SHELLBOXES

DefySwap

Smart Contract Security Audit

Prepared by ShellBoxes

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Contents

1 Introduction

DefySwap engaged ShellBoxes to conduct a security assessment on the DefySwap beginning on October 20th, 2021 and ending October 28th, 2021. In this report, we detail our methodical approach to evaluate potential security issues associated with the implementation of smart contracts, by exposing possible semantic discrepancies between the smart contract code and design document, and by recommending additional ideas to optimize the existing code. Our findings indicate that the current version of smart contracts can still be enhanced further due to the presence of many security and performance concerns.

This document summarizes the findings of our audit.

1.1 About DefySwap

The project is being handled and launched by defy.farm team which is an established project on the BSC chain. DEFYSWAP is one of the most advanced trading platforms on the Fantom Opera chain which also offers multiple decisionmaking tools for the users and offers a user- friendly and detailed full-options trading experience for all.

Issuer	DefySwap
Website	https://defyswap.finance
Type	Solidity Smart Contract
Audit Method	Whitebox

1.2 Approach & Methodology

ShellBoxes used a combination of manual and automated security testing to achieve a balance between efficiency, timeliness, practicability, and correctness within the audit's scope. While manual testing is advised for identifying problems in logic, procedure, and implementation, automated testing techniques help to expand the coverage of smart contracts and can quickly detect code that does not comply with security best practices.

1.2.1 Risk Methodology

Vulnerabilities or bugs identified by ShellBoxes are ranked using a risk assessment technique that considers both the LIKELIHOOD and IMPACT of a security incident. This framework is effective at conveying the features and consequences of technological vulnerabilities.

Its quantitative paradigm enables repeatable and precise measurement, while also revealing the underlying susceptibility characteristics that were used to calculate the Risk scores. A risk level will be assigned to each vulnerability on a scale of 5 to 1, with 5 indicating the greatest possibility or impact.

- Likelihood quantifies the probability of a certain vulnerability being discovered and exploited in the untamed.
- Impact quantifies the technical and economic costs of a successful attack.
- Severity indicates the risk's overall criticality.

Probability and impact are classified into three categories: H, M, and L, which correspond to high, medium, and low, respectively. Severity is determined by probability and impact and is categorized into four levels, namely Critical, High, Medium, and Low.

Impact	High	Critical	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Low
		High	Medium	Low
			Likelihood	

2 Findings Overview

2.1 Summary

The following is a synopsis of our conclusions from our analysis of the DefySwap implementation. During the first part of our audit, we examine the smart contract source code and run the codebase via a static code analyzer. The objective here is to find known coding problems statically and then manually check (reject or confirm) issues highlighted by the tool. Additionally, we check business logics, system processes, and DeFi-related components manually to identify potential hazards and/or defects.

2.2 Key Findings

In general, these smart contracts are well-designed and constructed, but their implementation might be improved by addressing the discovered flaws, which include , 3 high-severity, 11 medium-severity, 20 low-severity vulnerabilities.

Vulnerabilities	Severity	Status
Usage Of transfer Instead Of safeTransfer	HIGH	Fixed
Usage Of transfer Instead Of safeTransfer	HIGH	Fixed
Usage Of transfer Instead Of safeTransfer	HIGH	Fixed
Approve Race Condition	MEDIUM	Acknowledged
Race Condition	MEDIUM	Acknowledged
Old Dev/BurnVault/IlpVault are not included in fee	MEDIUM	Fixed
Race Condition	MEDIUM	Acknowledged
Owner Can Create Duplicate Pools	MEDIUM	Ackwonledged
Reward Miscalculation	MEDIUM	Fixed
Approve Race	MEDIUM	Acknowledged
For Loop Over Dynamic Array	MEDIUM	Acknowledged
Owner Can Create Duplicate Pools	MEDIUM	Acknowledged
Reward Miscalculation	MEDIUM	Fixed
For Loop Over Dynamic Array	MEDIUM	Acknowledged

Missing Address Verification	LOW	Fixed
Integer Overflow	LOW	Acknowledged
Floating Pragma	LOW	Fixed
Usage of Block.TimeStamp	LOW	Acknowledged
Owner Can Renounce Ownership	LOW	Acknowledged
Missing Address Verification	LOW	fixed
Missing Value Verification	LOW	Fixed
Floating Pragma	LOW	Fixed
Missing Address Verification	LOW	Fixed
Owner Can Renounce Ownership	LOW	Acknowledged
Missing Address Verification	LOW	Fixed
Owner Can Renounce Ownership	LOW	Acknowledged
Missing Address Verification	LOW	Fixed
Integer Overflow	LOW	Acknowledged
Missing Address Verification	LOW	Fixed
Integer Overflow	LOW	Acknowledged
Floating Pragma	LOW	Fixed
Missing Value Verification	LOW	Fixed
Missing Address Verification	LOW	Fixed
Owner Can Renounce Ownership	LOW	Acknowledged

3 Finding Details

A DFYToken.sol

A.1 Approve Race Condition [MEDIUM]

Description:

The standard ERC20 implementation contains a widely-known racing condition in it approve function, wherein a spender is able to witness the token owner broadcast a transaction altering their approval and quickly sign and broadcast a transaction using transferFrom to move the current approved amount from the owner's balance to the spender. If the spender's transaction is validated before the owner's, the spender will be able to get both approval amounts of both transactions.

Code:

Listing 1: DFYtoken.sol

```
    function _approve(address owner, address spender, uint256 amount) internal {
require(owner != address(0), 'ERC20: approve from the zero address');
require(spender != address(0), 'ERC20: approve to the zero address');
_allowances[owner][spender] = amount;
emit Approval(owner, spender, amount);
}
```

Risk Level:

Likelihood – 2

Impact - 5

Recommendation:

Use increaseAllowance and decreaseAllowance functions to modify the approval amount instead of using the approve function to modify it.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

A.2 Race Condition [MEDIUM]

Description:

The _burnFee, the _ilpFee and the _devFee variables have setters. If the user checks the value of one of these variables, then performs a transfer, then the owner updates the fees, the order of the transaction might overturn and the user's transaction in this case will be executed with the new fees without him knowing about it.

Code:

Listing 2: DFYtoken.sol

```
// A percentage of every transfer goes to Burn Vault ,ILP Vault & Dev
uint256 burnAmount = amount.mul(_burnFee).div(1000);
uint256 ilpAmount = amount.mul(_ilpFee).div(1000);
uint256 devAmount = amount.mul(_devFee).div(1000);
```

Risk Level:

Likelihood – 1
Impact - 4

Recommendation:

Add the fees in the arguments of the transfer function, then add a require statements that verifies that the values that are provided in the arguments are the same as the ones that are stored in the smart contract.

Code:

Listing 3: DFYtoken.sol

```
function _transfer(address sender, address recipient, uint256 amount,
    ↪ uint256 burnFee, uint256 ilpFe uint256 devFee) internal override
    ↪ {
 require(burnFee == _burnFee, "DFY: Invalid burnFree");
 require(ilpFee == _ilpFee, "DFY: Invalid ilpFree");
 require(devFee == _devFee, "DFY: Invalid devFree");
```

Status - Acknowledged

The DefySwap team has acknowledged the risk.

A.3 Old Dev/BurnVault/IlpVault are not included in fee [MEDIUM]

Description:

When setting the Dev, the BurnVault and the IlpVault addresses, the old addresses are not included back in the fee. Thus, all the old addresses will be excluded from the fee transactions.

Code:

Listing 4: DFYtoken.sol

```
function setDev(address _dev) external onlyDev {
require(dev != address(0), 'DEFY: dev cannot be the zero address');
dev = _dev ;
_isExcludedFromFee[_dev] = true;
emit NewDeveloper(_dev);
}
function setBurnVault(address _burnVault) external onlyMaster {
BURN_VAULT = _burnVault ;
_isExcludedFromFee[_burnVault] = true;
emit SetBurnVault(_burnVault);
}
function setIlpVault(address _ilpVault) external onlyOwner {
ILP_VAULT = _ilpVault;
_isExcludedFromFee[_ilpVault] = true;
emit SetIlpVault(_ilpVault);
}
```

Risk Level:

Likelihood – 3
Impact - 2

Recommendation:

Include the old value of the address to the fee before updating it to the new value using the mapping _isExcludedFromFee and set it back to false.

Listing 5: DFYtoken.sol

```
function setDev(address _dev) external onlyDev {
require(dev != address(0), 'DEFY: dev cannot be the zero address');
_isExcludedFromFee[dev] = false;
 dev = _dev ;
_isExcludedFromFee[_dev] = true;
emit NewDeveloper(_dev);
}
function setBurnVault(address _burnVault) external onlyMaster {
 _isExcludedFromFee[BURN_VAULT] = false;
BURN_VAULT = _burnVault ;
_isExcludedFromFee[_burnVault] = true;
emit SetBurnVault(_burnVault);
}
function setIlpVault(address _ilpVault) external onlyOwner {
_isExcludedFromFee[ILP_VAULT] = false;
```

```
 ILP_VAULT = _ilpVault;
_isExcludedFromFee[_ilpVault] = true;
emit SetIlpVault(_ilpVault);
}
```

Status - Fixed

The DefySwap team has fixed the issue by including the old value of the address to the fee before updating it.

Listing 6: DFYtoken.sol

```
function setDev(address _dev) external onlyDev {
require(dev != address(0), 'DEFY: dev cannot be the zero address');
_isExcludedFromFee[dev] = false;
dev = _dev ;
_isExcludedFromFee[_dev] = true;
emit NewDeveloper(_dev);
}
function setBurnVault(address _burnVault) external onlyMaster {
_isExcludedFromFee[BURN_VAULT] = false;
BURN_VAULT = _burnVault ;
_isExcludedFromFee[_burnVault] = true;
emit SetBurnVault(_burnVault);
}
function setIlpVault(address _ilpVault) external onlyOwner {
_isExcludedFromFee[ILP_VAULT] = false;
ILP_VAULT = _ilpVault;
_isExcludedFromFee[_ilpVault] = true;
emit SetIlpVault(_ilpVault);
}
```

A.4 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 7: DFYtoken.sol

```
constructor(address _dev, address _bunVault, uint256 _initAmount) public
    ↪ { //address _ilpVault,
dev = _dev;
BURN_VAULT = _bunVault;
defyMaster = msg.sender;
mint(msg.sender,_initAmount);
_isExcludedFromFee[msg.sender] = true;
_isExcludedFromFee[_bunVault] = true;
}
```

Listing 8: DFYtoken.sol

```
function setRouter(address _router) external onlyOwner {
router = _router;
emit SetRouter(_router);
}
```

Listing 9: DFYtoken.sol

```
function setMaster(address master) public onlyMaster {
defyMaster = master;
emit SetDefyMaster(master);
}
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It is recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Listing 10: DFYtoken.sol

```
function setMaster(address master) public onlyMaster {
 require(master!= address(0), 'DEFY: master cannot be the zero address')
     ↪ ;
defyMaster = master;
emit SetDefyMaster(master);
}
```

Status - Fixed

The DefySwap team has fixed the issue as recommended by adding require statements that verify the addresses provided in the arguments.

Listing 11: DFYtoken.sol

```
constructor(address _dev, address _bunVault, uint256 _initAmount) public
    ↪ {
require(_dev != address(0), 'DEFY: dev cannot be the zero address');
require(_bunVault != address(0), 'DEFY: burn vault cannot be the zero
    ↪ address');
dev = _dev;
BURN_VAULT = _bunVault;
defyMaster = msg.sender;
mint(msg.sender,_initAmount);
_isExcludedFromFee[msg.sender] = true;
_isExcludedFromFee[_bunVault] = true;
_isExcludedFromFee[_dev] = true;
}
```

Listing 12: DFYtoken.sol

```
function setRouter(address _router) external onlyOwner {
require(_router != address(0), 'DEFY: Router cannot be the zero address
    ↪ ');
router = _router;
emit SetRouter(_router);
}
```

Listing 13: DFYtoken.sol

```
function setMaster(address master) public onlyMaster {
require(master!= address(0), 'DEFY: DefyMaster cannot be the zero
    ↪ address');
defyMaster = master;
emit SetDefyMaster(master);
}
```

A.5 Integer Overflow [LOW]

Description:

The nonce mapping was implemented and integrated in the signature process in order to prevent the spender from claiming the reward multiple times (replay attack). The problem here is long term, when the nonces[target] reaches 2^{256-1}, the next increment will cause an integer overflow and the nonces[signatory] value will change to 0.

Code:

Listing 14: DFYToken.sol

```
require(nonce == nonces[signatory]++, "DEFY::delegateBySig: invalid
    ↪ nonce");
```

Risk Level:

Likelihood – 1
Impact - 4

Recommendation:

Use the add function from the SafeMath library. Also, returning an error message would help to explain why the transaction failed.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

A.6 Floating Pragma [LOW]

Description:

The contract makes use of the floating-point pragma 0.6.12. Contracts should be deployed using the same compiler version and flags that were used during the testing process. Locking the pragma helps ensure that contracts are not unintentionally deployed using another pragma, such as an obsolete version, that may introduce issues in the contract system.

Code:

Listing 15: DFYToken.sol

```
pragma solidity ^0.6.12;
```

Recommendation:

Consider locking the pragma version. It is advised that floating pragma not be used in production. Both truffle-config.js and hardhat.config.js support locking the pragma version.

Status - Fixed

The DefySwap team has fixed the issue by locking the pragma version to 0.6.12.

Listing 16: DFYToken.sol

```
pragma solidity 0.6.12;
```

B DFYMaster.sol

B.1 Usage Of transfer Instead Of safeTransfer [HIGH]

Description:

The ERC20 standard token implementation functions also return the transaction status as a boolean. It is a good practice to check for the return status of the function call to ensure that the transaction was successful. It is the developer's responsibility to enclose these function calls with require() to ensure that, when the intended ERC20 function call returns false, the caller transaction also fails. However, it is mostly missed by developers when they carry out checks; in effect, the transaction would always succeed, even if the token transfer did not.

Code:

Listing 17: DFYMaster.sol

```
function safeDefyTransfer(address _to, uint256 _amount) internal {
uint256 defyBal = defy.balanceOf(address(this));
if (_amount > defyBal) {
defy.transfer(_to, defyBal);
} else {
defy.transfer(_to, _amount);
}
}
```

Listing 18: DFYMaster.sol

```
function safeSecondRTransfer(address _to, uint256 _amount) internal {
```

```
uint256 secondRBal = secondR.balanceOf(address(this));
if (_amount > secondRBal) {
secondR.transfer(_to, secondRBal);
} else {
secondR.transfer(_to, _amount);
}
}
```

Risk Level:

Likelihood – 3
Impact - 5

Recommendation:

Use the safeTransfer function from the safeERC20 Implementation, or put the transfer call inside an assert or require to verify that it returned true.

Status - Fixed

The DefySwap team has fixed the issue by adding a require statement that verifies if the transfer has passed correctly.

Listing 19: DFYMaster.sol

```
function safeDefyTransfer(address _to, uint256 _amount) internal {
uint256 defyBal = defy.balanceOf(address(this));
bool successfulTansfer = false;
if (_amount > defyBal) {
successfulTansfer = defy.transfer(_to, defyBal);
} else {
successfulTansfer = defy.transfer(_to, _amount);
}
require(successfulTansfer, "safeDefyTransfer: transfer failed");
}
```

Listing 20: DFYMaster.sol

```
function safeSecondRTransfer(address _to, uint256 _amount) internal {
uint256 secondRBal = secondR.balanceOf(address(this));
bool successfulTansfer = false;
if (_amount > secondRBal) {
successfulTansfer = secondR.transfer(_to, secondRBal);
} else {
successfulTansfer = secondR.transfer(_to, _amount);
}
require(successfulTansfer, "safeSecondRTransfer: transfer failed");
}
```

B.2 Race Condition [MEDIUM]

Description:

The depositFee variable have a setter. If the user checks the value of this variable, then calls the deposit function, and the owner updates the depositFee, the order of the transaction might overturn and the user's transaction in this case will be executed with the new fee without him knowing about it.

Code:

Listing 21: DFYMaster.sol

```
if (pool.depositFee > 0) {
    uint256 depositFee = amount_.mul(pool.depositFee).div(10000);
    pool.lpToken.safeTransfer(feeAddress, depositFee);
    user.amount = user.amount.add(amount_).sub(depositFee);
    pool.lpSupply = pool.lpSupply.add(amount_).sub(depositFee);
```

Risk Level:

Likelihood – 1
Impact - 4

Recommendation:

Add the depositFee in the arguments of the deposit function, then add a require statements that verifies that the value provided in the arguments is the same as the one that is stored in the smart contract.

Listing 22: DFYMaster.sol

```
function deposit(uint256 _pid, uint256 _amount, uint256 _depositFee)
    ↪ public {
 require(depositFee == _depositFee, "DFY: Invalid depositFee");
```

Status - Acknowledged

The DefySwap team has acknowledged the risk.

B.3 Owner Can Create Duplicate Pools [MEDIUM]

Description:

The add() function is used to add a new pool, it turns out that it did not complete essential sanity checks to prohibit the creation of a new pool with duplicate LP tokens. If a new pool with a duplicate LP token is introduced, it is likely that an error in the reward distribution to the pools and staking will occur.

Code:

Listing 23: DFYMaster.sol

```
function add(uint256 _allocPoint, uint256 _allocPointDR, IERC20 _lpToken
    ↪ , DefySTUB _stub, IERC20IERC20 _token1, uint256 _depositFee,
    ↪ uint256 _withdrawalFee, bool _offerILP, bool _issueSTUB,
uint256 _rewardEndTimestamp, bool _withUpdate ) public onlyDev {
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "Add: invalid
    ↪ rewardEndTimestamp");
```

Risk Level:

Likelihood – 3
Impact - 3

Recommendation:

This might be avoided by defining a mapping from addresses to booleans, such that once added, LP tokens are mapped to true. A require-statement might then be added to the method to prevent the same LP token from being added again.

Status - Ackwonledged

The DefySwap team has acknowledged the risk, saying that they need this as they may have to add a duplicate pool in an emergency situation while keeping 0 allocpoints to not used pools).

B.4 Reward Miscalculation [MEDIUM]

Description:

The totalAllocPoint variable is used to determine the portion of total rewards minted that each pool will get, making it a critical part in the rewards calculation. As a result, if the totalAllocPoint variable is changed without first updating the pending awards, the payout for each pool is calculated improperly. The following add() and set() functions modify the totalAllocPoint variable without updating the awards.

Code:

Listing 24: DFYMaster.sol

```
function add(uint256 _allocPoint, uint256 _allocPointDR, IERC20 _lpToken
    ↪ , DefySTUB _stub, IERC20 _token0,
IERC20 _token1, uint256 _depositFee, uint256 _withdrawalFee, bool
    ↪ _offerILP, bool _issueSTUB,
uint256 _rewardEndTimestamp, bool _withUpdate ) public onlyDev {
```

```
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "Add: invalid
    ↪ rewardEndTimestamp");
if (_withUpdate) {
massUpdatePools();
}
```

Listing 25: DFYMaster.sol

```
function set(uint256 _pid, uint256 _allocPoint, uint256 _allocPointDR,
    ↪ IERC20 _token0,
IERC20 _token1, uint256 _depositFee, uint256 _withdrawalFee, _offerILP,
bool _issueSTUB, uint256 _rewardEndTimestamp, bool _withUpdate ) public
    ↪ onlyOwner {
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp, "Add: invalid
    ↪ rewardEndTimestamp");
if (_withUpdate) {
massUpdatePools();
}
```

Risk Level:

Likelihood – 2
Impact - 4

Recommendation:

The Team should remove _withUpdate variable in the set() and add() functions and always calling the massUpdatePools() function before updating totalAllocPoint variable.

Status - Fixed

The DefySwap team have fixed the issue by removing _withUpdate variable in the set() and add() functions and calling the massUpdatePools() function before updating totalAllocPoint variable.

Listing 26: DFYMaster.sol

```
function add(uint256 _allocPoint, uint256 _allocPointDR, IERC20 _lpToken
   ↪ , DefySTUB _stub, IERC20 _token0,
IERC20 _token1, uint256 _depositFee, uint256 _withdrawalFee, bool
   ↪ _offerILP, bool _issueSTUB,
uint256 _rewardEndTimestamp) public onlyDev {
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "Add: invalid
   ↪ rewardEndTimestamp");
massUpdatePools();
}
```

Listing 27: DFYMaster.sol

```
function set(uint256 _pid, uint256 _allocPoint, uint256 _allocPointDR,
   ↪ IERC20 _token0, IERC20 _token1,
 uint256 _depositFee, uint256 _withdrawalFee, _offerILP, bool _issueSTUB
    ↪ ,
 uint256 _rewardEndTimestamp) public onlyOwner {
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp, "Add: invalid
   ↪ rewardEndTimestamp");
massUpdatePools();
}
```

B.5 Usage of Block.TimeStamp [LOW]

Description:

block.timestamp is used in the contract. The variable block is a set of variables. The timestamp does not always reflect the current time and may be inaccurate. The value of a block can be influenced by miners. Maximal Extractable Value attacks require a timestamp of up to 900 seconds. There is no guarantee that the value is right, all what is guaranteed is that it is higher than the timestamp of the previous block.

Code:

Listing 28: DFYMaster.sol

```
uint256 lastRewardTimestamp = block.timestamp > startTimestamp ? block.
    ↪ timestamp : startTimestamp;
```

Listing 29: DFYMaster.sol

```
require(_rewardEndTimestamp > block.timestamp , "Add: invalid
    ↪ rewardEndTimestamp");
```

Risk Level:

Likelihood – 3
Impact - 3

Recommendation:

You can use an Oracle to get the exact time or verify if a delay of 900 seconds will not destroy the logic of the staking contract.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

B.6 Owner Can Renounce Ownership [LOW]

Description:

Typically, the contract's owner is the account that deploys the contract. As a result, the owner is able to perform certain privileged activities on his behalf. The renounceOwnership function is used in smart contracts to renounce ownership. Otherwise, if the contract's ownership has not been transferred previously, it will never have an Owner, which is risky.

Code:

Listing 30: DFYMaster.sol

```
contract DefyMaster is Ownable , ReentrancyGuard {
using SafeMath for uint256;
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It is advised that the Owner cannot call renounceOwnership without first transferring ownership to a different address. Additionally, if a multi-signature wallet is utilized, executing the renounceOwnership method for two or more users should be confirmed. Alternatively, the RenounceOwnership functionality can be disabled by overriding it.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

B.7 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 31: DFYMaster.sol

```
constructor(DfyToken _defy, DefySTUB _stub, BurnVault _burnvault, ImpermanentLossProtection _ilp,
address _devaddr, address _feeAddress, uint256 _startTimestamp, uint256 _initMint) public {
defy = _defy;
burn_vault = _burnvault;
ilp = _ilp;
devaddr = _devaddr;
feeAddress = _feeAddress;
startTimestamp = _startTimestamp;
```

Listing 32: DFYMaster.sol

```
function setImpermanentLossProtection(address _ilp)public onlyDev returns (bool){
ilp = ImpermanentLossProtection(_ilp);
}
function setFeeAddress(address _feeAddress)public onlyDev returns (bool) {
feeAddress = _feeAddress;
emit SetFeeAddress(_feeAddress);
return true;
}
function setDFY(DfyToken _dfy)public onlyDev returns (bool){
defy = _dfy;
emit SetDFY(address(_dfy));
return true;
}
function setSecondaryReward(IERC20 _rewardToken)public onlyDev returns (
    ↪ bool){
secondR = _rewardToken ;
emit SetSecondaryReward(address(_rewardToken));
return true;
}
```

Listing 33: DFYMaster.sol

```
function dev(address _devaddr) public {
require(msg.sender == devaddr, "dev: wut?");
devaddr = _devaddr;
}
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It's recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Listing 34: DFYMaster.sol

```
function dev(address _devaddr) public {
require(msg.sender == devaddr, "dev: wut?");
 require(_devaddr != address(0), 'DEFY: dev cannot be the zero address')
     ↪ ;
devaddr = _devaddr;
}
```

Status - fixed

The DefySwap team has fixed the issue by adding require statements that verify the addresses provided in the arguments.

Listing 35: DFYMaster.sol

```
function dev(address _devaddr) public {
require(_devaddr != address(0), 'DEFY: dev cannot be the zero address');
require(msg.sender == devaddr, "dev: wut?");
devaddr = _devaddr;
}
```

B.8 Missing Value Verification [LOW]

Description:

Certain functions lack a safety check in the values, the values of the arguments should include some safety checks test, otherwise, the contract's functionality may get hurt.

Code:

Listing 36: DFYMaster.sol

```
function setStartTimestamp(uint256 sTimestamp) public onlyDev{
startTimestamp = sTimestamp;
emit UpdateStartTimestamp(sTimestamp);
}
```

Listing 37: DFYMaster.sol

```
function updateMultiplier(uint256 multiplierNumber) public onlyDev {
BONUS_MULTIPLIER = multiplierNumber;
}
```

Listing 38: DFYMaster.sol

```
function add(uint256 _allocPoint, uint256 _allocPointDR, IERC20 _lpToken
    ↪ , DefySTUB _stub, IERC20 _token0, IERC20 _token1, uint256
    ↪ _depositFee, uint256 _withdrawalFee, _offerILP, bool _issueSTUB,
    ↪ uint256 _rewardEndTimestamp, bool _withUpdate ) public onlyDev {
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "Add: invalid
    ↪ rewardEndTimestamp");
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It's recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing require statements.

Listing 39: DFYMaster.sol

```
function setStartTimestamp(uint256 sTimestamp) public onlyDev{
 require(sTimestamp > block.timestamp, "Invalid Timestamp");
startTimestamp = sTimestamp;
emit UpdateStartTimestamp(sTimestamp);
}
```

Listing 40: DFYMaster.sol

```
function updateMultiplier(uint256 multiplierNumber) public onlyDev {
 require(multiplierNumber != 0, " multiplierNumber should not be null");
BONUS_MULTIPLIER = multiplierNumber;
}
```

Listing 41: DFYMaster.sol

```
function add(uint256 _allocPoint, uint256 _allocPointDR, IERC20 _lpToken
    ↪ , DefySTUB _stub, IERC20 _token0,
IERC20 _token1, uint256 _depositFee, uint256 _withdrawalFee, _offerILP, bool _issueSTUB,
uint256 _rewardEndTimestamp, bool _withUpdate ) public onlyDev {
 require(_allocPoint != 0 && _allocPointDR != 0, "AllocPoint and allocPointDR should not be null");
require(_depositFee <= 600, "Add : Max Deposit Fee is 6%");
require(_withdrawalFee <= 600, "Add : Max Deposit Fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "Add: invalid rewardEndTimestamp");
```

Status - Fixed

The DefySwap team has fixed the issue by adding require statements in order to verify the values that are provided in the arguments.

Listing 42: DFYMaster.sol

```
function setStartTimestamp(uint256 sTimestamp) public onlyDev{
 require(sTimestamp > block.timestamp, "Invalid Timestamp");
startTimestamp = sTimestamp;
emit UpdateStartTimestamp(sTimestamp);
}
```

Listing 43: DFYMaster.sol

```
function updateMultiplier(uint256 multiplierNumber) public onlyDev {
 require(multiplierNumber != 0, " multiplierNumber should not be null");
BONUS_MULTIPLIER = multiplierNumber;
}
```

B.9 Floating Pragma [LOW]

Description:

The contract makes use of the floating-point pragma 0.6.12. Contracts should be deployed using the same compiler version and flags that were used during the testing process. Locking the pragma helps ensure that contracts are not unintentionally deployed using another pragma, such as an obsolete version, that may introduce issues in the contract system.

Code:

Listing 44: DFYMaster.sol

```
pragma solidity ^0.6.12;
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

Consider locking the pragma version. It is advised that floating pragma not be used in production. Both truffle-config.js and hardhat.config.js support locking the pragma version.

Status - Fixed

The DefySwap team has fixed the issue by locking the pragma version to 0.6.12.

Listing 45: DFYMaster.sol

```
pragma solidity 0.6.12;
```

C BurnVault.sol

C.1 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 46: BurnVault.sol

```
function setDefyMaster (address master) external onlyDefy{
defyMaster = master ;
emit SetDefyMaster(master);
}
function setDefy (address _defy) external onlyDefy{
defy = DfyToken(_defy);
}
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It is recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Listing 47: BurnVault.sol

```
function setDefyMaster (address master) external onlyDefy{
 require(_devaddr != address(0), 'DEFY: DefyMaster cannot be the zero address');
defyMaster = master ;
emit SetDefyMaster(master);
}
function setDefy (address _defy) external onlyDefy{
 require(_defy!= address(0), 'DEFY: Defy cannot be the zero address');
```

Status - Fixed

The DefySwap team has fixed the issue as recommended by adding a require statement that verifies the addresses provided in the arguments.

Listing 48: BurnVault.sol

```
function setDefyMaster (address master) external onlyDefy{
require(master != address(0), 'DEFY: DefyMaster cannot be the zero address');
defyMaster = master ;
emit SetDefyMaster(master);
}
```

Listing 49: BurnVault.sol

```
function setDefy (address _defy) external onlyDefy{
require(_defy!= address(0), 'DEFY: DFY cannot be the zero address');
defy = DfyToken(_defy);
}
```

C.2 Owner Can Renounce Ownership [LOW]

Description:

Typically, the contract's owner is the account that deploys the contract. As a result, the owner is able to perform certain privileged activities on his behalf. The renounceOwnership function is used in smart contracts to renounce ownership. Otherwise, if the contract's ownership has not been transferred previously, it will never have an Owner, which is risky.

Code:

Listing 50: BurnVault.sol

```
contract BurnVault is Ownable {
DfyToken public defy;
address public defyMaster;
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It is advised that the Owner cannot call renounceOwnership without first transferring ownership to a different address. Additionally, if a multi-signature wallet is utilized, executing the renounceOwnership method for two or more users should be confirmed. Alternatively, the renounce ownership functionality can be disabled by overriding it.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

D Factory.sol

D.1 Approve Race [MEDIUM]

Description:

The standard ERC20 implementation contains a widely-known racing condition in its approve function, wherein a spender is able to witness the token owner broadcast a transaction altering their approval and quickly sign and broadcast a transaction using transferFrom to move the current approved amount from the owner's balance to the spender. If the spender's transaction is validated before the owner's, the spender will be able to get both approval amounts of both transactions.

Code:

Listing 51: DefySwapERC20.sol

```
function _approve(address owner, address spender, uint256 value) private {
allowance[owner][spender] = value;
emit Approval(owner, spender, value);
}
```

Risk Level:

Likelihood – 2
Impact - 5

Recommendation:

Use increaseAllowance and decreaseAllowance functions to modify the approval amount instead of using the approve function to modify it.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

D.2 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 52: DefySwapERC20.sol

```
function transfer(address to, uint256 value) external returns (bool) {
_transfer(msg.sender, to, value);
return true;
}
```

Listing 53: DefySwapPair.sol

```
function initialize(address _token0, address _token1) external {
```

```
require(msg.sender == factory, 'DefySwap: FORBIDDEN'); // sufficient check
token0 = _token0;
token1 = _token1;
}
```

Listing 54: DefySwapFactory.sol

```
constructor(address _feeToSetter) public {
feeToSetter = _feeToSetter;
}
```

Listing 55: DefySwapFactory.sol

```
function setFeeTo(address _feeTo) external {
require(msg.sender == feeToSetter, "DefySwap: FORBIDDEN");
feeTo = _feeTo;
}
function setFeeToSetter(address _feeToSetter) external {
require(msg.sender == feeToSetter, "DefySwap: FORBIDDEN");
feeToSetter = _feeToSetter;
}
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It's recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Listing 56: DefySwapERC20

```
function transfer(address to, uint256 value) external returns (bool) {
 require(to != address(0), 'DEFY: to cannot be the zero address');
_transfer(msg.sender, to, value);
return true;
}
```

Listing 57: DefySwapPair.sol

```
function initialize(address _token0, address _token1) external {
 require(token0 != address(0) && token1 != address(0), 'DEFY: tokens cannot be the zero address');
require(msg.sender == factory, 'DefySwap: FORBIDDEN'); // sufficient check
token0 = _token0;
token1 = _token1;
}
```

Listing 58: DefySwapPair.sol

```
constructor(address _feeToSetter) public {
 require(_feeToSetter != address(0), 'DEFY: feeToSetter cannot be the zero address');
feeToSetter = _feeToSetter;
}
```

Listing 59: DefySwapFactory.sol

```
function setFeeTo(address _feeTo) external {
 require(_feeTo != address(0), 'DEFY: feeTo cannot be the zero address');
require(msg.sender == feeToSetter, "DefySwap: FORBIDDEN");
feeTo = _feeTo;
}
function setFeeToSetter(address _feeToSetter) external {
 require(_feeToSetter != address(0), 'DEFY: feeToSetter cannot be the zero address');
require(msg.sender == feeToSetter, "DefySwap: FORBIDDEN");
feeToSetter = _feeToSetter;
```

Status - Fixed

The DefySwap team has fixed the issue as recommended by adding require statements in order to verify the values that are provided in the arguments.

E ILP.sol

E.1 Usage Of transfer Instead Of safeTransfer [HIGH]

Description:

The ERC20 standard token implementation functions also return the transaction status as a Boolean. It is a good practice to check for the return status of the function call to ensure that the transaction was successful. It is the developer’s responsibility to enclose these function calls with require() to ensure that, when the intended ERC20 function call returns false, the caller transaction also fails. However, it is mostly missed by developers when they carry out checks; in effect, the transaction would always succeed, even if the token transfer did not.

Code:

Listing 60: ImpermanentLossProtection.sol

```
ting 32 : ImpermanentLossProtection (Line 761)
function defyTransfer(address _to, uint256 _amount) externalonlyFarm {
uint256 defyBal = IERC20(defy).balanceOf(address(this));
uint256 xfAmt = _amount;
if( xfAmt > defyBal )
xfAmt = defyBal;
if(xfAmt > 0)
IERC20(defy).transfer(_to, xfAmt);
}
```

Risk Level:

Likelihood – 3
Impact - 5

Recommendation:

Use the safeTransfer function from the safeERC20 Implementation, or put the transfer call inside an assert or require to verify that it returned true.

Status - Fixed

The DefySwap team has fixed the issue by adding a require statement that verifies if the transfer has passed correctly.

E.2 Owner Can Renounce Ownership [LOW]

Description:

Typically, the contract's owner is the account that deploys the contract. As a result, the owner is able to perform certain privileged activities on his behalf. The renounceOwnership function is used in smart contracts to renounce ownership. Otherwise, if the contract's ownership has not been transferred previously, it will never have an Owner.

Code:

Listing 61: ImpermanentLossProtection.sol

```
contract ImpermanentLossProtection is Ownable {
using SafeMath for uint256;
using SafeERC20 for IERC20;
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It is advised that the Owner cannot call renounceOwnership without first transferring ownership to a different address. Additionally, if a multi-signature wallet is utilized, executing the renounceOwnership method for two or more users should be confirmed. Alternatively, the renounce ownership functionality can be disabled by overriding it.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

E.3 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 62: ImpermanentLossProtection.sol

```
constructor( address _defy, address _defyMaster)
public
{
defy = _defy;
defyMaster = _defyMaster;
devAddr = msg.sender;
```

Listing 63: ImpermanentLossProtection.sol

```
function setAddresses( address _defy, address _defyMaster ) public
    ↪ onlyFarm {
defy = _defy;
defyMaster = _defyMaster;
set(0,IERC20(0),IERC20(0),false);
poolInfo[0].lpToken = _defy ;
}
```

Listing 64: ImpermanentLossProtection.sol

```
function dev(address _devAddr) public {
require(msg.sender == devAddr, "dev: wut?");
devAddr = _devAddr;
}
function add(address _lpToken, IERC20 _token0, IERC20 _token1, bool _offerILP)
public onlyDev {
poolInfo.push(
PoolInfo({
lpToken: _lpToken,
token0: _token0,
token1: _token1,
token0_decimal: _token0.decimals(),
token1_decimal: _token1.decimals(),
impermanentLossProtection: _offerILP
})
);
}
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It's recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Status - Fixed

The DefySwap team has fixed the issue as recommended by adding require statements that verify the addresses provided in the arguments.

E.4 Integer Overflow [LOW]

Description:

The pow and defyPrice are vulnerable to integer overflow since they are the result of an addition, the problem here is in the long term, when the variable reaches 2^{256-1}, the next increment will cause an integer overflow, so the value will change to 0.

Code:

Listing 65: ImpermanentLossProtection.sol

```
if(_dec0 > _dec1){
pow = 18 + _dec0 - _dec1;
}
if (_dec0 < _dec1){
pow = 18 + _dec1 - _dec0;
}
defyPrice = ( (10 ** pow) * (r0) ) / (r1);
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

Use the add function from the SafeMath library. Also, returning an error message like would help explain why the transaction failed.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

F Router.sol

F.1 For Loop Over Dynamic Array [MEDIUM]

Description:

When smart contracts are deployed or their associated functions are invoked, the execution of these operations always consumes a certain quantity of gas, according to the amount of computation required to accomplish them. Modifying an unknown-size array that grows in size over time can result in a Denial-of-Service. Simply by having an excessively huge array, users can exceed the gas limit, therefore preventing the transaction from ever succeeding.

Code:

Listing 66: DefySwapLibrary.sol

```
function getAmountsOut(address factory, uint amountIn, address[] memory path) internal view
 returns (uint[] memory amounts) {
require(path.length >= 2, 'DefySwapLibrary: INVALID_PATH');
amounts = new uint[](path.length);
amounts[0] = amountIn;
for (uint i; i < path.length - 1; i++) {
(uint reserveIn, uint reserveOut) = getReserves(factory, path[i], path[i + 1]);
amounts[i + 1] = getAmountOut(amounts[i], reserveIn, reserveOut);
}
}
```

Listing 67: DefySwapLibrary.sol

```
function getAmountsIn(address factory, uint256 amountOut, address[]
    ↪ memory path) internal
 view returns (uint256[] memory amounts) {
require(path.length >= 2, "DefySwapLibrary: INVALID_PATH");
amounts = new uint256[](path.length);
amounts[amounts.length - 1] = amountOut;
for (uint256 i = path.length - 1; i > 0; i--) {
(uint256 reserveIn, uint256 reserveOut) = getReserves(factory, path[i -
    ↪ 1], path[i]);
amounts[i - 1] = getAmountIn(amounts[i], reserveIn, reserveOut);
}
 }
 }
```

Listing 68: DefySwapRouter.sol

```
for (uint256 i; i < path.length - 1; i++) {
(address input, address output) = (path[i], path[i + 1]);
(address token0, ) = DefySwapLibrary.sortTokens(input, output);
uint256 amountOut = amounts[i + 1];
(uint256 amount0Out, uint256 amount1Out) = input == token0
? (uint256(0), amountOut)
: (amountOut, uint256(0));
address to = i < path.length - 2
? DefySwapLibrary.pairFor(factory, output, path[i + 2])
: _to;
IDefySwapPair(DefySwapLibrary.pairFor(factory, input, output)).swap(
amount0Out,
amount1Out,
to,
new bytes(0)
);
}
```

Listing 69: DefySwapRouter.sol

```
for (uint256 i; i < path.length - 1; i++) {
(address input, address output) = (path[i], path[i + 1]);
(address token0, ) = DefySwapLibrary.sortTokens(input, output);
IDefySwapPair pair = IDefySwapPair(
DefySwapLibrary.pairFor(factory, input, output)
);
uint256 amountInput;
uint256 amountOutput;
{
// scope to avoid stack too deep errors
(uint256 reserve0, uint256 reserve1, ) = pair.getReserves();
(uint256 reserveInput, uint256 reserveOutput) = input == token0
? (reserve0, reserve1)
: (reserve1, reserve0);
amountInput = IERC20(input).balanceOf(address(pair)).sub(
reserveInput
);
amountOutput = DefySwapLibrary.getAmountOut(
amountInput,
reserveInput,
```

Risk Level:

Likelihood – 2
Impact - 4

Recommendation:

Avoid actions that involve looping across the entire data structure. If you really must loop over an array of unknown size, arrange for it to consume many blocs and thus multiple transactions.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

G STUB.sol

G.1 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 70: DefySTUB.sol

```
function delegateBySig(address delegatee, uint256 nonce, uint256 expiry, uint8 v, bytes32 r,
bytes32 s ) external {
bytes32 domainSeparator = keccak256(
abi.encode(
DOMAIN_TYPEHASH,
keccak256(bytes(name())),
getChainId(),
address(this)
)
);
bytes32 structHash = keccak256(
abi.encode(DELEGATION_TYPEHASH, delegatee, nonce, expiry)
);
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It's recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Status - Fixed

The DefySwap team has fixed the issue as recommended by adding require statements that verify the addresses provided in the arguments.

G.2 Integer Overflow [LOW]

Description:

The nonce mapping was implemented and integrated in the signature process in order to prevent the spender from claiming the reward multiple times (replay attack). The problem here is long term, when the nonces[target] reaches 2^{256-1}, the next increment will cause an integer overflow and the nonces[target] value will change to 0.

Code:

Listing 71: DefySTUB.sol

```
require(nonce == nonces[signatory]++, "DEFY::delegateBySig: invalid
    ↪ nonce");
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

Use the add function from the SafeMath library. Also, returning an error message like would help explain why the transaction failed.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

G.3 Floating Pragma [LOW]

Description:

The contract makes use of the floating-point pragma 0.6.12. Contracts should be deployed using the same compiler version and flags that were used during the testing process. Locking the pragma helps ensure that contracts are not unintentionally deployed using another pragma, such as an obsolete version, that may introduce issues in the contract system.

Code:

Listing 72: DefySTUB.sol

```
pragma solidity ^0.6.12;
```

Risk Level:

Likelihood – 2
Impact - 2

Recommendation:

Consider locking the pragma version. It is advised that floating pragma not be used in production. Both truffle-config.js and hardhat.config.js support locking the pragma version.

Status - Fixed

The DefySwap team has fixed the issue by locking the pragma version to 0.6.12.

Listing 73: DefySTUB.sol

```
pragma solidity 0.6.12;
```

H subDefyMaster.sol

H.1 Owner Can Create Duplicate Pools [MEDIUM]

Description:

The add() function is used to add a new pool, it turns out that it did not complete essential sanity checks to prohibit the creation of a new pool with duplicate LP tokens. If a new pool with a duplicate LP token is introduced, it is likely that an error in the reward distribution to the pools and staking will occur.

Code:

Listing 74: SubDefyMaster.sol

```
function add(uint256 _allocPoint, uint256 _depositFee, uint256
    ↪ _withdrawalFee, IERC20 _lpToken, uint256 _rewardEndTimestamp,
    ↪ bool _withUpdate) public onlyDev {
require(_depositFee <= 600 , "ADD : Max Deposit fee is 6%");
require(_withdrawalFee <= 600 , "ADD : Max Withdrawal fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "ADD : invalid
    ↪ rewardEndTimestamp");
require(_rewardEndTimestamp <= endTimestamp , "ADD : rewardEndTimestamp
    ↪ higher than endTimesif (_withUpdate) {
massUpdatePools();
}
```

Risk Level:

Likelihood – 2
Impact - 4

Recommendation:

This might be avoided by defining a mapping from addresses to booleans, such that once added, LP tokens are mapped to true. A require-statement might then be added to the method to prevent the same LP token from being added again.

Status - Acknowledged

The DefySwap team has acknowledged the risk, saying that they need this as they may have to add a duplicate pool in an emergency situation while keeping 0 allocpoints to not used pools.

H.2 Reward Miscalculation [MEDIUM]

Description:

The totalAllocPoint variable is used to determine the portion of total rewards minted that each pool will get, making it a critical part in the rewards calculation. As a result, if the totalAllocPoint variable is changed without first updating the pending awards, the payout for each pool is calculated improperly. The following add() and set() functions modify the totalAllocPoint variable without updating the awards.

Code:

Listing 75: subDefyMaster.sol

```
function add(uint256 _allocPoint, uint256 _depositFee, uint256 _withdrawalFee, IERC20 _lpToken,
uint256 _rewardEndTimestamp, bool _withUpdate) public onlyDev {
require(_depositFee <= 600 , "ADD : Max Deposit fee is 6%");
require(_withdrawalFee <= 600 , "ADD : Max Withdrawal fee is 6%");
require(_rewardEndTimestamp > block.timestamp , "ADD : invalid
    ↪ rewardEndTimestamp");
require(_rewardEndTimestamp <= endTimestamp , "ADD : rewardEndTimestamp
    ↪ higher than endTimesif (_withUpdate) {
massUpdatePools();
}
```

Risk Level:

Likelihood – 2
Impact - 4

Recommendation:

The DefySwap team should remove _withUpdate variable in the set() and add() functions and always calling the massUpdatePools() function before updating the totalAllocPoint variable.

Status - Fixed

The DefySwap team have fixed the issue by removing _withUpdate variable in the set() and add() functions and calling the massUpdatePools() function before updating totalAllocPoint variable.

H.3 For Loop Over Dynamic Array [MEDIUM]

Description:

When smart contracts are deployed or their associated functions are invoked, the execution of these operations always consumes a certain quantity of gas, according to the amount of computation required to accomplish them. Modifying an unknown-size array that grows in size over time can result in a Denial-of-Service. Simply by having an excessively huge array, users can exceed the gas limit, therefore preventing the transaction from ever succeeding.

Code:

Listing 76: subDefyMaster.sol

```
function massUpdatePools() public {
uint256 length = poolInfo.length;
for (uint256 pid = 0; pid < length; pid++) {
updatePool(pid);
}
}
```

Risk Level:

Likelihood – 1
Impact - 4

Recommendation:

Avoid actions that involve looping across the entire data structure. If you really must loop over an array of unknown size, arrange for it to consume many blocs and thus multiple transactions.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

H.4 Missing Value Verification [LOW]

Description:

Certain functions lack a safety check in the values, the values of the arguments should include some safety checks test, otherwise, the contract's functionality may get hurt.

Code:

Listing 77: subDefyMaster.sol

```
function setStartTimestamp(uint256 sTimestamp) public onlyOwner{
startTimestamp = sTimestamp;
}
```

Listing 78: subDefyMaster.sol

```
function updateMultiplier(uint256 multiplierNumber) public onlyDev {
BONUS_MULTIPLIER = multiplierNumber;
}
```

Listing 79: subDefyMaster.sol

```
function updateTaxRatio(uint256 _tax) public onlyDev {
taxRatio = (10000 - _tax);
}
```

Recommendation:

It is recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing require statements

Listing 80: subDefyMaster.sol

```
function updateTaxRatio(uint256 _tax) public onlyDev {
 require(tax <= 10000, " Underflow protection");
taxRatio = (10000 - _tax);
}
```

Status - Fixed

The DefySwap team has fixed the issue by adding require statements in order to verify the values that are provided in the arguments.

H.5 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 81: subDefyMaster.sol

```
constructor(IERC20 _rewardToken, address _devaddr, address _feeAddress,
 uint256 _startTimestamp, uint256 _endTimestamp) public {
rewardToken = _rewardToken;
devaddr = _devaddr;
feeAddress = _feeAddress;
startTimestamp = _startTimestamp;
endTimestamp = _endTimestamp;
}
function setFeeAddress(address _feeAddress) public onlyDev returns (bool
    ↪ ) {
feeAddress = _feeAddress;
emit feeAddressUpdated(_feeAddress);
return true;
}
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It's recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Status - Fixed

The DefySwap team has fixed the issue by adding require statements that verify the addresses provided in the arguments.

I Zapper.sol

I.1 Usage Of transfer Instead Of safeTransfer [HIGH]

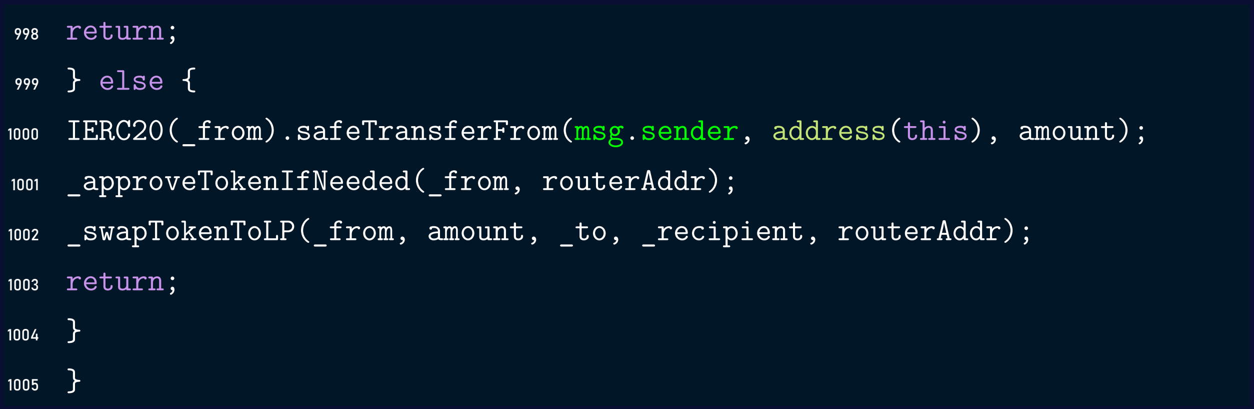
Description:

The ERC20 standard token implementation functions also return the transaction status as a Boolean. It is a good practice to check for the return status of the function call to ensure that the transaction was successful. It is the developer's responsibility to enclose these function calls with require() to ensure that, when the intended ERC20 function call returns false, the caller transaction also fails. However, it is mostly missed by developers when they carry out checks; in effect, the transaction would always succeed, even if the token transfer did not.

Code:

Listing 82: Zap.sol

```
function zapInToken(address _from, uint256 amount, address _to, address routerAddr,
address _recipient) external override {
_approveTokenIfNeeded(_from, routerAddr);
if (isFeeOnTransfer[_from]) {
IERC20(_from).transferFrom(msg.sender, address(this), amount);
_swapTokenToLP(
_from,
IERC20(_from).balanceOf(address(this)),
_to,
_recipient,
routerAddr
);
```



```
return;
} else {
IERC20(_from).safeTransferFrom(msg.sender, address(this), amount);
_approveTokenIfNeeded(_from, routerAddr);
_swapTokenToLP(_from, amount, _to, _recipient, routerAddr);
return;
}
}
```

Risk Level:

Likelihood – 3
Impact - 5

Recommendation:

Use the safeTransfer function from the safeERC20 Implementation, or put the transfer call inside and assert or require to verify that it returned true.

Status - Fixed

The DefySwap team has fixed the issue by adding a require statement that verifies if the transfer has passed correctly

I.2 Owner Can Renounce Ownership [LOW]

Description:

Typically, the contract's owner is the account that deploys the contract. As a result, the owner is able to perform certain privileged activities on his behalf. The renounceOwnership function is used in smart contracts to renounce ownership. Otherwise, if the contract's ownership has not been transferred previously, it will never have an Owner, which is risky.

Code:

Listing 83: Zap.sol

```
contract Zap isOwnable, IZap {
using SafeMath for uint256;
using SafeERC20 for IERC20;
```

Risk Level:

Likelihood – 1
Impact - 3

Recommendation:

It is advised that the Owner cannot call renounceOwnership without first transferring ownership to a different address. Additionally, if a multi-signature wallet is utilized, executing the renounceOwnership method for two or more users should be confirmed. Alternatively, the RenounceOwnership functionality can be disabled by overriding it.

Status - Acknowledged

The DefySwap team has acknowledged the risk.

I.3 Missing Address Verification [LOW]

Description:

Certain functions lack a safety check in the address, the address-type argument should include a zero-address test, otherwise, the contract's functionality may become inaccessible.

Code:

Listing 84: Zap.sol

```
constructor(address _WNATIVE) Ownable() {
```

```
WNATIVE = _WNATIVE;
}
```

Listing 85: Zap.sol

```
function zapInToken(address _from, uint256 amount, address _to,
address routerAddr, address _recipient) external override {
_approveTokenIfNeeded(_from, routerAddr);
```

Listing 86: Zap.sol

```
function estimateZapInToken(address _from, address _to, address _router,
    ↪  uint256 _amt
) public view override returns (uint256, uint256) {
// get pairs for desired lp
if (
_from == IUniswapV2Pair(_to).token0()
_from == IUniswapV2Pair(_to).token1()
) {
```

Listing 87: Zap.sol

```
function zapIn(address _to, address routerAddr, address _recipient)
    ↪ external payaboverride {
// from Native to an LP token through the specified router
_swapNativeToLP(_to, msg.value, _recipient, routerAddr);
}
function zapAcross(address _from, uint256 amount, address _toRouter,
    ↪ address _reci) external override {
IERC20(_from).safeTransferFrom(msg.sender, address(this), amount);
IUniswapV2Pair pair = IUniswapV2Pair(_from);
```

Risk Level:

Likelihood – 1

Impact - 3

Recommendation:

It’s recommended to undertake further validation prior to user-supplied data. The concerns can be resolved by utilizing a whitelist technique or a modifier.

Status - Fixed

The DefySwap team has fixed the issue by adding require statements that verify the addresses provided in the arguments.

4 Static Analysis (Slither)

Description:

ShellBoxes expanded the coverage of the specific contract areas using automated testing methodologies. Slither, a Solidity static analysis framework, was one of the tools used. Slither was run on all-scoped contracts in both text and binary formats. This tool can be used to test mathematical relationships between Solidity instances statically and variables that allow for the detection of errors or inconsistent usage of the contracts' APIs throughout the entire codebase.

Results:

```
DefyMaster.safeDefyTransfer(address,uint256) (DFYMaster.sol#2417-2424)
   ↪ ignores return value by defy.transfer(_to,defyBal) (DFYMaster.sol
   ↪ #2420)
DefyMaster.safeDefyTransfer(address,uint256) (DFYMaster.sol#2417-2424)
   ↪ ignores return value by defy.transfer(_to,_amount) (DFYMaster.sol
   ↪ #2422)
DefyMaster.safeSecondRTransfer(address,uint256) (DFYMaster.sol
   ↪ #2427-2434) ignores return value by secondR.transfer(_to,
   ↪ secondRBal) (DFYMaster.sol#2430)
DefyMaster.safeSecondRTransfer(address,uint256) (DFYMaster.sol
   ↪ #2427-2434) ignores return value by secondR.transfer(_to,_amount)
   ↪  (DFYMaster.sol#2432)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #unchecked-transfer

DefyMaster.pendingDefy(uint256,address) (DFYMaster.sol#2093-2129)
   ↪ performs a multiplication on the result of a division:
       -defyReward = multiplier.mul(defyPerSec).mul(pool.allocPoint).div
          ↪ (totalAllocPoint) (DFYMaster.sol#2120-2123)
       -accDefyPerShare = accDefyPerShare.add(defyReward.mul(1e12).div(
          ↪ lpSupply)) (DFYMaster.sol#2124-2126)
```

```
DefyMaster.pendingSecondR(uint256,address) (DFYMaster.sol#2132-2171)
    ↪ performs a multiplication on the result of a division:
        -secondRReward = multiplier.mul(secondRPerSec).mul(pool.
            ↪ allocPointDR).div(totalAllocPointDR) (DFYMaster.sol
            ↪ #2159-2162)
        -accSecondRPerShare = accSecondRPerShare.add(secondRReward.mul(1
            ↪ e12).div(lpSupply)) (DFYMaster.sol#2163-2165)
DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268) performs a
    ↪ multiplication on the result of a division:
        -defyReward = multiplier.mul(defyPerSec).mul(pool.allocPoint).div
            ↪ (totalAllocPoint) (DFYMaster.sol#2236-2238)
        -pool.accDefyPerShare = pool.accDefyPerShare.add(defyReward.mul(1
            ↪ e12).div(lpSupply)) (DFYMaster.sol#2252-2254)
DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268) performs a
    ↪ multiplication on the result of a division:
        -secondRReward = multiplier_scope_0.mul(secondRPerSec).mul(pool.
            ↪ allocPointDR).div(totalAllocPointDR) (DFYMaster.sol
            ↪ #2245-2248)
        -pool.accSecondRPerShare = pool.accSecondRPerShare.add(
            ↪ secondRReward.mul(1e12).div(lpSupply)) (DFYMaster.sol
            ↪ #2255-2257)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #divide-before-multiply

DfyToken._writeCheckpoint(address,uint32,uint256,uint256) (DFYMaster.sol
    ↪ #1386-1411) uses a dangerous strict equality:
        - nCheckpoints > 0 && checkpoints[delegatee][nCheckpoints - 1].
            ↪ fromBlock == blockNumber (DFYMaster.sol#1398-1399)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dangerous-strict-equalities

Reentrancy in DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,
    ↪ IERC20,uint256,uint256,bool,bool,uint256,bool) (DFYMaster.sol
    ↪ #1966-2029):
       External calls:
       - massUpdatePools() (DFYMaster.sol#1990)
              - burn_vault.burn() (DFYMaster.sol#1942)
              - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
       - ilp.add(address(_lpToken),_token0,_token1,_offerILP) (DFYMaster
          ↪ .sol#1993)
       State variables written after the call(s):
       - poolInfo.push(PoolInfo(_lpToken,_stub,_allocPoint,_allocPointDR
          ↪ ,_depositFee,_withdrawalFee,lastRewardTimestamp,
          ↪ lastRewardTimestamp,_rewardEndTimestamp,0,0,0,_offerILP,
          ↪ _issueSTUB)) (DFYMaster.sol#1999-2016)
       - totalAllocPoint = totalAllocPoint.add(_allocPoint) (DFYMaster.
          ↪ sol#1997)
       - totalAllocPointDR = totalAllocPointDR.add(_allocPointDR) (
          ↪ DFYMaster.sol#1998)
Reentrancy in DefyMaster.deposit(uint256,uint256) (DFYMaster.sol
   ↪ #2271-2340):
       External calls:
       - updatePool(_pid) (DFYMaster.sol#2274)
              - burn_vault.burn() (DFYMaster.sol#1942)
              - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
       - safeDefyTransfer(msg.sender,pending) (DFYMaster.sol#2305)
              - defy.transfer(_to,defyBal) (DFYMaster.sol#2420)
              - defy.transfer(_to,_amount) (DFYMaster.sol#2422)
       - safeSecondRTransfer(msg.sender,pending) (DFYMaster.sol#2308)
              - secondR.transfer(_to,secondRBal) (DFYMaster.sol#2430)
              - secondR.transfer(_to,_amount) (DFYMaster.sol#2432)
       - ilp.defyTransfer(msg.sender,extraDefy.sub(pending)) (DFYMaster.
          ↪ sol#2311)
       - pool.lpToken.safeTransferFrom(address(msg.sender),address(this)
          ↪ ,amount_) (DFYMaster.sol#2316-2320)
       - pool.lpToken.safeTransfer(feeAddress,depositFee) (DFYMaster.sol
          ↪ #2326)
       State variables written after the call(s):
       - pool.lpSupply = pool.lpSupply.add(amount_).sub(depositFee) (
          ↪ DFYMaster.sol#2328)
       - user.amount = user.amount.add(amount_).sub(depositFee) (
          ↪ DFYMaster.sol#2327)
Reentrancy in DefyMaster.deposit(uint256,uint256) (DFYMaster.sol
   ↪ #2271-2340):
       External calls:
       - updatePool(_pid) (DFYMaster.sol#2274)
              - burn_vault.burn() (DFYMaster.sol#1942)
              - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
       - safeDefyTransfer(msg.sender,pending) (DFYMaster.sol#2305)
              - defy.transfer(_to,defyBal) (DFYMaster.sol#2420)
              - defy.transfer(_to,_amount) (DFYMaster.sol#2422)
       - safeSecondRTransfer(msg.sender,pending) (DFYMaster.sol#2308)
              - secondR.transfer(_to,secondRBal) (DFYMaster.sol#2430)
              - secondR.transfer(_to,_amount) (DFYMaster.sol#2432)
       - ilp.defyTransfer(msg.sender,extraDefy.sub(pending)) (DFYMaster.
          ↪ sol#2311)
       - pool.lpToken.safeTransferFrom(address(msg.sender),address(this)
          ↪ ,amount_) (DFYMaster.sol#2316-2320)
       State variables written after the call(s):
       - pool.lpSupply = pool.lpSupply.add(amount_) (DFYMaster.sol#2331)
       - user.amount = user.amount.add(amount_) (DFYMaster.sol#2330)
Reentrancy in DefyMaster.emergencyWithdraw(uint256) (DFYMaster.sol
   ↪ #2405-2414):
       External calls:
       - pool.lpToken.safeTransfer(address(msg.sender),user.amount) (
          ↪ DFYMaster.sol#2408)
       State variables written after the call(s):
       - pool.lpSupply = pool.lpSupply.sub(user.amount) (DFYMaster.sol
          ↪ #2409)
       - user.amount = 0 (DFYMaster.sol#2411)
       - user.rewardDebt = 0 (DFYMaster.sol#2412)
       - user.rewardDebtDR = 0 (DFYMaster.sol#2413)
```

```
Reentrancy in DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool) (DFYMaster.sol#2032-2081)
    ↪ :
        External calls:
        - massUpdatePools() (DFYMaster.sol#2053)
                - burn_vault.burn() (DFYMaster.sol#1942)
                - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        - ilp.set(_pid,_token0,_token1,_offerILP) (DFYMaster.sol#2055)
        State variables written after the call(s):
        - poolInfo[_pid].allocPoint = _allocPoint (DFYMaster.sol#2063)
        - poolInfo[_pid].allocPointDR = _allocPointDR (DFYMaster.sol
            ↪ #2064)
        - poolInfo[_pid].depositFee = _depositFee (DFYMaster.sol#2065)
        - poolInfo[_pid].withdrawalFee = _withdrawalFee (DFYMaster.sol
            ↪ #2066)
        - poolInfo[_pid].rewardEndTimestamp = _rewardEndTimestamp (
            ↪ DFYMaster.sol#2067)
        - poolInfo[_pid].impermanentLossProtection = _offerILP (DFYMaster
            ↪ .sol#2068)
        - poolInfo[_pid].issueStub = _issueSTUB (DFYMaster.sol#2069)
        - totalAllocPoint = totalAllocPoint.sub(poolInfo[_pid].allocPoint
            ↪ ).add(_allocPoint) (DFYMaster.sol#2057-2059)
        - totalAllocPointDR = totalAllocPointDR.sub(poolInfo[_pid].
            ↪ allocPointDR).add(_allocPointDR) (DFYMaster.sol#2060-2062)
Reentrancy in DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268):
        External calls:
        - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        State variables written after the call(s):
        - pool.accDefyPerShare = pool.accDefyPerShare.add(defyReward.mul
            ↪ (1e12).div(lpSupply)) (DFYMaster.sol#2252-2254)
        - pool.accSecondRPerShare = pool.accSecondRPerShare.add(
            ↪ secondRReward.mul(1e12).div(lpSupply)) (DFYMaster.sol
            ↪ #2255-2257)
        - pool.lastRewardTimestamp = blockTimestamp (DFYMaster.sol#2260)
```

```
       - pool.lastRewardTimestampDR = blockTimestampDR (DFYMaster.sol
          ↪ #2261)
Reentrancy in DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268):
       External calls:
       - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
       - updateReward() (DFYMaster.sol#2263)
              - burn_vault.burn() (DFYMaster.sol#1942)
       State variables written after the call(s):
       - updateReward() (DFYMaster.sol#2263)
              - defyPerSec = burnAmount.div(SECONDS_PER_CYCLE) (
                 ↪ DFYMaster.sol#1938)
       - updateReward() (DFYMaster.sol#2263)
              - nextCycleTimestamp = (block.timestamp).add(
                 ↪ SECONDS_PER_CYCLE) (DFYMaster.sol#1940)
       - pool.lastRewardTimestamp = block.timestamp (DFYMaster.sol#2265)
       - pool.lastRewardTimestampDR = block.timestamp (DFYMaster.sol
          ↪ #2266)
Reentrancy in DefyMaster.withdraw(uint256,uint256) (DFYMaster.sol
   ↪ #2343-2402):
       External calls:
       - updatePool(_pid) (DFYMaster.sol#2347)
              - burn_vault.burn() (DFYMaster.sol#1942)
              - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
       - safeDefyTransfer(msg.sender,pending) (DFYMaster.sol#2381)
              - defy.transfer(_to,defyBal) (DFYMaster.sol#2420)
              - defy.transfer(_to,_amount) (DFYMaster.sol#2422)
       - safeSecondRTransfer(msg.sender,pending) (DFYMaster.sol#2384)
              - secondR.transfer(_to,secondRBal) (DFYMaster.sol#2430)
              - secondR.transfer(_to,_amount) (DFYMaster.sol#2432)
       - ilp.defyTransfer(msg.sender,extraDefy.sub(pending)) (DFYMaster.
          ↪ sol#2387)
       State variables written after the call(s):
       - user.amount = user.amount.sub(amount_) (DFYMaster.sol#2391)
```

```
Reentrancy in DefyMaster.withdraw(uint256,uint256) (DFYMaster.sol
    ↪ #2343-2402):
        External calls:
        - updatePool(_pid) (DFYMaster.sol#2347)
                - burn_vault.burn() (DFYMaster.sol#1942)
                - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        - safeDefyTransfer(msg.sender,pending) (DFYMaster.sol#2381)
                - defy.transfer(_to,defyBal) (DFYMaster.sol#2420)
                - defy.transfer(_to,_amount) (DFYMaster.sol#2422)
        - safeSecondRTransfer(msg.sender,pending) (DFYMaster.sol#2384)
                - secondR.transfer(_to,secondRBal) (DFYMaster.sol#2430)
                - secondR.transfer(_to,_amount) (DFYMaster.sol#2432)
        - ilp.defyTransfer(msg.sender,extraDefy.sub(pending)) (DFYMaster.
            ↪ sol#2387)
        - pool.lpToken.safeTransfer(address(msg.sender),amount_) (
            ↪ DFYMaster.sol#2392)
        State variables written after the call(s):
        - pool.lpSupply = pool.lpSupply.sub(amount_) (DFYMaster.sol#2393)
        - user.depVal = ilp.getDepositValue(user.amount,_pid) (DFYMaster.
            ↪ sol#2395)
        - user.depositTime = block.timestamp (DFYMaster.sol#2396)
        - user.rewardDebt = user.amount.mul(pool.accDefyPerShare).div(1
            ↪ e12) (DFYMaster.sol#2397)
        - user.rewardDebtDR = user.amount.mul(pool.accSecondRPerShare).
            ↪ div(1e12) (DFYMaster.sol#2398)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #reentrancy-vulnerabilities-1

ERC20.constructor(string,string).name (DFYMaster.sol#687) shadows:
        - ERC20.name() (DFYMaster.sol#703-705) (function)
        - IERC20.name() (DFYMaster.sol#129) (function)
ERC20.constructor(string,string).symbol (DFYMaster.sol#687) shadows:
        - ERC20.symbol() (DFYMaster.sol#717-719) (function)
        - IERC20.symbol() (DFYMaster.sol#124) (function)
```

```
ERC20.allowance(address,address).owner (DFYMaster.sol#755) shadows:
        - Ownable.owner() (DFYMaster.sol#64-66) (function)
ERC20._approve(address,address,uint256).owner (DFYMaster.sol#958)
    ↪ shadows:
        - Ownable.owner() (DFYMaster.sol#64-66) (function)
DefyMaster.getUserInfo(uint256,address).deposit (DFYMaster.sol#1852)
    ↪ shadows:
        - DefyMaster.deposit(uint256,uint256) (DFYMaster.sol#2271-2340) (
            ↪ function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #local-variable-shadowing

DefyMaster.dev(address) (DFYMaster.sol#2437-2441) should emit an event
    ↪ for:
        - devaddr = _devaddr (DFYMaster.sol#2440)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-events-access-control

DefyMaster.updateMultiplier(uint256) (DFYMaster.sol#1922-1925) should
    ↪ emit an event for:
        - BONUS_MULTIPLIER = multiplierNumber (DFYMaster.sol#1924)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-events-arithmetic

DfyToken.constructor(address,address,uint256)._dev (DFYMaster.sol#1028)
    ↪ lacks a zero-check on :
                - dev = _dev (DFYMaster.sol#1034)
DfyToken.constructor(address,address,uint256)._bunVault (DFYMaster.sol
    ↪ #1029) lacks a zero-check on :
                - BURN_VAULT = _bunVault (DFYMaster.sol#1035)
DfyToken.setDev(address)._dev (DFYMaster.sol#1104) lacks a zero-check on
    ↪  :
                - dev = _dev (DFYMaster.sol#1106)
```

```
DfyToken.setBurnVault(address)._burnVault (DFYMaster.sol#1111) lacks a
    ↪ zero-check on :
              - BURN_VAULT = _burnVault (DFYMaster.sol#1112)
DfyToken.setIlpVault(address)._ilpVault (DFYMaster.sol#1117) lacks a
    ↪ zero-check on :
              - ILP_VAULT = _ilpVault (DFYMaster.sol#1118)
DfyToken.setMaster(address).master (DFYMaster.sol#1123) lacks a zero-
    ↪ check on :
              - defyMaster = master (DFYMaster.sol#1124)
BurnVault.setDefyMaster(address).master (DFYMaster.sol#1581) lacks a
    ↪ zero-check on :
              - defyMaster = master (DFYMaster.sol#1582)
DefyMaster.constructor(DfyToken,DefySTUB,BurnVault,
    ↪ ImpermanentLossProtection,address,address,uint256,uint256).
    ↪ _devaddr (DFYMaster.sol#1775) lacks a zero-check on :
              - devaddr = _devaddr (DFYMaster.sol#1784)
DefyMaster.constructor(DfyToken,DefySTUB,BurnVault,
    ↪ ImpermanentLossProtection,address,address,uint256,uint256).
    ↪ _feeAddress (DFYMaster.sol#1776) lacks a zero-check on :
              - feeAddress = _feeAddress (DFYMaster.sol#1785)
DefyMaster.setFeeAddress(address)._feeAddress (DFYMaster.sol#1823) lacks
    ↪  a zero-check on :
              - feeAddress = _feeAddress (DFYMaster.sol#1825)
DefyMaster.dev(address)._devaddr (DFYMaster.sol#2437) lacks a zero-check
    ↪  on :
              - devaddr = _devaddr (DFYMaster.sol#2440)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-zero-address-validation

DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268) has external
    ↪ calls inside a loop: defy.mint(address(this),defyReward) (
    ↪ DFYMaster.sol#2251)
DefyMaster.updateReward() (DFYMaster.sol#1936-1945) has external calls
    ↪ inside a loop: burnAmount = defy.balanceOf(address(burn_vault)) (
   ↪ DFYMaster.sol#1937)
DefyMaster.updateReward() (DFYMaster.sol#1936-1945) has external calls
   ↪ inside a loop: burn_vault.burn() (DFYMaster.sol#1942)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ /#calls-inside-a-loop

Reentrancy in DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,
   ↪ IERC20,uint256,uint256,bool,bool,uint256,bool) (DFYMaster.sol
   ↪ #1966-2029):
       External calls:
       - massUpdatePools() (DFYMaster.sol#1990)
              - burn_vault.burn() (DFYMaster.sol#1942)
              - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
       - ilp.add(address(_lpToken),_token0,_token1,_offerILP) (DFYMaster
          ↪ .sol#1993)
       Event emitted after the call(s):
       - addPool(poolInfo.length - 1,address(_lpToken),_allocPoint,
          ↪ _allocPointDR,_depositFee,_withdrawalFee,_offerILP,
          ↪ _issueSTUB,_rewardEndTimestamp) (DFYMaster.sol#2018-2028)
Reentrancy in BurnVault.burn() (DFYMaster.sol#1590-1594):
       External calls:
       - defy.burn(amount) (DFYMaster.sol#1592)
       Event emitted after the call(s):
       - Burn(amount) (DFYMaster.sol#1593)
Reentrancy in BurnVault.burnPortion(uint256) (DFYMaster.sol#1596-1599):
       External calls:
       - defy.burn(amount) (DFYMaster.sol#1597)
       Event emitted after the call(s):
       - Burn(amount) (DFYMaster.sol#1598)
Reentrancy in DefyMaster.deposit(uint256,uint256) (DFYMaster.sol
   ↪ #2271-2340):
       External calls:
       - updatePool(_pid) (DFYMaster.sol#2274)
              - burn_vault.burn() (DFYMaster.sol#1942)
```

```
                - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        - safeDefyTransfer(msg.sender,pending) (DFYMaster.sol#2305)
                - defy.transfer(_to,defyBal) (DFYMaster.sol#2420)
                - defy.transfer(_to,_amount) (DFYMaster.sol#2422)
        - safeSecondRTransfer(msg.sender,pending) (DFYMaster.sol#2308)
                - secondR.transfer(_to,secondRBal) (DFYMaster.sol#2430)
                - secondR.transfer(_to,_amount) (DFYMaster.sol#2432)
        - ilp.defyTransfer(msg.sender,extraDefy.sub(pending)) (DFYMaster.
          ↪ sol#2311)
        - pool.lpToken.safeTransferFrom(address(msg.sender),address(this)
          ↪ ,amount_) (DFYMaster.sol#2316-2320)
        - pool.lpToken.safeTransfer(feeAddress,depositFee) (DFYMaster.sol
          ↪ #2326)
        - pool.stubToken.mint(msg.sender,amount_) (DFYMaster.sol#2338)
        Event emitted after the call(s):
        - Deposit(msg.sender,_pid,amount_) (DFYMaster.sol#2339)
Reentrancy in DefyMaster.emergencyWithdraw(uint256) (DFYMaster.sol
    ↪ #2405-2414):
        External calls:
        - pool.lpToken.safeTransfer(address(msg.sender),user.amount) (
          ↪ DFYMaster.sol#2408)
        Event emitted after the call(s):
        - EmergencyWithdraw(msg.sender,_pid,user.amount) (DFYMaster.sol
          ↪ #2410)
Reentrancy in DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool) (DFYMaster.sol#2032-2081)
    ↪ :
        External calls:
        - massUpdatePools() (DFYMaster.sol#2053)
                - burn_vault.burn() (DFYMaster.sol#1942)
                - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        - ilp.set(_pid,_token0,_token1,_offerILP) (DFYMaster.sol#2055)
        Event emitted after the call(s):
```

```
        - setPool(_pid,_allocPoint,_allocPointDR,_depositFee,
           ↪ _withdrawalFee,_offerILP,_issueSTUB,_rewardEndTimestamp) (
           ↪ DFYMaster.sol#2071-2080)
Reentrancy in DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268):
        External calls:
        - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        - updateReward() (DFYMaster.sol#2263)
                - burn_vault.burn() (DFYMaster.sol#1942)
        Event emitted after the call(s):
        - UpdateEmissionRate(defyPerSec) (DFYMaster.sol#1944)
                - updateReward() (DFYMaster.sol#2263)
Reentrancy in DefyMaster.updateReward() (DFYMaster.sol#1936-1945):
        External calls:
        - burn_vault.burn() (DFYMaster.sol#1942)
        Event emitted after the call(s):
        - UpdateEmissionRate(defyPerSec) (DFYMaster.sol#1944)
Reentrancy in DefyMaster.withdraw(uint256,uint256) (DFYMaster.sol
   ↪ #2343-2402):
        External calls:
        - updatePool(_pid) (DFYMaster.sol#2347)
                - burn_vault.burn() (DFYMaster.sol#1942)
                - defy.mint(address(this),defyReward) (DFYMaster.sol#2251)
        - safeDefyTransfer(msg.sender,pending) (DFYMaster.sol#2381)
                - defy.transfer(_to,defyBal) (DFYMaster.sol#2420)
                - defy.transfer(_to,_amount) (DFYMaster.sol#2422)
        - safeSecondRTransfer(msg.sender,pending) (DFYMaster.sol#2384)
                - secondR.transfer(_to,secondRBal) (DFYMaster.sol#2430)
                - secondR.transfer(_to,_amount) (DFYMaster.sol#2432)
        - ilp.defyTransfer(msg.sender,extraDefy.sub(pending)) (DFYMaster.
           ↪ sol#2387)
        - pool.lpToken.safeTransfer(address(msg.sender),amount_) (
           ↪ DFYMaster.sol#2392)
        - pool.stubToken.burn(msg.sender,amount_) (DFYMaster.sol#2399)
        Event emitted after the call(s):
```

```
       - Withdraw(msg.sender,_pid,amount_) (DFYMaster.sol#2401)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #reentrancy-vulnerabilities-3

DfyToken.delegateBySig(address,uint256,uint256,uint8,bytes32,bytes32) (
   ↪ DFYMaster.sol#1251-1287) uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(now <= expiry,DEFY::delegateBySig:
          ↪ signature expired) (DFYMaster.sol#1285)
DefyMaster._getDaysSinceDeposit(uint256,address) (DFYMaster.sol
   ↪ #1878-1891) uses timestamp for comparisons
       Dangerous comparisons:
       - block.timestamp < user.depositTime (DFYMaster.sol#1885)
DefyMaster.updateSecondReward(uint256,uint256) (DFYMaster.sol#1947-1957)
   ↪  uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(_endTimestamp > block.timestamp,invalid
          ↪ End timestamp) (DFYMaster.sol#1951)
DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool) (DFYMaster.sol#1966-2029) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(_rewardEndTimestamp > block.timestamp,Add:
          ↪  invalid rewardEndTimestamp) (DFYMaster.sol#1984-1987)
       - block.timestamp > startTimestamp (DFYMaster.sol#1994-1996)
DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,uint256,
   ↪ bool,bool,uint256,bool) (DFYMaster.sol#2032-2081) uses timestamp
   ↪ for comparisons
       Dangerous comparisons:
       - require(bool,string)(_rewardEndTimestamp > block.timestamp,Add:
          ↪  invalid rewardEndTimestamp) (DFYMaster.sol#2047-2050)
DefyMaster.pendingDefy(uint256,address) (DFYMaster.sol#2093-2129) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
```

```
       - block.timestamp > pool.lastRewardTimestamp && lpSupply != 0 &&
          ↪ totalAllocPoint != 0 (DFYMaster.sol#2103-2105)
       - block.timestamp < nextCycleTimestamp (DFYMaster.sol#2109)
       - block.timestamp < pool.rewardEndTimestamp (DFYMaster.sol
          ↪ #2110-2112)
DefyMaster.pendingSecondR(uint256,address) (DFYMaster.sol#2132-2171)
   ↪ uses timestamp for comparisons
       Dangerous comparisons:
       - block.timestamp > pool.lastRewardTimestampDR && lpSupply != 0
          ↪ && totalAllocPointDR != 0 (DFYMaster.sol#2142-2144)
       - block.timestamp < endTimestampDR (DFYMaster.sol#2148)
       - block.timestamp < pool.rewardEndTimestamp (DFYMaster.sol
          ↪ #2149-2151)
DefyMaster.massUpdatePools() (DFYMaster.sol#2174-2180) uses timestamp
   ↪ for comparisons
       Dangerous comparisons:
       - pid < length (DFYMaster.sol#2176)
DefyMaster.updatePool(uint256) (DFYMaster.sol#2183-2268) uses timestamp
   ↪ for comparisons
       Dangerous comparisons:
       - block.timestamp <= pool.lastRewardTimestamp && block.timestamp
          ↪ <= pool.lastRewardTimestampDR (DFYMaster.sol#2188-2189)
       - block.timestamp < nextCycleTimestamp (DFYMaster.sol#2198)
       - block.timestamp < endTimestampDR (DFYMaster.sol#2208)
       - totalAllocPoint != 0 (DFYMaster.sol#2231)
       - totalAllocPointDR != 0 (DFYMaster.sol#2240)
       - block.timestamp > nextCycleTimestamp (DFYMaster.sol#2184)
       - block.timestamp < pool.rewardEndTimestamp (DFYMaster.sol
          ↪ #2199-2201)
       - block.timestamp < pool.rewardEndTimestamp (DFYMaster.sol
          ↪ #2209-2211)
DefyMaster.deposit(uint256,uint256) (DFYMaster.sol#2271-2340) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
       - pool.impermanentLossProtection && user.amount > 0 &&
          ↪ _getDaysSinceDeposit(_pid,msg.sender) >= 30 (DFYMaster.sol
          ↪ #2286-2288)
DefyMaster.withdraw(uint256,uint256) (DFYMaster.sol#2343-2402) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(user.amount > 0,withdraw: nothing to
          ↪ withdraw) (DFYMaster.sol#2346)
       - pool.impermanentLossProtection && user.amount > 0 &&
          ↪ _getDaysSinceDeposit(_pid,msg.sender) >= 30 (DFYMaster.sol
          ↪ #2364-2366)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #block-timestamp

Address.isContract(address) (DFYMaster.sol#423-434) uses assembly
       - INLINE ASM (DFYMaster.sol#430-432)
Address._functionCallWithValue(address,bytes,uint256,string) (DFYMaster.
   ↪ sol#549-577) uses assembly
       - INLINE ASM (DFYMaster.sol#569-572)
DfyToken.getChainId() (DFYMaster.sol#1422-1428) uses assembly
       - INLINE ASM (DFYMaster.sol#1424-1426)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #assembly-usage

DefyMaster.updateReward() (DFYMaster.sol#1936-1945) has costly
   ↪ operations inside a loop:
       - defyPerSec = burnAmount.div(SECONDS_PER_CYCLE) (DFYMaster.sol
          ↪ #1938)
DefyMaster.updateReward() (DFYMaster.sol#1936-1945) has costly
   ↪ operations inside a loop:
       - nextCycleTimestamp = (block.timestamp).add(SECONDS_PER_CYCLE) (
          ↪ DFYMaster.sol#1940)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #costly-operations-inside-a-loop
```

```
Address.functionCall(address,bytes) (DFYMaster.sol#484-489) is never
    ↪ used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (DFYMaster.sol
    ↪ #516-528) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (DFYMaster.
    ↪ sol#536-547) is never used and should be removed
Address.sendValue(address,uint256) (DFYMaster.sol#452-464) is never used
    ↪  and should be removed
Context._msgData() (DFYMaster.sol#25-28) is never used and should be
    ↪ removed
ERC20._burnFrom(address,uint256) (DFYMaster.sol#975-985) is never used
    ↪ and should be removed
SafeERC20.safeApprove(IERC20,address,uint256) (DFYMaster.sol#1475-1492)
    ↪ is never used and should be removed
SafeERC20.safeDecreaseAllowance(IERC20,address,uint256) (DFYMaster.sol
    ↪ #1512-1529) is never used and should be removed
SafeERC20.safeIncreaseAllowance(IERC20,address,uint256) (DFYMaster.sol
    ↪ #1494-1510) is never used and should be removed
SafeMath.min(uint256,uint256) (DFYMaster.sol#382-384) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256) (DFYMaster.sol#357-359) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256,string) (DFYMaster.sol#373-380) is never
    ↪ used and should be removed
SafeMath.sqrt(uint256) (DFYMaster.sol#387-398) is never used and should
    ↪ be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Low level call in Address.sendValue(address,uint256) (DFYMaster.sol
    ↪ #452-464):
        - (success) = recipient.call{value: amount}() (DFYMaster.sol#459)
```

```
Low level call in Address._functionCallWithValue(address,bytes,uint256,
   ↪ string) (DFYMaster.sol#549-577):
        - (success,returndata) = target.call{value: weiValue}(data) (
           ↪ DFYMaster.sol#558-560)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #low-level-calls

Parameter DfyToken.mint(address,uint256)._to (DFYMaster.sol#1043) is not
   ↪  in mixedCase
Parameter DfyToken.mint(address,uint256)._amount (DFYMaster.sol#1043) is
   ↪  not in mixedCase
Parameter DfyToken.setDev(address)._dev (DFYMaster.sol#1104) is not in
   ↪ mixedCase
Parameter DfyToken.setBurnVault(address)._burnVault (DFYMaster.sol#1111)
   ↪  is not in mixedCase
Parameter DfyToken.setIlpVault(address)._ilpVault (DFYMaster.sol#1117)
   ↪ is not in mixedCase
Variable DfyToken._burnFee (DFYMaster.sol#992) is not in mixedCase
Variable DfyToken._ilpFee (DFYMaster.sol#993) is not in mixedCase
Variable DfyToken._devFee (DFYMaster.sol#994) is not in mixedCase
Variable DfyToken._maxTxAmount (DFYMaster.sol#996) is not in mixedCase
Variable DfyToken._maxSupply (DFYMaster.sol#997) is not in mixedCase
Variable DfyToken.BURN_VAULT (DFYMaster.sol#999) is not in mixedCase
Variable DfyToken.ILP_VAULT (DFYMaster.sol#1000) is not in mixedCase
Variable DfyToken._delegates (DFYMaster.sol#1185) is not in mixedCase
Parameter BurnVault.setDefy(address)._defy (DFYMaster.sol#1586) is not
   ↪ in mixedCase
Event DefyMasteraddPool(uint256,address,uint256,uint256,uint256,uint256,
   ↪ bool,bool,uint256) (DFYMaster.sol#1745-1755) is not in CapWords
Event DefyMastersetPool(uint256,uint256,uint256,uint256,uint256,bool,
   ↪ bool,uint256) (DFYMaster.sol#1757-1766) is not in CapWords
Parameter DefyMaster.setImpermanentLossProtection(address)._ilp (
   ↪ DFYMaster.sol#1814) is not in mixedCase
```

```
Parameter DefyMaster.setFeeAddress(address)._feeAddress (DFYMaster.sol
    ↪ #1823) is not in mixedCase
Parameter DefyMaster.setDFY(DfyToken)._dfy (DFYMaster.sol#1830) is not
    ↪ in mixedCase
Parameter DefyMaster.setSecondaryReward(IERC20)._rewardToken (DFYMaster.
    ↪ sol#1837) is not in mixedCase
Parameter DefyMaster.updateSecondReward(uint256,uint256)._reward (
    ↪ DFYMaster.sol#1947) is not in mixedCase
Parameter DefyMaster.updateSecondReward(uint256,uint256)._endTimestamp (
    ↪ DFYMaster.sol#1947) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._allocPoint (DFYMaster.
    ↪ sol#1967) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._allocPointDR (DFYMaster.
    ↪ sol#1968) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._lpToken (DFYMaster.sol
    ↪ #1969) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._stub (DFYMaster.sol
    ↪ #1970) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._token0 (DFYMaster.sol
    ↪ #1971) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._token1 (DFYMaster.sol
    ↪ #1972) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._depositFee (DFYMaster.
    ↪ sol#1973) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
    ↪ uint256,uint256,bool,bool,uint256,bool)._withdrawalFee (DFYMaster
    ↪ .sol#1974) is not in mixedCase
```

```
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
   ↪ uint256,uint256,bool,bool,uint256,bool)._offerILP (DFYMaster.sol
   ↪ #1975) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
   ↪ uint256,uint256,bool,bool,uint256,bool)._issueSTUB (DFYMaster.sol
   ↪ #1976) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
   ↪ uint256,uint256,bool,bool,uint256,bool)._rewardEndTimestamp (
   ↪ DFYMaster.sol#1977) is not in mixedCase
Parameter DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
   ↪ uint256,uint256,bool,bool,uint256,bool)._withUpdate (DFYMaster.
   ↪ sol#1978) is not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._pid (DFYMaster.sol#2033) is not
   ↪ in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._allocPoint (DFYMaster.sol#2034)
   ↪ is not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._allocPointDR (DFYMaster.sol
   ↪ #2035) is not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._token0 (DFYMaster.sol#2036) is
   ↪ not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._token1 (DFYMaster.sol#2037) is
   ↪ not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._depositFee (DFYMaster.sol#2038)
   ↪ is not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
   ↪ uint256,bool,bool,uint256,bool)._withdrawalFee (DFYMaster.sol
   ↪ #2039) is not in mixedCase
```

```
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
    ↪ uint256,bool,bool,uint256,bool)._offerILP (DFYMaster.sol#2040) is
    ↪  not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
    ↪ uint256,bool,bool,uint256,bool)._issueSTUB (DFYMaster.sol#2041)
    ↪ is not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
    ↪ uint256,bool,bool,uint256,bool)._rewardEndTimestamp (DFYMaster.
    ↪ sol#2042) is not in mixedCase
Parameter DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
    ↪ uint256,bool,bool,uint256,bool)._withUpdate (DFYMaster.sol#2043)
    ↪ is not in mixedCase
Parameter DefyMaster.getMultiplier(uint256,uint256)._from (DFYMaster.sol
    ↪ #2084) is not in mixedCase
Parameter DefyMaster.getMultiplier(uint256,uint256)._to (DFYMaster.sol
    ↪ #2084) is not in mixedCase
Parameter DefyMaster.pendingDefy(uint256,address)._pid (DFYMaster.sol
    ↪ #2093) is not in mixedCase
Parameter DefyMaster.pendingDefy(uint256,address)._user (DFYMaster.sol
    ↪ #2093) is not in mixedCase
Parameter DefyMaster.pendingSecondR(uint256,address)._pid (DFYMaster.sol
    ↪ #2132) is not in mixedCase
Parameter DefyMaster.pendingSecondR(uint256,address)._user (DFYMaster.
    ↪ sol#2132) is not in mixedCase
Parameter DefyMaster.updatePool(uint256)._pid (DFYMaster.sol#2183) is
    ↪ not in mixedCase
Parameter DefyMaster.deposit(uint256,uint256)._pid (DFYMaster.sol#2271)
    ↪ is not in mixedCase
Parameter DefyMaster.deposit(uint256,uint256)._amount (DFYMaster.sol
    ↪ #2271) is not in mixedCase
Parameter DefyMaster.withdraw(uint256,uint256)._pid (DFYMaster.sol#2343)
    ↪  is not in mixedCase
Parameter DefyMaster.withdraw(uint256,uint256)._amount (DFYMaster.sol
    ↪ #2343) is not in mixedCase
```

```
Parameter DefyMaster.emergencyWithdraw(uint256)._pid (DFYMaster.sol
    ↪ #2405) is not in mixedCase
Parameter DefyMaster.safeDefyTransfer(address,uint256)._to (DFYMaster.
    ↪ sol#2417) is not in mixedCase
Parameter DefyMaster.safeDefyTransfer(address,uint256)._amount (
    ↪ DFYMaster.sol#2417) is not in mixedCase
Parameter DefyMaster.safeSecondRTransfer(address,uint256)._to (DFYMaster
    ↪ .sol#2427) is not in mixedCase
Parameter DefyMaster.safeSecondRTransfer(address,uint256)._amount (
    ↪ DFYMaster.sol#2427) is not in mixedCase
Parameter DefyMaster.dev(address)._devaddr (DFYMaster.sol#2437) is not
    ↪ in mixedCase
Variable DefyMaster.burn_vault (DFYMaster.sol#1687) is not in mixedCase
Variable DefyMaster.BONUS_MULTIPLIER (DFYMaster.sol#1699) is not in
    ↪ mixedCase
Variable DefyMaster.SECONDS_PER_CYCLE (DFYMaster.sol#1703) is not in
    ↪ mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (DFYMaster.sol#26)" inContext (DFYMaster.sol
    ↪ #16-29)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements

DfyToken._maxSupply (DFYMaster.sol#997) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #state-variables-that-could-be-declared-constant

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (DFYMaster.sol#83-86)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (DFYMaster.sol#92-94)
decimals() should be declared external:
	- ERC20.decimals() (DFYMaster.sol#710-712)
symbol() should be declared external:
	- ERC20.symbol() (DFYMaster.sol#717-719)
transfer(address,uint256) should be declared external:
	- ERC20.transfer(address,uint256) (DFYMaster.sol#743-750)
allowance(address,address) should be declared external:
	- ERC20.allowance(address,address) (DFYMaster.sol#755-762)
approve(address,uint256) should be declared external:
	- ERC20.approve(address,uint256) (DFYMaster.sol#771-778)
transferFrom(address,address,uint256) should be declared external:
	- ERC20.transferFrom(address,address,uint256) (DFYMaster.sol
	  ↪ #792-807)
increaseAllowance(address,uint256) should be declared external:
	- ERC20.increaseAllowance(address,uint256) (DFYMaster.sol
	  ↪ #821-831)
decreaseAllowance(address,uint256) should be declared external:
	- ERC20.decreaseAllowance(address,uint256) (DFYMaster.sol
	  ↪ #847-860)
mint(uint256) should be declared external:
	- DfyToken.mint(uint256) (DFYMaster.sol#1052-1055)
	- ERC20.mint(uint256) (DFYMaster.sol#870-873)
setMaster(address) should be declared external:
	- DfyToken.setMaster(address) (DFYMaster.sol#1123-1126)
burnToVault(uint256) should be declared external:
	- DfyToken.burnToVault(uint256) (DFYMaster.sol#1132-1134)
burn(uint256) should be declared external:
	- DfyToken.burn(uint256) (DFYMaster.sol#1138-1141)
burn() should be declared external:
	- BurnVault.burn() (DFYMaster.sol#1590-1594)
burnPortion(uint256) should be declared external:
	- BurnVault.burnPortion(uint256) (DFYMaster.sol#1596-1599)
setImpermanentLossProtection(address) should be declared external:
	- DefyMaster.setImpermanentLossProtection(address) (DFYMaster.sol
	  ↪ #1814-1821)
```

```
setFeeAddress(address) should be declared external:
        - DefyMaster.setFeeAddress(address) (DFYMaster.sol#1823-1828)
setDFY(DfyToken) should be declared external:
        - DefyMaster.setDFY(DfyToken) (DFYMaster.sol#1830-1835)
setSecondaryReward(IERC20) should be declared external:
        - DefyMaster.setSecondaryReward(IERC20) (DFYMaster.sol#1837-1846)
getUserInfo(uint256,address) should be declared external:
        - DefyMaster.getUserInfo(uint256,address) (DFYMaster.sol
            ↪ #1848-1867)
setStartTimestamp(uint256) should be declared external:
        - DefyMaster.setStartTimestamp(uint256) (DFYMaster.sol#1916-1920)
updateMultiplier(uint256) should be declared external:
        - DefyMaster.updateMultiplier(uint256) (DFYMaster.sol#1922-1925)
updateSecondReward(uint256,uint256) should be declared external:
        - DefyMaster.updateSecondReward(uint256,uint256) (DFYMaster.sol
            ↪ #1947-1957)
add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,uint256,uint256,bool,
    ↪ bool,uint256,bool) should be declared external:
        - DefyMaster.add(uint256,uint256,IERC20,DefySTUB,IERC20,IERC20,
            ↪ uint256,uint256,bool,bool,uint256,bool) (DFYMaster.sol
            ↪ #1966-2029)
set(uint256,uint256,uint256,IERC20,IERC20,uint256,uint256,bool,bool,
    ↪ uint256,bool) should be declared external:
        - DefyMaster.set(uint256,uint256,uint256,IERC20,IERC20,uint256,
            ↪ uint256,bool,bool,uint256,bool) (DFYMaster.sol#2032-2081)
deposit(uint256,uint256) should be declared external:
        - DefyMaster.deposit(uint256,uint256) (DFYMaster.sol#2271-2340)
withdraw(uint256,uint256) should be declared external:
        - DefyMaster.withdraw(uint256,uint256) (DFYMaster.sol#2343-2402)
emergencyWithdraw(uint256) should be declared external:
        - DefyMaster.emergencyWithdraw(uint256) (DFYMaster.sol#2405-2414)
dev(address) should be declared external:
        - DefyMaster.dev(address) (DFYMaster.sol#2437-2441)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
DFYMaster.sol analyzed (13 contracts with 78 detectors), 176 result(s)
    ↪ found

DfyToken._writeCheckpoint(address,uint32,uint256,uint256) (DFYtoken.sol
    ↪ #1373-1398) uses a dangerous strict equality:
        - nCheckpoints > 0 && checkpoints[delegatee][nCheckpoints - 1].
            ↪ fromBlock == blockNumber (DFYtoken.sol#1385-1386)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dangerous-strict-equalities

ERC20.constructor(string,string).name (DFYtoken.sol#628) shadows:
        - ERC20.name() (DFYtoken.sol#644-646) (function)
        - IERC20.name() (DFYtoken.sol#129) (function)
ERC20.constructor(string,string).symbol (DFYtoken.sol#628) shadows:
        - ERC20.symbol() (DFYtoken.sol#658-660) (function)
        - IERC20.symbol() (DFYtoken.sol#124) (function)
ERC20.allowance(address,address).owner (DFYtoken.sol#696) shadows:
        - Ownable.owner() (DFYtoken.sol#64-66) (function)
ERC20._approve(address,address,uint256).owner (DFYtoken.sol#899) shadows
    ↪ :
        - Ownable.owner() (DFYtoken.sol#64-66) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #local-variable-shadowing

DfyToken.constructor(address,address,uint256)._dev (DFYtoken.sol#971)
    ↪ lacks a zero-check on :
              - dev = _dev (DFYtoken.sol#977)
DfyToken.constructor(address,address,uint256)._bunVault (DFYtoken.sol
    ↪ #972) lacks a zero-check on :
              - BURN_VAULT = _bunVault (DFYtoken.sol#978)
DfyToken.setRouter(address)._router (DFYtoken.sol#1019) lacks a zero-
    ↪ check on :
```

```
                - router = _router (DFYtoken.sol#1021)
DfyToken.setDev(address)._dev (DFYtoken.sol#1058) lacks a zero-check on
    ↪ :
                - dev = _dev (DFYtoken.sol#1061)
DfyToken.setBurnVault(address)._burnVault (DFYtoken.sol#1066) lacks a
    ↪ zero-check on :
                - BURN_VAULT = _burnVault (DFYtoken.sol#1068)
DfyToken.setIlpVault(address)._ilpVault (DFYtoken.sol#1073) lacks a zero
    ↪ -check on :
                - ILP_VAULT = _ilpVault (DFYtoken.sol#1075)
DfyToken.setMaster(address).master (DFYtoken.sol#1080) lacks a zero-
    ↪ check on :
                - defyMaster = master (DFYtoken.sol#1082)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-zero-address-validation

DfyToken.delegateBySig(address,uint256,uint256,uint8,bytes32,bytes32) (
    ↪ DFYtoken.sol#1237-1274) uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(now <= expiry,DEFY::delegateBySig:
           ↪ signature expired) (DFYtoken.sol#1272)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #block-timestamp

Address.isContract(address) (DFYtoken.sol#423-434) uses assembly
       - INLINE ASM (DFYtoken.sol#430-432)
Address._functionCallWithValue(address,bytes,uint256,string) (DFYtoken.
    ↪ sol#549-577) uses assembly
       - INLINE ASM (DFYtoken.sol#569-572)
DfyToken.getChainId() (DFYtoken.sol#1409-1415) uses assembly
       - INLINE ASM (DFYtoken.sol#1411-1413)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #assembly-usage
```

```
Address._functionCallWithValue(address,bytes,uint256,string) (DFYtoken.
    ↪ sol#549-577) is never used and should be removed
Address.functionCall(address,bytes) (DFYtoken.sol#484-489) is never used
    ↪  and should be removed
Address.functionCall(address,bytes,string) (DFYtoken.sol#497-503) is
    ↪ never used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (DFYtoken.sol
    ↪ #516-528) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (DFYtoken.
    ↪ sol#536-547) is never used and should be removed
Address.isContract(address) (DFYtoken.sol#423-434) is never used and
    ↪ should be removed
Address.sendValue(address,uint256) (DFYtoken.sol#452-464) is never used
    ↪ and should be removed
Context._msgData() (DFYtoken.sol#25-28) is never used and should be
    ↪ removed
ERC20._burnFrom(address,uint256) (DFYtoken.sol#916-926) is never used
    ↪ and should be removed
SafeMath.min(uint256,uint256) (DFYtoken.sol#382-384) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256) (DFYtoken.sol#357-359) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256,string) (DFYtoken.sol#373-380) is never
    ↪ used and should be removed
SafeMath.sqrt(uint256) (DFYtoken.sol#387-398) is never used and should
    ↪ be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Low level call in Address.sendValue(address,uint256) (DFYtoken.sol
    ↪ #452-464):
        - (success) = recipient.call{value: amount}() (DFYtoken.sol#459)
Low level call in Address._functionCallWithValue(address,bytes,uint256,
    ↪ string) (DFYtoken.sol#549-577):
        - (success,returndata) = target.call{value: weiValue}(data) (
            ↪ DFYtoken.sol#558-560)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Variable ERC20._allowances (DFYtoken.sol#611) is not in mixedCase
Parameter DfyToken.mint(address,uint256)._to (DFYtoken.sol#986) is not
    ↪ in mixedCase
Parameter DfyToken.mint(address,uint256)._amount (DFYtoken.sol#986) is
    ↪ not in mixedCase
Parameter DfyToken.setRouter(address)._router (DFYtoken.sol#1019) is not
    ↪  in mixedCase
Parameter DfyToken.setDev(address)._dev (DFYtoken.sol#1058) is not in
    ↪ mixedCase
Parameter DfyToken.setBurnVault(address)._burnVault (DFYtoken.sol#1066)
    ↪ is not in mixedCase
Parameter DfyToken.setIlpVault(address)._ilpVault (DFYtoken.sol#1073) is
    ↪  not in mixedCase
Variable DfyToken._burnFee (DFYtoken.sol#933) is not in mixedCase
Variable DfyToken._ilpFee (DFYtoken.sol#934) is not in mixedCase
Variable DfyToken._devFee (DFYtoken.sol#935) is not in mixedCase
Variable DfyToken._maxTxAmount (DFYtoken.sol#937) is not in mixedCase
Variable DfyToken._maxSupply (DFYtoken.sol#938) is not in mixedCase
Variable DfyToken.BURN_VAULT (DFYtoken.sol#940) is not in mixedCase
Variable DfyToken.ILP_VAULT (DFYtoken.sol#941) is not in mixedCase
Variable DfyToken._delegates (DFYtoken.sol#1170) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (DFYtoken.sol#26)" inContext (DFYtoken.sol
    ↪ #16-29)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements
```

```
DfyToken._maxSupply (DFYtoken.sol#938) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #state-variables-that-could-be-declared-constant

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (DFYtoken.sol#83-86)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (DFYtoken.sol#92-94)
decimals() should be declared external:
        - ERC20.decimals() (DFYtoken.sol#651-653)
symbol() should be declared external:
        - ERC20.symbol() (DFYtoken.sol#658-660)
transfer(address,uint256) should be declared external:
        - ERC20.transfer(address,uint256) (DFYtoken.sol#684-691)
allowance(address,address) should be declared external:
        - ERC20.allowance(address,address) (DFYtoken.sol#696-703)
approve(address,uint256) should be declared external:
        - ERC20.approve(address,uint256) (DFYtoken.sol#712-719)
transferFrom(address,address,uint256) should be declared external:
        - ERC20.transferFrom(address,address,uint256) (DFYtoken.sol
            ↪ #733-748)
increaseAllowance(address,uint256) should be declared external:
        - ERC20.increaseAllowance(address,uint256) (DFYtoken.sol#762-772)
decreaseAllowance(address,uint256) should be declared external:
        - ERC20.decreaseAllowance(address,uint256) (DFYtoken.sol#788-801)
mint(uint256) should be declared external:
        - DfyToken.mint(uint256) (DFYtoken.sol#996-999)
        - ERC20.mint(uint256) (DFYtoken.sol#811-814)
setMaster(address) should be declared external:
        - DfyToken.setMaster(address) (DFYtoken.sol#1080-1084)
burnToVault(uint256) should be declared external:
        - DfyToken.burnToVault(uint256) (DFYtoken.sol#1091-1093)
burn(uint256) should be declared external:
        - DfyToken.burn(uint256) (DFYtoken.sol#1097-1100)
```

```
transferTaxFree(address,uint256) should be declared external:
        - DfyToken.transferTaxFree(address,uint256) (DFYtoken.sol
           ↪ #1102-1110)
transferFromTaxFree(address,address,uint256) should be declared external
    ↪ :
        - DfyToken.transferFromTaxFree(address,address,uint256) (DFYtoken
           ↪ .sol#1112-1128)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
DFYtoken.sol analyzed (7 contracts with 78 detectors), 64 result(s)
    ↪ found


// [+]BurnVault
ERC20.constructor(string,string).name (BurnVault.sol#628) shadows:
        - ERC20.name() (BurnVault.sol#644-646) (function)
        - IERC20.name() (BurnVault.sol#129) (function)
ERC20.constructor(string,string).symbol (BurnVault.sol#628) shadows:
        - ERC20.symbol() (BurnVault.sol#658-660) (function)
        - IERC20.symbol() (BurnVault.sol#124) (function)
ERC20.allowance(address,address).owner (BurnVault.sol#696) shadows:
        - Ownable.owner() (BurnVault.sol#64-66) (function)
ERC20._approve(address,address,uint256).owner (BurnVault.sol#899)
    ↪ shadows:
        - Ownable.owner() (BurnVault.sol#64-66) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #local-variable-shadowing

BurnVault.setDefyMaster(address).master (BurnVault.sol#952) lacks a zero
    ↪ -check on :
                - defyMaster = master (BurnVault.sol#954)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-zero-address-validation
```

```
Reentrancy in BurnVault.burn() (BurnVault.sol#963-967):
        External calls:
        - defy.burn(amount) (BurnVault.sol#965)
        Event emitted after the call(s):
        - Burn(amount) (BurnVault.sol#966)
Reentrancy in BurnVault.burnPortion(uint256) (BurnVault.sol#969-972):
        External calls:
        - defy.burn(amount) (BurnVault.sol#970)
        Event emitted after the call(s):
        - Burn(amount) (BurnVault.sol#971)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #reentrancy-vulnerabilities-3

Address.isContract(address) (BurnVault.sol#423-434) uses assembly
        - INLINE ASM (BurnVault.sol#430-432)
Address._functionCallWithValue(address,bytes,uint256,string) (BurnVault.
    ↪ sol#549-577) uses assembly
        - INLINE ASM (BurnVault.sol#569-572)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #assembly-usage

Address._functionCallWithValue(address,bytes,uint256,string) (BurnVault.
    ↪ sol#549-577) is never used and should be removed
Address.functionCall(address,bytes) (BurnVault.sol#484-489) is never
    ↪ used and should be removed
Address.functionCall(address,bytes,string) (BurnVault.sol#497-503) is
    ↪ never used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (BurnVault.sol
    ↪ #516-528) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (BurnVault.
    ↪ sol#536-547) is never used and should be removed
Address.isContract(address) (BurnVault.sol#423-434) is never used and
    ↪ should be removed
```

```
Address.sendValue(address,uint256) (BurnVault.sol#452-464) is never used
    ↪  and should be removed
Context._msgData() (BurnVault.sol#25-28) is never used and should be
    ↪ removed
ERC20._burn(address,uint256) (BurnVault.sol#874-883) is never used and
    ↪ should be removed
ERC20._burnFrom(address,uint256) (BurnVault.sol#916-926) is never used
    ↪ and should be removed
SafeMath.div(uint256,uint256) (BurnVault.sol#317-319) is never used and
    ↪ should be removed
SafeMath.div(uint256,uint256,string) (BurnVault.sol#333-343) is never
    ↪ used and should be removed
SafeMath.min(uint256,uint256) (BurnVault.sol#382-384) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256) (BurnVault.sol#357-359) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256,string) (BurnVault.sol#373-380) is never
    ↪ used and should be removed
SafeMath.mul(uint256,uint256) (BurnVault.sol#291-303) is never used and
    ↪ should be removed
SafeMath.sqrt(uint256) (BurnVault.sol#387-398) is never used and should
    ↪ be removed
SafeMath.sub(uint256,uint256) (BurnVault.sol#256-258) is never used and
    ↪ should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Low level call in Address.sendValue(address,uint256) (BurnVault.sol
    ↪ #452-464):
        - (success) = recipient.call{value: amount}() (BurnVault.sol#459)
Low level call in Address._functionCallWithValue(address,bytes,uint256,
    ↪ string) (BurnVault.sol#549-577):
        - (success,returndata) = target.call{value: weiValue}(data) (
            ↪ BurnVault.sol#558-560)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Parameter BurnVault.setDefy(address)._defy (BurnVault.sol#958) is not in
    ↪  mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (BurnVault.sol#26)" inContext (BurnVault.sol
    ↪ #16-29)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (BurnVault.sol#83-86)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (BurnVault.sol#92-94)
name() should be declared external:
        - ERC20.name() (BurnVault.sol#644-646)
decimals() should be declared external:
        - ERC20.decimals() (BurnVault.sol#651-653)
symbol() should be declared external:
        - ERC20.symbol() (BurnVault.sol#658-660)
totalSupply() should be declared external:
        - ERC20.totalSupply() (BurnVault.sol#665-667)
balanceOf(address) should be declared external:
        - ERC20.balanceOf(address) (BurnVault.sol#672-674)
transfer(address,uint256) should be declared external:
        - ERC20.transfer(address,uint256) (BurnVault.sol#684-691)
allowance(address,address) should be declared external:
        - ERC20.allowance(address,address) (BurnVault.sol#696-703)
approve(address,uint256) should be declared external:
        - ERC20.approve(address,uint256) (BurnVault.sol#712-719)
transferFrom(address,address,uint256) should be declared external:
       - ERC20.transferFrom(address,address,uint256) (BurnVault.sol
          ↪ #733-748)
increaseAllowance(address,uint256) should be declared external:
       - ERC20.increaseAllowance(address,uint256) (BurnVault.sol
          ↪ #762-772)
decreaseAllowance(address,uint256) should be declared external:
       - ERC20.decreaseAllowance(address,uint256) (BurnVault.sol
          ↪ #788-801)
mint(uint256) should be declared external:
       - ERC20.mint(uint256) (BurnVault.sol#811-814)
burn() should be declared external:
       - BurnVault.burn() (BurnVault.sol#963-967)
burnPortion(uint256) should be declared external:
       - BurnVault.burnPortion(uint256) (BurnVault.sol#969-972)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #public-function-that-could-be-declared-external
BurnVault.sol analyzed (8 contracts with 78 detectors), 47 result(s)
   ↪ found

DefySwapPair._update(uint256,uint256,uint112,uint112) (factory.sol
   ↪ #574-599) uses a weak PRNG: "blockTimestamp = uint32(block.
   ↪ timestamp % 2 ** 32) (factory.sol#584)"
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #weak-PRNG

DefySwapPair._safeTransfer(address,address,uint256) (factory.sol
   ↪ #513-526) uses a dangerous strict equality:
       - require(bool,string)(success && (data.length == 0 || abi.decode
          ↪ (data,(bool))),DefySwap: TRANSFER_FAILED) (factory.sol
          ↪ #522-525)
DefySwapPair._safeTransferTaxFree(address,address,uint256) (factory.sol
   ↪ #528-542) uses a dangerous strict equality:
       - require(bool,string)(success && (data.length == 0 || abi.decode
          ↪ (data,(bool))),TransferHelper: TRANSFER_FAILED) (factory.
```

```
        ↪ sol#538-541)
DefySwapPair.mint(address) (factory.sol#626-651) uses a dangerous strict
   ↪  equality:
        - _totalSupply == 0 (factory.sol#636)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #dangerous-strict-equalities

Reentrancy in DefySwapPair.burn(address) (factory.sol#654-694):
        External calls:
        - _safeTransferTaxFree(_token0,to,amount0) (factory.sol#678)
                - (success,data) = token.call(abi.encodeWithSelector(0
                    ↪ xdffc1a11,to,value)) (factory.sol#535-537)
        - _safeTransfer(_token0,to,amount0) (factory.sol#680)
                - (success,data) = token.call(abi.encodeWithSelector(
                    ↪ SELECTOR,to,value)) (factory.sol#519-521)
        - _safeTransferTaxFree(_token1,to,amount1) (factory.sol#683)
                - (success,data) = token.call(abi.encodeWithSelector(0
                    ↪ xdffc1a11,to,value)) (factory.sol#535-537)
        - _safeTransfer(_token1,to,amount1) (factory.sol#685)
                - (success,data) = token.call(abi.encodeWithSelector(
                    ↪ SELECTOR,to,value)) (factory.sol#519-521)
        State variables written after the call(s):
        - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
            ↪ #691)
                - blockTimestampLast = blockTimestamp (factory.sol#597)
        - kLast = uint256(reserve0).mul(reserve1) (factory.sol#692)
        - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
            ↪ #691)
                - reserve0 = uint112(balance0) (factory.sol#595)
        - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
            ↪ #691)
                - reserve1 = uint112(balance1) (factory.sol#596)
Reentrancy in DefySwapFactory.createPair(address,address) (factory.sol
   ↪ #816-838):
       External calls:
       - IDefySwapPair(pair).initialize(token0,token1) (factory.sol#833)
       State variables written after the call(s):
       - getPair[token0][token1] = pair (factory.sol#834)
       - getPair[token1][token0] = pair (factory.sol#835)
Reentrancy in DefySwapPair.swap(uint256,uint256,address,bytes) (factory.
   ↪ sol#697-760):
       External calls:
       - _safeTransfer(_token0,to,amount0Out) (factory.sol#721)
              - (success,data) = token.call(abi.encodeWithSelector(
                 ↪ SELECTOR,to,value)) (factory.sol#519-521)
       - _safeTransfer(_token1,to,amount1Out) (factory.sol#722)
              - (success,data) = token.call(abi.encodeWithSelector(
                 ↪ SELECTOR,to,value)) (factory.sol#519-521)
       - IDefySwapCallee(to).defyswapCall(msg.sender,amount0Out,
          ↪ amount1Out,data) (factory.sol#724-729)
       State variables written after the call(s):
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #758)
              - blockTimestampLast = blockTimestamp (factory.sol#597)
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #758)
              - reserve0 = uint112(balance0) (factory.sol#595)
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #758)
              - reserve1 = uint112(balance1) (factory.sol#596)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #reentrancy-vulnerabilities-1

DefySwapPair.initialize(address,address)._token0 (factory.sol#566) lacks
   ↪  a zero-check on :
              - token0 = _token0 (factory.sol#569)
DefySwapPair.initialize(address,address)._token1 (factory.sol#566) lacks
   ↪  a zero-check on :
```

```
              - token1 = _token1 (factory.sol#570)
DefySwapFactory.constructor(address)._feeToSetter (factory.sol#807)
   ↪ lacks a zero-check on :
              - feeToSetter = _feeToSetter (factory.sol#809)
DefySwapFactory.setFeeTo(address)._feeTo (factory.sol#840) lacks a zero-
   ↪ check on :
              - feeTo = _feeTo (factory.sol#843)
DefySwapFactory.setFeeToSetter(address)._feeToSetter (factory.sol#846)
   ↪ lacks a zero-check on :
              - feeToSetter = _feeToSetter (factory.sol#849)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #missing-zero-address-validation

Reentrancy in DefySwapPair.burn(address) (factory.sol#654-694):
       External calls:
       - _safeTransferTaxFree(_token0,to,amount0) (factory.sol#678)
              - (success,data) = token.call(abi.encodeWithSelector(0
                 ↪ xdffc1a11,to,value)) (factory.sol#535-537)
       - _safeTransfer(_token0,to,amount0) (factory.sol#680)
              - (success,data) = token.call(abi.encodeWithSelector(
                 ↪ SELECTOR,to,value)) (factory.sol#519-521)
       - _safeTransferTaxFree(_token1,to,amount1) (factory.sol#683)
              - (success,data) = token.call(abi.encodeWithSelector(0
                 ↪ xdffc1a11,to,value)) (factory.sol#535-537)
       - _safeTransfer(_token1,to,amount1) (factory.sol#685)
              - (success,data) = token.call(abi.encodeWithSelector(
                 ↪ SELECTOR,to,value)) (factory.sol#519-521)
       State variables written after the call(s):
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #691)
              - price0CumulativeLast += uint256(UQ112x112.encode(
                 ↪ _reserve1).uqdiv(_reserve0)) * timeElapsed (factory
                 ↪ .sol#588-590)
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #691)
              - price1CumulativeLast += uint256(UQ112x112.encode(
                 ↪ _reserve0).uqdiv(_reserve1)) * timeElapsed (factory
                 ↪ .sol#591-593)
Reentrancy in DefySwapFactory.createPair(address,address) (factory.sol
   ↪ #816-838):
       External calls:
       - IDefySwapPair(pair).initialize(token0,token1) (factory.sol#833)
       State variables written after the call(s):
       - allPairs.push(pair) (factory.sol#836)
Reentrancy in DefySwapPair.swap(uint256,uint256,address,bytes) (factory.
   ↪ sol#697-760):
       External calls:
       - _safeTransfer(_token0,to,amount0Out) (factory.sol#721)
              - (success,data) = token.call(abi.encodeWithSelector(
                 ↪ SELECTOR,to,value)) (factory.sol#519-521)
       - _safeTransfer(_token1,to,amount1Out) (factory.sol#722)
              - (success,data) = token.call(abi.encodeWithSelector(
                 ↪ SELECTOR,to,value)) (factory.sol#519-521)
       - IDefySwapCallee(to).defyswapCall(msg.sender,amount0Out,
          ↪ amount1Out,data) (factory.sol#724-729)
       State variables written after the call(s):
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #758)
              - price0CumulativeLast += uint256(UQ112x112.encode(
                 ↪ _reserve1).uqdiv(_reserve0)) * timeElapsed (factory
                 ↪ .sol#588-590)
       - _update(balance0,balance1,_reserve0,_reserve1) (factory.sol
          ↪ #758)
              - price1CumulativeLast += uint256(UQ112x112.encode(
                 ↪ _reserve0).uqdiv(_reserve1)) * timeElapsed (factory
                 ↪ .sol#591-593)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #reentrancy-vulnerabilities-2

Reentrancy in DefySwapPair.burn(address) (factory.sol#654-694):
        External calls:
        - _safeTransferTaxFree(_token0,to,amount0) (factory.sol#678)
                - (success,data) = token.call(abi.encodeWithSelector(0
                   ↪ xdffc1a11,to,value)) (factory.sol#535-537)
        - _safeTransfer(_token0,to,amount0) (factory.sol#680)
                - (success,data) = token.call(abi.encodeWithSelector(
                   ↪ SELECTOR,to,value)) (factory.sol#519-521)
        - _safeTransferTaxFree(_token1,to,amount1) (factory.sol#683)
                - (success,data) = token.call(abi.encodeWithSelector(0
                   ↪ xdffc1a11,to,value)) (factory.sol#535-537)
        - _safeTransfer(_token1,to,amount1) (factory.sol#685)
                - (success,data) = token.call(abi.encodeWithSelector(
                   ↪ SELECTOR,to,value)) (factory.sol#519-521)
        Event emitted after the call(s):
        - Burn(msg.sender,amount0,amount1,to) (factory.sol#693)
        - Sync(reserve0,reserve1) (factory.sol#598)
                - _update(balance0,balance1,_reserve0,_reserve1) (factory.
                   ↪ sol#691)
Reentrancy in DefySwapFactory.createPair(address,address) (factory.sol
   ↪ #816-838):
        External calls:
        - IDefySwapPair(pair).initialize(token0,token1) (factory.sol#833)
        Event emitted after the call(s):
        - PairCreated(token0,token1,pair,allPairs.length) (factory.sol
           ↪ #837)
Reentrancy in DefySwapPair.swap(uint256,uint256,address,bytes) (factory.
   ↪ sol#697-760):
        External calls:
        - _safeTransfer(_token0,to,amount0Out) (factory.sol#721)
```

```
                - (success,data) = token.call(abi.encodeWithSelector(
                   ↪ SELECTOR,to,value)) (factory.sol#519-521)
        - _safeTransfer(_token1,to,amount1Out) (factory.sol#722)
                - (success,data) = token.call(abi.encodeWithSelector(
                   ↪ SELECTOR,to,value)) (factory.sol#519-521)
        - IDefySwapCallee(to).defyswapCall(msg.sender,amount0Out,
           ↪ amount1Out,data) (factory.sol#724-729)
        Event emitted after the call(s):
        - Swap(msg.sender,amount0In,amount1In,amount0Out,amount1Out,to) (
           ↪ factory.sol#759)
        - Sync(reserve0,reserve1) (factory.sol#598)
                - _update(balance0,balance1,_reserve0,_reserve1) (factory.
                   ↪ sol#758)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #reentrancy-vulnerabilities-3

DefySwapERC20.permit(address,address,uint256,uint256,uint8,bytes32,
   ↪ bytes32) (factory.sol#315-347) uses timestamp for comparisons
        Dangerous comparisons:
        - require(bool,string)(deadline >= block.timestamp,DefySwap:
           ↪ EXPIRED) (factory.sol#324)
DefySwapPair._update(uint256,uint256,uint112,uint112) (factory.sol
   ↪ #574-599) uses timestamp for comparisons
        Dangerous comparisons:
        - timeElapsed > 0 && _reserve0 != 0 && _reserve1 != 0 (factory.
           ↪ sol#586)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #block-timestamp

DefySwapERC20.constructor() (factory.sol#242-258) uses assembly
        - INLINE ASM (factory.sol#244-246)
DefySwapFactory.createPair(address,address) (factory.sol#816-838) uses
   ↪ assembly
        - INLINE ASM (factory.sol#829-831)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #assembly-usage

Low level call in DefySwapPair._safeTransfer(address,address,uint256) (
    ↪ factory.sol#513-526):
        - (success,data) = token.call(abi.encodeWithSelector(SELECTOR,to,
            ↪ value)) (factory.sol#519-521)
Low level call in DefySwapPair._safeTransferTaxFree(address,address,
    ↪ uint256) (factory.sol#528-542):
        - (success,data) = token.call(abi.encodeWithSelector(0xdffc1a11,
            ↪ to,value)) (factory.sol#535-537)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Function IDefySwapPair.DOMAIN_SEPARATOR() (factory.sol#66) is not in
    ↪ mixedCase
Function IDefySwapPair.PERMIT_TYPEHASH() (factory.sol#68) is not in
    ↪ mixedCase
Function IDefySwapPair.MINIMUM_LIQUIDITY() (factory.sol#99) is not in
    ↪ mixedCase
Parameter IDefySwapPair.setLiqTax(bool,bool).token0_Tax (factory.sol
    ↪ #116) is not in mixedCase
Parameter IDefySwapPair.setLiqTax(bool,bool).token1_tax (factory.sol
    ↪ #116) is not in mixedCase
Parameter IDefySwapPair.setRLiqTax(bool,bool).token0_Tax (factory.sol
    ↪ #120) is not in mixedCase
Parameter IDefySwapPair.setRLiqTax(bool,bool).token1_tax (factory.sol
    ↪ #120) is not in mixedCase
Function IDefySwapERC20.DOMAIN_SEPARATOR() (factory.sol#187) is not in
    ↪ mixedCase
Function IDefySwapERC20.PERMIT_TYPEHASH() (factory.sol#189) is not in
    ↪ mixedCase
Variable DefySwapERC20.DOMAIN_SEPARATOR (factory.sol#229) is not in
    ↪ mixedCase
```

```
Parameter DefySwapPair.setLiqTax(bool,bool).token0_Tax (factory.sol#477)
   ↪  is not in mixedCase
Parameter DefySwapPair.setLiqTax(bool,bool).token1_tax (factory.sol#477)
   ↪  is not in mixedCase
Parameter DefySwapPair.setRLiqTax(bool,bool).token0_Tax (factory.sol
   ↪ #490) is not in mixedCase
Parameter DefySwapPair.setRLiqTax(bool,bool).token1_tax (factory.sol
   ↪ #490) is not in mixedCase
Parameter DefySwapPair.initialize(address,address)._token0 (factory.sol
   ↪ #566) is not in mixedCase
Parameter DefySwapPair.initialize(address,address)._token1 (factory.sol
   ↪ #566) is not in mixedCase
Parameter DefySwapFactory.setFeeTo(address)._feeTo (factory.sol#840) is
   ↪ not in mixedCase
Parameter DefySwapFactory.setFeeToSetter(address)._feeToSetter (factory.
   ↪ sol#846) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #conformance-to-solidity-naming-conventions

Variable DefySwapPair.swap(uint256,uint256,address,bytes).
   ↪ balance0Adjusted (factory.sol#745-747) is too similar to
   ↪ DefySwapPair.swap(uint256,uint256,address,bytes).balance1Adjusted
   ↪  (factory.sol#748-750)
Variable DefySwapPair.price0CumulativeLast (factory.sol#447) is too
   ↪ similar to DefySwapPair.price1CumulativeLast (factory.sol#448)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #variable-names-are-too-similar

DefySwapFactory.createPair(address,address) (factory.sol#816-838) uses
   ↪ literals with too many digits:
       - bytecode = type(address)(DefySwapPair).creationCode (factory.
          ↪ sol#827)
DefySwapFactory.slitherConstructorConstantVariables() (factory.sol
   ↪ #790-851) uses literals with too many digits:
        - INIT_CODE_PAIR_HASH = keccak256(bytes)(abi.encodePacked(type(
            ↪ address)(DefySwapPair).creationCode)) (factory.sol
            ↪ #791-792)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #too-many-digits

isAddTaxFree(address) should be declared external:
        - DefySwapPair.isAddTaxFree(address) (factory.sol#503-506)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
factory.sol analyzed (11 contracts with 78 detectors), 47 result(s)
    ↪ found

ImpermanentLossProtection.defyTransfer(address,uint256) (ILP.sol
    ↪ #887-892) ignores return value by IERC20(defy).transfer(_to,xfAmt
    ↪ ) (ILP.sol#891)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #unchecked-transfer

ImpermanentLossProtection.dev(address) (ILP.sol#895-899) should emit an
    ↪ event for:
        - devAddr = _devAddr (ILP.sol#898)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-events-access-control

ImpermanentLossProtection.constructor(address,address)._defy (ILP.sol
    ↪ #858) lacks a zero-check on :
                - defy = _defy (ILP.sol#860)
ImpermanentLossProtection.constructor(address,address)._defyMaster (ILP.
    ↪ sol#858) lacks a zero-check on :
                - defyMaster = _defyMaster (ILP.sol#861)
ImpermanentLossProtection.setAddresses(address,address)._defy (ILP.sol
    ↪ #877) lacks a zero-check on :
                - defy = _defy (ILP.sol#879)
```

```
ImpermanentLossProtection.setAddresses(address,address)._defyMaster (ILP
   ↪ .sol#877) lacks a zero-check on :
              - defyMaster = _defyMaster (ILP.sol#880)
ImpermanentLossProtection.dev(address)._devAddr (ILP.sol#895) lacks a
   ↪ zero-check on :
              - devAddr = _devAddr (ILP.sol#898)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #missing-zero-address-validation

Address.isContract(address) (ILP.sol#580-591) uses assembly
       - INLINE ASM (ILP.sol#587-589)
Address._functionCallWithValue(address,bytes,uint256,string) (ILP.sol
   ↪ #706-734) uses assembly
       - INLINE ASM (ILP.sol#726-729)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #assembly-usage

Address._functionCallWithValue(address,bytes,uint256,string) (ILP.sol
   ↪ #706-734) is never used and should be removed
Address.functionCall(address,bytes) (ILP.sol#641-646) is never used and
   ↪ should be removed
Address.functionCall(address,bytes,string) (ILP.sol#654-660) is never
   ↪ used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (ILP.sol#673-685)
   ↪ is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (ILP.sol
   ↪ #693-704) is never used and should be removed
Address.isContract(address) (ILP.sol#580-591) is never used and should
   ↪ be removed
Address.sendValue(address,uint256) (ILP.sol#609-621) is never used and
   ↪ should be removed
Context._msgData() (ILP.sol#25-28) is never used and should be removed
SafeERC20._callOptionalReturn(IERC20,bytes) (ILP.sol#351-368) is never
   ↪ used and should be removed
```

```
SafeERC20.safeApprove(IERC20,address,uint256) (ILP.sol#289-306) is never
    ↪  used and should be removed
SafeERC20.safeDecreaseAllowance(IERC20,address,uint256) (ILP.sol
    ↪ #326-343) is never used and should be removed
SafeERC20.safeIncreaseAllowance(IERC20,address,uint256) (ILP.sol
    ↪ #308-324) is never used and should be removed
SafeERC20.safeTransfer(IERC20,address,uint256) (ILP.sol#259-268) is
    ↪ never used and should be removed
SafeERC20.safeTransferFrom(IERC20,address,address,uint256) (ILP.sol
    ↪ #270-280) is never used and should be removed
SafeMath.add(uint256,uint256) (ILP.sol#396-401) is never used and should
    ↪  be removed
SafeMath.min(uint256,uint256) (ILP.sol#539-541) is never used and should
    ↪  be removed
SafeMath.mod(uint256,uint256) (ILP.sol#514-516) is never used and should
    ↪  be removed
SafeMath.mod(uint256,uint256,string) (ILP.sol#530-537) is never used and
    ↪  should be removed
SafeMath.sqrt(uint256) (ILP.sol#544-555) is never used and should be
    ↪ removed
SafeMath.sub(uint256,uint256) (ILP.sol#413-415) is never used and should
    ↪  be removed
SafeMath.sub(uint256,uint256,string) (ILP.sol#427-436) is never used and
    ↪  should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Low level call in Address.sendValue(address,uint256) (ILP.sol#609-621):
        - (success) = recipient.call{value: amount}() (ILP.sol#616)
Low level call in Address._functionCallWithValue(address,bytes,uint256,
    ↪ string) (ILP.sol#706-734):
        - (success,returndata) = target.call{value: weiValue}(data) (ILP.
            ↪ sol#715-717)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Function IDefySwapPair.DOMAIN_SEPARATOR() (ILP.sol#64) is not in
    ↪ mixedCase
Function IDefySwapPair.PERMIT_TYPEHASH() (ILP.sol#66) is not in
    ↪ mixedCase
Function IDefySwapPair.MINIMUM_LIQUIDITY() (ILP.sol#97) is not in
    ↪ mixedCase
Parameter ImpermanentLossProtection.setAddresses(address,address)._defy
    ↪ (ILP.sol#877) is not in mixedCase
Parameter ImpermanentLossProtection.setAddresses(address,address).
    ↪ _defyMaster (ILP.sol#877) is not in mixedCase
Parameter ImpermanentLossProtection.defyTransfer(address,uint256)._to (
    ↪ ILP.sol#887) is not in mixedCase
Parameter ImpermanentLossProtection.defyTransfer(address,uint256).
    ↪ _amount (ILP.sol#887) is not in mixedCase
Parameter ImpermanentLossProtection.dev(address)._devAddr (ILP.sol#895)
    ↪ is not in mixedCase
Parameter ImpermanentLossProtection.add(address,IERC20,IERC20,bool).
    ↪ _lpToken (ILP.sol#902) is not in mixedCase
Parameter ImpermanentLossProtection.add(address,IERC20,IERC20,bool).
    ↪ _token0 (ILP.sol#903) is not in mixedCase
Parameter ImpermanentLossProtection.add(address,IERC20,IERC20,bool).
    ↪ _token1 (ILP.sol#904) is not in mixedCase
Parameter ImpermanentLossProtection.add(address,IERC20,IERC20,bool).
    ↪ _offerILP (ILP.sol#905) is not in mixedCase
Parameter ImpermanentLossProtection.set(uint256,IERC20,IERC20,bool)._pid
    ↪  (ILP.sol#921) is not in mixedCase
Parameter ImpermanentLossProtection.set(uint256,IERC20,IERC20,bool).
    ↪ _token0 (ILP.sol#922) is not in mixedCase
Parameter ImpermanentLossProtection.set(uint256,IERC20,IERC20,bool).
    ↪ _token1 (ILP.sol#923) is not in mixedCase
```

```
Parameter ImpermanentLossProtection.set(uint256,IERC20,IERC20,bool).
    ↪ _offerILP (ILP.sol#924) is not in mixedCase
Parameter ImpermanentLossProtection.getDepositValue(uint256,uint256).
    ↪ _pid (ILP.sol#936) is not in mixedCase
Parameter ImpermanentLossProtection.getDefyPrice(uint256)._pid (ILP.sol
    ↪ #970) is not in mixedCase
Parameter ImpermanentLossProtection.getReserves(uint256)._pid (ILP.sol
    ↪ #1033) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (ILP.sol#26)" inContext (ILP.sol#16-29)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (ILP.sol#789-792)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (ILP.sol#798-800)
setAddresses(address,address) should be declared external:
        - ImpermanentLossProtection.setAddresses(address,address) (ILP.
            ↪ sol#877-884)
dev(address) should be declared external:
        - ImpermanentLossProtection.dev(address) (ILP.sol#895-899)
add(address,IERC20,IERC20,bool) should be declared external:
        - ImpermanentLossProtection.add(address,IERC20,IERC20,bool) (ILP.
            ↪ sol#901-918)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
ILP.sol analyzed (8 contracts with 78 detectors), 57 result(s) found

Compilation warnings/errors on router.sol:
Warning: Contract code size exceeds 24576 bytes (a limit introduced in
    ↪ Spurious Dragon). This contract may not be deployable on mainnet.
    ↪  Consider enabling the optimizer (with a low "runs" value!),
    ↪ turning off revert strings, or using libraries.
   --> router.sol:643:1:
    |
643 | contract DefySwapRouter is IDefySwapRouter02 {
    | ^ (Relevant source part starts here and spans across multiple
        ↪ lines).



DefySwapRouter.addLiquidityETH(address,uint256,uint256,uint256,address,
    ↪ uint256) (router.sol#767-819) sends eth to arbitrary user
        Dangerous calls:
        - IWETH(WETH).deposit{value: amountETH}() (router.sol#813)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #functions-that-send-ether-to-arbitrary-destinations

DefySwapRouter.removeLiquidity(address,address,uint256,uint256,uint256,
    ↪ address,uint256) (router.sol#822-847) ignores return value by
    ↪ IDefySwapPair(pair).transferFrom(msg.sender,pair,liquidity) (
    ↪ router.sol#839)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #unchecked-transfer

DefySwapLibrary.getAmountsOut(address,uint256,address[]).i (router.sol
    ↪ #571) is a local variable never initialized
DefySwapRouter._swap(uint256[],address[],address).i (router.sol#1048) is
    ↪  a local variable never initialized
DefySwapRouter._swapSupportingFeeOnTransferTokens(address[],address).i (
    ↪ router.sol#1256) is a local variable never initialized
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #uninitialized-local-variables
```

```
DefySwapRouter._addLiquidity(address,address,uint256,uint256,uint256,
    ↪ uint256) (router.sol#665-711) ignores return value by
    ↪ IDefySwapFactory(factory).createPair(tokenA,tokenB) (router.sol
    ↪ #676)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #unused-return

DefySwapRouter.constructor(address,address)._factory (router.sol#654)
    ↪ lacks a zero-check on :
                - factory = _factory (router.sol#656)
DefySwapRouter.constructor(address,address)._WETH (router.sol#654) lacks
    ↪  a zero-check on :
                - WETH = _WETH (router.sol#657)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-zero-address-validation

TransferHelper.safeApprove(address,address,uint256) (router.sol#37-50)
    ↪ is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Pragma version=0.6.6 (router.sol#1) allows old versions
solc-0.6.6 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #incorrect-versions-of-solidity

Low level call in TransferHelper.safeApprove(address,address,uint256) (
    ↪ router.sol#37-50):
        - (success,data) = token.call(abi.encodeWithSelector(0x095ea7b3,
            ↪ to,value)) (router.sol#43-45)
Low level call in TransferHelper.safeTransfer(address,address,uint256) (
    ↪ router.sol#52-65):
        - (success,data) = token.call(abi.encodeWithSelector(0xa9059cbb,
            ↪ to,value)) (router.sol#58-60)
```

```
Low level call in TransferHelper.safeTransferTaxFree(address,address,
   ↪ uint256) (router.sol#67-80):
        - (success,data) = token.call(abi.encodeWithSelector(0xdffc1a11,
           ↪ to,value)) (router.sol#73-75)
Low level call in TransferHelper.safeTransferFrom(address,address,
   ↪ address,uint256) (router.sol#82-96):
        - (success,data) = token.call(abi.encodeWithSelector(0x23b872dd,
           ↪ from,to,value)) (router.sol#89-91)
Low level call in TransferHelper.safeTransferFromTaxFree(address,address
   ↪ ,address,uint256) (router.sol#98-112):
        - (success,data) = token.call(abi.encodeWithSelector(0x57dd378e,
           ↪ from,to,value)) (router.sol#105-107)
Low level call in TransferHelper.safeTransferETH(address,uint256) (
   ↪ router.sol#114-117):
        - (success) = to.call{value: value}(new bytes(0)) (router.sol
           ↪ #115)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #low-level-calls

Function IDefySwapFactory.INIT_CODE_PAIR_HASH() (router.sol#32) is not
   ↪ in mixedCase
Function IDefySwapRouter01.WETH() (router.sol#123) is not in mixedCase
Function IDefySwapPair.DOMAIN_SEPARATOR() (router.sol#359) is not in
   ↪ mixedCase
Function IDefySwapPair.PERMIT_TYPEHASH() (router.sol#361) is not in
   ↪ mixedCase
Function IDefySwapPair.MINIMUM_LIQUIDITY() (router.sol#392) is not in
   ↪ mixedCase
Parameter IDefySwapPair.setLiqTax(bool,bool).token0_Tax (router.sol#409)
   ↪  is not in mixedCase
Parameter IDefySwapPair.setLiqTax(bool,bool).token1_tax (router.sol#409)
   ↪  is not in mixedCase
Parameter IDefySwapPair.setRLiqTax(bool,bool).token0_Tax (router.sol
   ↪ #413) is not in mixedCase
```

```
Parameter IDefySwapPair.setRLiqTax(bool,bool).token1_tax (router.sol
    ↪ #413) is not in mixedCase
Variable DefySwapRouter.WETH (router.sol#647) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Variable IDefySwapRouter01.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountADesired (router.sol#128)
    ↪ is too similar to IDefySwapRouter01.addLiquidity(address,address,
    ↪ uint256,uint256,uint256,uint256,address,uint256).amountBDesired (
    ↪ router.sol#129)
Variable DefySwapRouter._addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256).amountADesired (router.sol#668) is too similar
    ↪ to DefySwapRouter._addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256).amountBDesired (router.sol#669)
Variable DefySwapRouter._addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256).amountADesired (router.sol#668) is too similar
    ↪ to DefySwapRouter.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountBDesired (router.sol#717)
Variable IDefySwapRouter01.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountADesired (router.sol#128)
    ↪ is too similar to DefySwapRouter._addLiquidity(address,address,
    ↪ uint256,uint256,uint256,uint256).amountBDesired (router.sol#669)
Variable IDefySwapRouter01.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountADesired (router.sol#128)
    ↪ is too similar to DefySwapRouter.addLiquidity(address,address,
    ↪ uint256,uint256,uint256,uint256,address,uint256).amountBDesired (
    ↪ router.sol#717)
Variable DefySwapRouter.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountADesired (router.sol#716)
    ↪ is too similar to DefySwapRouter.addLiquidity(address,address,
    ↪ uint256,uint256,uint256,uint256,address,uint256).amountBDesired (
    ↪ router.sol#717)
```

```
Variable DefySwapRouter.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountADesired (router.sol#716)
    ↪ is too similar to DefySwapRouter._addLiquidity(address,address,
    ↪ uint256,uint256,uint256,uint256).amountBDesired (router.sol#669)
Variable DefySwapRouter._addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256).amountADesired (router.sol#668) is too similar
    ↪ to IDefySwapRouter01.addLiquidity(address,address,uint256,uint256
    ↪ ,uint256,uint256,address,uint256).amountBDesired (router.sol#129)
Variable DefySwapRouter.addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256,address,uint256).amountADesired (router.sol#716)
    ↪ is too similar to IDefySwapRouter01.addLiquidity(address,address,
    ↪ uint256,uint256,uint256,uint256,address,uint256).amountBDesired (
    ↪ router.sol#129)
Variable DefySwapRouter._addLiquidity(address,address,uint256,uint256,
    ↪ uint256,uint256).amountAOptimal (router.sol#698-702) is too
    ↪ similar to DefySwapRouter._addLiquidity(address,address,uint256,
    ↪ uint256,uint256,uint256).amountBOptimal (router.sol#686-690)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #variable-names-are-too-similar

quote(uint256,uint256,uint256) should be declared external:
        - DefySwapRouter.quote(uint256,uint256,uint256) (router.sol
            ↪ #1361-1367)
getAmountOut(uint256,uint256,uint256) should be declared external:
        - DefySwapRouter.getAmountOut(uint256,uint256,uint256) (router.
            ↪ sol#1369-1375)
getAmountIn(uint256,uint256,uint256) should be declared external:
        - DefySwapRouter.getAmountIn(uint256,uint256,uint256) (router.sol
            ↪ #1377-1383)
getAmountsOut(uint256,address[]) should be declared external:
        - DefySwapRouter.getAmountsOut(uint256,address[]) (router.sol
            ↪ #1385-1393)
getAmountsIn(uint256,address[]) should be declared external:
        - DefySwapRouter.getAmountsIn(uint256,address[]) (router.sol
            ↪ #1395-1403)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
router.sol analyzed (10 contracts with 78 detectors), 42 result(s) found

DefySTUB._writeCheckpoint(address,uint32,uint256,uint256) (STUB.sol
    ↪ #1151-1176) uses a dangerous strict equality:
        - nCheckpoints > 0 && checkpoints[delegatee][nCheckpoints - 1].
            ↪ fromBlock == blockNumber (STUB.sol#1163-1164)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dangerous-strict-equalities

ERC20.constructor(string,string).name (STUB.sol#628) shadows:
        - ERC20.name() (STUB.sol#644-646) (function)
        - IERC20.name() (STUB.sol#129) (function)
ERC20.constructor(string,string).symbol (STUB.sol#628) shadows:
        - ERC20.symbol() (STUB.sol#658-660) (function)
        - IERC20.symbol() (STUB.sol#124) (function)
ERC20.allowance(address,address).owner (STUB.sol#696) shadows:
        - Ownable.owner() (STUB.sol#64-66) (function)
ERC20._approve(address,address,uint256).owner (STUB.sol#899) shadows:
        - Ownable.owner() (STUB.sol#64-66) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #local-variable-shadowing

DefySTUB.delegateBySig(address,uint256,uint256,uint8,bytes32,bytes32) (
    ↪ STUB.sol#1015-1052) uses timestamp for comparisons
        Dangerous comparisons:
        - require(bool,string)(now <= expiry,DEFY::delegateBySig:
            ↪ signature expired) (STUB.sol#1050)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #block-timestamp
```

```
Address.isContract(address) (STUB.sol#423-434) uses assembly
       - INLINE ASM (STUB.sol#430-432)
Address._functionCallWithValue(address,bytes,uint256,string) (STUB.sol
   ↪ #549-577) uses assembly
       - INLINE ASM (STUB.sol#569-572)
DefySTUB.getChainId() (STUB.sol#1187-1193) uses assembly
       - INLINE ASM (STUB.sol#1189-1191)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #assembly-usage

Address._functionCallWithValue(address,bytes,uint256,string) (STUB.sol
   ↪ #549-577) is never used and should be removed
Address.functionCall(address,bytes) (STUB.sol#484-489) is never used and
   ↪  should be removed
Address.functionCall(address,bytes,string) (STUB.sol#497-503) is never
   ↪ used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (STUB.sol#516-528)
   ↪ is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (STUB.sol
   ↪ #536-547) is never used and should be removed
Address.isContract(address) (STUB.sol#423-434) is never used and should
   ↪ be removed
Address.sendValue(address,uint256) (STUB.sol#452-464) is never used and
   ↪ should be removed
Context._msgData() (STUB.sol#25-28) is never used and should be removed
ERC20._burnFrom(address,uint256) (STUB.sol#916-926) is never used and
   ↪ should be removed
SafeMath.div(uint256,uint256) (STUB.sol#317-319) is never used and
   ↪ should be removed
SafeMath.div(uint256,uint256,string) (STUB.sol#333-343) is never used
   ↪ and should be removed
SafeMath.min(uint256,uint256) (STUB.sol#382-384) is never used and
   ↪ should be removed
```

```
SafeMath.mod(uint256,uint256) (STUB.sol#357-359) is never used and
    ↪ should be removed
SafeMath.mod(uint256,uint256,string) (STUB.sol#373-380) is never used
    ↪ and should be removed
SafeMath.mul(uint256,uint256) (STUB.sol#291-303) is never used and
    ↪ should be removed
SafeMath.sqrt(uint256) (STUB.sol#387-398) is never used and should be
    ↪ removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Low level call in Address.sendValue(address,uint256) (STUB.sol#452-464):
        - (success) = recipient.call{value: amount}() (STUB.sol#459)
Low level call in Address._functionCallWithValue(address,bytes,uint256,
    ↪ string) (STUB.sol#549-577):
        - (success,returndata) = target.call{value: weiValue}(data) (STUB
            ↪ .sol#558-560)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Parameter DefySTUB.mint(address,uint256)._to (STUB.sol#932) is not in
    ↪ mixedCase
Parameter DefySTUB.mint(address,uint256)._amount (STUB.sol#932) is not
    ↪ in mixedCase
Parameter DefySTUB.burn(address,uint256)._from (STUB.sol#937) is not in
    ↪ mixedCase
Parameter DefySTUB.burn(address,uint256)._amount (STUB.sol#937) is not
    ↪ in mixedCase
Variable DefySTUB._delegates (STUB.sol#949) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (STUB.sol#26)" inContext (STUB.sol#16-29)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (STUB.sol#83-86)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (STUB.sol#92-94)
decimals() should be declared external:
        - ERC20.decimals() (STUB.sol#651-653)
symbol() should be declared external:
        - ERC20.symbol() (STUB.sol#658-660)
totalSupply() should be declared external:
        - ERC20.totalSupply() (STUB.sol#665-667)
transfer(address,uint256) should be declared external:
        - ERC20.transfer(address,uint256) (STUB.sol#684-691)
allowance(address,address) should be declared external:
        - ERC20.allowance(address,address) (STUB.sol#696-703)
approve(address,uint256) should be declared external:
        - ERC20.approve(address,uint256) (STUB.sol#712-719)
transferFrom(address,address,uint256) should be declared external:
        - ERC20.transferFrom(address,address,uint256) (STUB.sol#733-748)
increaseAllowance(address,uint256) should be declared external:
        - ERC20.increaseAllowance(address,uint256) (STUB.sol#762-772)
decreaseAllowance(address,uint256) should be declared external:
        - ERC20.decreaseAllowance(address,uint256) (STUB.sol#788-801)
mint(uint256) should be declared external:
        - ERC20.mint(uint256) (STUB.sol#811-814)
mint(address,uint256) should be declared external:
        - DefySTUB.mint(address,uint256) (STUB.sol#932-935)
burn(address,uint256) should be declared external:
        - DefySTUB.burn(address,uint256) (STUB.sol#937-940)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
STUB.sol analyzed (7 contracts with 78 detectors), 47 result(s) found
```

```
SubDefyMaster.safeDefyTransfer(address,uint256) (subDefyMaster.sol
    ↪ #1037-1044) ignores return value by rewardToken.transfer(_to,
    ↪ rewardBal) (subDefyMaster.sol#1040)
SubDefyMaster.safeDefyTransfer(address,uint256) (subDefyMaster.sol
    ↪ #1037-1044) ignores return value by rewardToken.transfer(_to,
    ↪ _amount) (subDefyMaster.sol#1042)
SubDefyMaster.withdrawRemainder() (subDefyMaster.sol#1046-1052) ignores
    ↪ return value by rewardToken.transfer(feeAddress,rewardToken.
    ↪ balanceOf(address(this))) (subDefyMaster.sol#1051)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #unchecked-transfer

SubDefyMaster.pendingReward(uint256,address) (subDefyMaster.sol#877-906)
    ↪  performs a multiplication on the result of a division:
        -reward = multiplier.mul(rewardPerSecond).mul(pool.allocPoint).
            ↪ div(totalAllocPoint) (subDefyMaster.sol#894-897)
        -accDefyPerShare = accDefyPerShare.add(reward.mul(1e18).div(
            ↪ lpSupply)) (subDefyMaster.sol#898-900)
SubDefyMaster.updatePool(uint256) (subDefyMaster.sol#917-949) performs a
    ↪  multiplication on the result of a division:
        -reward = multiplier.mul(rewardPerSecond).mul(pool.allocPoint).
            ↪ div(totalAllocPoint) (subDefyMaster.sol#938-941)
        -pool.accDefyPerShare = pool.accDefyPerShare.add(reward.mul(1e18)
            ↪ .div(lpSupply)) (subDefyMaster.sol#943-945)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #divide-before-multiply

Reentrancy in SubDefyMaster.deposit(uint256,uint256) (subDefyMaster.sol
    ↪ #952-996):
        External calls:
        - safeDefyTransfer(msg.sender,pending) (subDefyMaster.sol#969)
                - rewardToken.transfer(_to,rewardBal) (subDefyMaster.sol
                    ↪ #1040)
                - rewardToken.transfer(_to,_amount) (subDefyMaster.sol
                   ↪ #1042)
        - pool.lpToken.safeTransferFrom(address(msg.sender),address(this)
           ↪ ,xfAmt) (subDefyMaster.sol#974-978)
        - pool.lpToken.safeTransfer(feeAddress,depositFee) (subDefyMaster
           ↪ .sol#984)
        State variables written after the call(s):
        - pool.lpSupply = pool.lpSupply.add(xfAmt).sub(depositFee) (
           ↪ subDefyMaster.sol#986)
        - user.amount = user.amount.add(xfAmt).sub(depositFee) (
           ↪ subDefyMaster.sol#985)
Reentrancy in SubDefyMaster.deposit(uint256,uint256) (subDefyMaster.sol
   ↪ #952-996):
        External calls:
        - safeDefyTransfer(msg.sender,pending) (subDefyMaster.sol#969)
                - rewardToken.transfer(_to,rewardBal) (subDefyMaster.sol
                   ↪ #1040)
                - rewardToken.transfer(_to,_amount) (subDefyMaster.sol
                   ↪ #1042)
        - pool.lpToken.safeTransferFrom(address(msg.sender),address(this)
           ↪ ,xfAmt) (subDefyMaster.sol#974-978)
        State variables written after the call(s):
        - pool.lpSupply = pool.lpSupply.add(xfAmt) (subDefyMaster.sol
           ↪ #989)
        - user.amount = user.amount.add(xfAmt) (subDefyMaster.sol#988)
Reentrancy in SubDefyMaster.emergencyWithdraw(uint256) (subDefyMaster.
   ↪ sol#1026-1034):
        External calls:
        - pool.lpToken.safeTransfer(address(msg.sender),user.amount) (
           ↪ subDefyMaster.sol#1029)
        State variables written after the call(s):
        - pool.lpSupply = pool.lpSupply.sub(user.amount) (subDefyMaster.
           ↪ sol#1030)
        - user.amount = 0 (subDefyMaster.sol#1032)
        - user.rewardDebt = 0 (subDefyMaster.sol#1033)
Reentrancy in SubDefyMaster.withdraw(uint256,uint256) (subDefyMaster.sol
    ↪ #999-1023):
        External calls:
        - safeDefyTransfer(msg.sender,pending) (subDefyMaster.sol#1012)
                - rewardToken.transfer(_to,rewardBal) (subDefyMaster.sol
                    ↪ #1040)
                - rewardToken.transfer(_to,_amount) (subDefyMaster.sol
                    ↪ #1042)
        State variables written after the call(s):
        - pool.lpSupply = pool.lpSupply.sub(xfAmt) (subDefyMaster.sol
            ↪ #1016)
        - user.amount = user.amount.sub(xfAmt) (subDefyMaster.sol#1015)
Reentrancy in SubDefyMaster.withdraw(uint256,uint256) (subDefyMaster.sol
    ↪ #999-1023):
        External calls:
        - safeDefyTransfer(msg.sender,pending) (subDefyMaster.sol#1012)
                - rewardToken.transfer(_to,rewardBal) (subDefyMaster.sol
                    ↪ #1040)
                - rewardToken.transfer(_to,_amount) (subDefyMaster.sol
                    ↪ #1042)
        - pool.lpToken.safeTransfer(address(msg.sender),xfAmt) (
            ↪ subDefyMaster.sol#1017)
        State variables written after the call(s):
        - user.depositTime = block.timestamp (subDefyMaster.sol#1020)
        - user.rewardDebt = user.amount.mul(pool.accDefyPerShare).div(1
            ↪ e18) (subDefyMaster.sol#1021)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #reentrancy-vulnerabilities-1

SubDefyMaster.getUserInfo(uint256,address).deposit (subDefyMaster.sol
    ↪ #747) shadows:
        - SubDefyMaster.deposit(uint256,uint256) (subDefyMaster.sol
            ↪ #952-996) (function)
```

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #local-variable-shadowing

SubDefyMaster.dev(address) (subDefyMaster.sol#1055-1058) should emit an
   ↪ event for:
       - devaddr = _devaddr (subDefyMaster.sol#1057)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #missing-events-access-control

SubDefyMaster.updateReward(uint256,uint256) (subDefyMaster.sol#760-768)
   ↪ should emit an event for:
       - rewardPerSecond = _reward.div((_endTimestamp).sub(block.
          ↪ timestamp)) (subDefyMaster.sol#766)
SubDefyMaster.updateMultiplier(uint256) (subDefyMaster.sol#775-778)
   ↪ should emit an event for:
       - BONUS_MULTIPLIER = multiplierNumber (subDefyMaster.sol#777)
SubDefyMaster.updateTaxRatio(uint256) (subDefyMaster.sol#782-785) should
   ↪  emit an event for:
       - taxRatio = (10000 - _tax) (subDefyMaster.sol#784)
SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool) (
   ↪ subDefyMaster.sol#793-832) should emit an event for:
       - totalAllocPoint = totalAllocPoint.add(_allocPoint) (
          ↪ subDefyMaster.sol#819)
SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool) (
   ↪ subDefyMaster.sol#835-865) should emit an event for:
       - totalAllocPoint = totalAllocPoint.sub(poolInfo[_pid].allocPoint
          ↪ ).add(_allocPoint) (subDefyMaster.sol#858-860)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #missing-events-arithmetic

SubDefyMaster.constructor(IERC20,address,address,uint256,uint256).
   ↪ _devaddr (subDefyMaster.sol#722) lacks a zero-check on :
              - devaddr = _devaddr (subDefyMaster.sol#730)
```

```
SubDefyMaster.constructor(IERC20,address,address,uint256,uint256).
    ↪ _feeAddress (subDefyMaster.sol#723) lacks a zero-check on :
                - feeAddress = _feeAddress (subDefyMaster.sol#731)
SubDefyMaster.setFeeAddress(address)._feeAddress (subDefyMaster.sol#736)
    ↪  lacks a zero-check on :
                - feeAddress = _feeAddress (subDefyMaster.sol#738)
SubDefyMaster.dev(address)._devaddr (subDefyMaster.sol#1055) lacks a
    ↪ zero-check on :
                - devaddr = _devaddr (subDefyMaster.sol#1057)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-zero-address-validation

Reentrancy in SubDefyMaster.deposit(uint256,uint256) (subDefyMaster.sol
    ↪ #952-996):
        External calls:
        - safeDefyTransfer(msg.sender,pending) (subDefyMaster.sol#969)
                - rewardToken.transfer(_to,rewardBal) (subDefyMaster.sol
                    ↪ #1040)
                - rewardToken.transfer(_to,_amount) (subDefyMaster.sol
                    ↪ #1042)
        - pool.lpToken.safeTransferFrom(address(msg.sender),address(this)
            ↪ ,xfAmt) (subDefyMaster.sol#974-978)
        - pool.lpToken.safeTransfer(feeAddress,depositFee) (subDefyMaster
            ↪ .sol#984)
        Event emitted after the call(s):
        - Deposit(msg.sender,_pid,xfAmt) (subDefyMaster.sol#995)
Reentrancy in SubDefyMaster.emergencyWithdraw(uint256) (subDefyMaster.
    ↪ sol#1026-1034):
        External calls:
        - pool.lpToken.safeTransfer(address(msg.sender),user.amount) (
            ↪ subDefyMaster.sol#1029)
        Event emitted after the call(s):
        - EmergencyWithdraw(msg.sender,_pid,user.amount) (subDefyMaster.
            ↪ sol#1031)
```

```
Reentrancy in SubDefyMaster.withdraw(uint256,uint256) (subDefyMaster.sol
   ↪ #999-1023):
       External calls:
       - safeDefyTransfer(msg.sender,pending) (subDefyMaster.sol#1012)
              - rewardToken.transfer(_to,rewardBal) (subDefyMaster.sol
                 ↪ #1040)
              - rewardToken.transfer(_to,_amount) (subDefyMaster.sol
                 ↪ #1042)
       - pool.lpToken.safeTransfer(address(msg.sender),xfAmt) (
          ↪ subDefyMaster.sol#1017)
       Event emitted after the call(s):
       - Withdraw(msg.sender,_pid,xfAmt) (subDefyMaster.sol#1022)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #reentrancy-vulnerabilities-3

SubDefyMaster.updateReward(uint256,uint256) (subDefyMaster.sol#760-768)
   ↪ uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(_endTimestamp > block.timestamp,invalid
          ↪ end timestamp) (subDefyMaster.sol#764)
SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool) (
   ↪ subDefyMaster.sol#793-832) uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(_rewardEndTimestamp > block.timestamp,ADD
          ↪ : invalid rewardEndTimestamp) (subDefyMaster.sol#803-806)
       - block.timestamp > startTimestamp (subDefyMaster.sol#816-818)
SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool) (
   ↪ subDefyMaster.sol#835-865) uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(_rewardEndTimestamp > block.timestamp,SET
          ↪ : invalid rewardEndTimestamp) (subDefyMaster.sol#845-848)
SubDefyMaster.pendingReward(uint256,address) (subDefyMaster.sol#877-906)
   ↪  uses timestamp for comparisons
       Dangerous comparisons:
```

```
       - block.timestamp > pool.lastRewardTimestamp && lpSupply != 0 (
          ↪ subDefyMaster.sol#886)
       - block.timestamp < pool.rewardEndTimestamp (subDefyMaster.sol
          ↪ #887-889)
SubDefyMaster.massUpdatePools() (subDefyMaster.sol#909-914) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
       - pid < length (subDefyMaster.sol#911)
SubDefyMaster.updatePool(uint256) (subDefyMaster.sol#917-949) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
       - block.timestamp <= pool.lastRewardTimestamp (subDefyMaster.sol
          ↪ #920)
       - block.timestamp < pool.rewardEndTimestamp (subDefyMaster.sol
          ↪ #924-928)
SubDefyMaster.withdraw(uint256,uint256) (subDefyMaster.sol#999-1023)
   ↪ uses timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(user.amount > 0,Nothing deposited.) (
          ↪ subDefyMaster.sol#1002)
SubDefyMaster.withdrawRemainder() (subDefyMaster.sol#1046-1052) uses
   ↪ timestamp for comparisons
       Dangerous comparisons:
       - require(bool,string)(block.timestamp > endTimestamp.add(604800)
          ↪ ,only withdrawable after 1 week from rewarding period end)
          ↪  (subDefyMaster.sol#1047-1050)
SubDefyMaster._getDaysSinceDeposit(uint256,address) (subDefyMaster.sol
   ↪ #1069-1081) uses timestamp for comparisons
       Dangerous comparisons:
       - block.timestamp < user.depositTime (subDefyMaster.sol#1076)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #block-timestamp

Address.isContract(address) (subDefyMaster.sol#417-428) uses assembly
```

```
       - INLINE ASM (subDefyMaster.sol#424-426)
Address._functionCallWithValue(address,bytes,uint256,string) (
    ↪ subDefyMaster.sol#543-571) uses assembly
       - INLINE ASM (subDefyMaster.sol#563-566)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #assembly-usage

Address.functionCall(address,bytes) (subDefyMaster.sol#478-483) is never
    ↪  used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (subDefyMaster.sol
    ↪ #510-522) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (
    ↪ subDefyMaster.sol#530-541) is never used and should be removed
Address.sendValue(address,uint256) (subDefyMaster.sol#446-458) is never
    ↪ used and should be removed
Context._msgData() (subDefyMaster.sol#10-13) is never used and should be
    ↪  removed
SafeERC20.safeApprove(IERC20,address,uint256) (subDefyMaster.sol
    ↪ #146-163) is never used and should be removed
SafeERC20.safeDecreaseAllowance(IERC20,address,uint256) (subDefyMaster.
    ↪ sol#183-200) is never used and should be removed
SafeERC20.safeIncreaseAllowance(IERC20,address,uint256) (subDefyMaster.
    ↪ sol#165-181) is never used and should be removed
SafeMath.mod(uint256,uint256) (subDefyMaster.sol#370-372) is never used
    ↪ and should be removed
SafeMath.mod(uint256,uint256,string) (subDefyMaster.sol#386-393) is
    ↪ never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Low level call in Address.sendValue(address,uint256) (subDefyMaster.sol
    ↪ #446-458):
       - (success) = recipient.call{value: amount}() (subDefyMaster.sol
           ↪ #453)
```

```
Low level call in Address._functionCallWithValue(address,bytes,uint256,
    ↪ string) (subDefyMaster.sol#543-571):
        - (success,returndata) = target.call{value: weiValue}(data) (
            ↪ subDefyMaster.sol#552-554)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Event SubDefyMasterfeeAddressUpdated(address) (subDefyMaster.sol#703) is
    ↪  not in CapWords
Parameter SubDefyMaster.setFeeAddress(address)._feeAddress (
    ↪ subDefyMaster.sol#736) is not in mixedCase
Parameter SubDefyMaster.updateReward(uint256,uint256)._reward (
    ↪ subDefyMaster.sol#760) is not in mixedCase
Parameter SubDefyMaster.updateReward(uint256,uint256)._endTimestamp (
    ↪ subDefyMaster.sol#760) is not in mixedCase
Parameter SubDefyMaster.updateTaxRatio(uint256)._tax (subDefyMaster.sol
    ↪ #782) is not in mixedCase
Parameter SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
    ↪ ._allocPoint (subDefyMaster.sol#794) is not in mixedCase
Parameter SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
    ↪ ._depositFee (subDefyMaster.sol#795) is not in mixedCase
Parameter SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
    ↪ ._withdrawalFee (subDefyMaster.sol#796) is not in mixedCase
Parameter SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
    ↪ ._lpToken (subDefyMaster.sol#797) is not in mixedCase
Parameter SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
    ↪ ._rewardEndTimestamp (subDefyMaster.sol#798) is not in mixedCase
Parameter SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
    ↪ ._withUpdate (subDefyMaster.sol#799) is not in mixedCase
Parameter SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool
    ↪ )._pid (subDefyMaster.sol#836) is not in mixedCase
Parameter SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool
    ↪ )._allocPoint (subDefyMaster.sol#837) is not in mixedCase
```

```
Parameter SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool
    ↪ )._depositFee (subDefyMaster.sol#838) is not in mixedCase
Parameter SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool
    ↪ )._withdrawalFee (subDefyMaster.sol#839) is not in mixedCase
Parameter SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool
    ↪ )._rewardEndTimestamp (subDefyMaster.sol#840) is not in mixedCase
Parameter SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool
    ↪ )._withUpdate (subDefyMaster.sol#841) is not in mixedCase
Parameter SubDefyMaster.getMultiplier(uint256,uint256)._from (
    ↪ subDefyMaster.sol#868) is not in mixedCase
Parameter SubDefyMaster.getMultiplier(uint256,uint256)._to (
    ↪ subDefyMaster.sol#868) is not in mixedCase
Parameter SubDefyMaster.pendingReward(uint256,address)._pid (
    ↪ subDefyMaster.sol#877) is not in mixedCase
Parameter SubDefyMaster.pendingReward(uint256,address)._user (
    ↪ subDefyMaster.sol#877) is not in mixedCase
Parameter SubDefyMaster.updatePool(uint256)._pid (subDefyMaster.sol#917)
    ↪  is not in mixedCase
Parameter SubDefyMaster.deposit(uint256,uint256)._pid (subDefyMaster.sol
    ↪ #952) is not in mixedCase
Parameter SubDefyMaster.deposit(uint256,uint256)._amount (subDefyMaster.
    ↪ sol#952) is not in mixedCase
Parameter SubDefyMaster.withdraw(uint256,uint256)._pid (subDefyMaster.
    ↪ sol#999) is not in mixedCase
Parameter SubDefyMaster.withdraw(uint256,uint256)._amount (subDefyMaster
    ↪ .sol#999) is not in mixedCase
Parameter SubDefyMaster.emergencyWithdraw(uint256)._pid (subDefyMaster.
    ↪ sol#1026) is not in mixedCase
Parameter SubDefyMaster.safeDefyTransfer(address,uint256)._to (
    ↪ subDefyMaster.sol#1037) is not in mixedCase
Parameter SubDefyMaster.safeDefyTransfer(address,uint256)._amount (
    ↪ subDefyMaster.sol#1037) is not in mixedCase
Parameter SubDefyMaster.dev(address)._devaddr (subDefyMaster.sol#1055)
    ↪ is not in mixedCase
```

```
Variable SubDefyMaster.BONUS_MULTIPLIER (subDefyMaster.sol#690) is not
    ↪ in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (subDefyMaster.sol#11)" inContext (
    ↪ subDefyMaster.sol#5-14)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (subDefyMaster.sol#625-628)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (subDefyMaster.sol#634-641)
setFeeAddress(address) should be declared external:
        - SubDefyMaster.setFeeAddress(address) (subDefyMaster.sol
            ↪ #736-741)
getUserInfo(uint256,address) should be declared external:
        - SubDefyMaster.getUserInfo(uint256,address) (subDefyMaster.sol
            ↪ #743-758)
updateReward(uint256,uint256) should be declared external:
        - SubDefyMaster.updateReward(uint256,uint256) (subDefyMaster.sol
            ↪ #760-768)
setStartTimestamp(uint256) should be declared external:
        - SubDefyMaster.setStartTimestamp(uint256) (subDefyMaster.sol
            ↪ #770-773)
updateMultiplier(uint256) should be declared external:
        - SubDefyMaster.updateMultiplier(uint256) (subDefyMaster.sol
            ↪ #775-778)
updateTaxRatio(uint256) should be declared external:
        - SubDefyMaster.updateTaxRatio(uint256) (subDefyMaster.sol
            ↪ #782-785)
add(uint256,uint256,uint256,IERC20,uint256,bool) should be declared
    ↪ external:
        - SubDefyMaster.add(uint256,uint256,uint256,IERC20,uint256,bool)
            ↪ (subDefyMaster.sol#793-832)
set(uint256,uint256,uint256,uint256,uint256,bool) should be declared
    ↪ external:
        - SubDefyMaster.set(uint256,uint256,uint256,uint256,uint256,bool)
            ↪  (subDefyMaster.sol#835-865)
deposit(uint256,uint256) should be declared external:
        - SubDefyMaster.deposit(uint256,uint256) (subDefyMaster.sol
            ↪ #952-996)
withdraw(uint256,uint256) should be declared external:
        - SubDefyMaster.withdraw(uint256,uint256) (subDefyMaster.sol
            ↪ #999-1023)
emergencyWithdraw(uint256) should be declared external:
        - SubDefyMaster.emergencyWithdraw(uint256) (subDefyMaster.sol
            ↪ #1026-1034)
withdrawRemainder() should be declared external:
        - SubDefyMaster.withdrawRemainder() (subDefyMaster.sol#1046-1052)
dev(address) should be declared external:
        - SubDefyMaster.dev(address) (subDefyMaster.sol#1055-1058)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
subDefyMaster.sol analyzed (7 contracts with 78 detectors), 94 result(s)
    ↪  found

Compilation warnings/errors on zapper.sol:
Warning: Contract code size exceeds 24576 bytes (a limit introduced in
    ↪ Spurious Dragon). This contract may not be deployable on mainnet.
    ↪  Consider enabling the optimizer (with a low "runs" value!),
    ↪ turning off revert strings, or using libraries.
    --> zapper.sol:1401:1:
     |
1401 | contract Zap is
     | ^ (Relevant source part starts here and spans across multiple
         ↪ lines).
```

```
Zap.zapInToken(address,uint256,address,address,address) (zapper.sol
    ↪ #1426-1455) ignores return value by IERC20(_from).transferFrom(
    ↪ msg.sender,address(this),amount) (zapper.sol#1437)
Zap.withdraw(address) (zapper.sol#2123-2130) ignores return value by
    ↪ IERC20(token).transfer(owner(),IERC20(token).balanceOf(address(
    ↪ this))) (zapper.sol#2129)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #unchecked-transfer

Zap.zapAcross(address,uint256,address,address) (zapper.sol#1543-1570)
    ↪ ignores return value by IUniswapV2Router01(_toRouter).
    ↪ addLiquidity(pair.token0(),pair.token1(),amt0,amt1,0,0,_recipient
    ↪ ,block.timestamp) (zapper.sol#1560-1569)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #unused-return

Zap.constructor(address)._WNATIVE (zapper.sol#1417) lacks a zero-check
    ↪ on :
              - WNATIVE = _WNATIVE (zapper.sol#1419)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #missing-zero-address-validation

Address.isContract(address) (zapper.sol#576-587) uses assembly
        - INLINE ASM (zapper.sol#583-585)
Address._verifyCallResult(bool,bytes,string) (zapper.sol#781-802) uses
    ↪ assembly
        - INLINE ASM (zapper.sol#794-797)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #assembly-usage

Different versions of Solidity are used:
        - Version used: ['0.8.4', '^0.8.0']
        - 0.8.4 (zapper.sol#3)
        - ^0.8.0 (zapper.sol#1240)
        - ^0.8.0 (zapper.sol#1265)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
   ↪ #different-pragma-directives-are-used

Address.functionCall(address,bytes) (zapper.sol#637-642) is never used
   ↪ and should be removed
Address.functionCallWithValue(address,bytes,uint256) (zapper.sol
   ↪ #669-681) is never used and should be removed
Address.functionDelegateCall(address,bytes) (zapper.sol#751-761) is
   ↪ never used and should be removed
Address.functionDelegateCall(address,bytes,string) (zapper.sol#769-779)
   ↪ is never used and should be removed
Address.functionStaticCall(address,bytes) (zapper.sol#714-725) is never
   ↪ used and should be removed
Address.functionStaticCall(address,bytes,string) (zapper.sol#733-743) is
   ↪  never used and should be removed
Address.sendValue(address,uint256) (zapper.sol#605-617) is never used
   ↪ and should be removed
Context._msgData() (zapper.sol#1257-1260) is never used and should be
   ↪ removed
SafeERC20.safeDecreaseAllowance(IERC20,address,uint256) (zapper.sol
   ↪ #1189-1210) is never used and should be removed
SafeERC20.safeIncreaseAllowance(IERC20,address,uint256) (zapper.sol
   ↪ #1173-1187) is never used and should be removed
SafeMath.div(uint256,uint256,string) (zapper.sol#1016-1025) is never
   ↪ used and should be removed
SafeMath.mod(uint256,uint256) (zapper.sol#972-974) is never used and
   ↪ should be removed
SafeMath.mod(uint256,uint256,string) (zapper.sol#1042-1051) is never
   ↪ used and should be removed
```

```
SafeMath.mul(uint256,uint256) (zapper.sol#942-944) is never used and
    ↪ should be removed
SafeMath.sub(uint256,uint256,string) (zapper.sol#989-998) is never used
    ↪ and should be removed
SafeMath.tryAdd(uint256,uint256) (zapper.sol#823-833) is never used and
    ↪ should be removed
SafeMath.tryDiv(uint256,uint256) (zapper.sol#877-886) is never used and
    ↪ should be removed
SafeMath.tryMod(uint256,uint256) (zapper.sol#893-902) is never used and
    ↪ should be removed
SafeMath.tryMul(uint256,uint256) (zapper.sol#856-870) is never used and
    ↪ should be removed
SafeMath.trySub(uint256,uint256) (zapper.sol#840-849) is never used and
    ↪ should be removed
TransferHelper.safeApprove(address,address,uint256) (zapper.sol
    ↪ #1058-1071) is never used and should be removed
TransferHelper.safeTransfer(address,address,uint256) (zapper.sol
    ↪ #1073-1086) is never used and should be removed
TransferHelper.safeTransferFrom(address,address,address,uint256) (zapper
    ↪ .sol#1088-1102) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #dead-code

Pragma version^0.8.0 (zapper.sol#1240) allows old versions
Pragma version^0.8.0 (zapper.sol#1265) allows old versions
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #incorrect-versions-of-solidity

Low level call in Address.sendValue(address,uint256) (zapper.sol
    ↪ #605-617):
        - (success) = recipient.call{value: amount}() (zapper.sol#612)
Low level call in Address.functionCallWithValue(address,bytes,uint256,
    ↪ string) (zapper.sol#689-706):
        - (success,returndata) = target.call{value: value}(data) (zapper.
            ↪ sol#702-704)
Low level call in Address.functionStaticCall(address,bytes,string) (
    ↪ zapper.sol#733-743):
        - (success,returndata) = target.staticcall(data) (zapper.sol#741)
Low level call in Address.functionDelegateCall(address,bytes,string) (
    ↪ zapper.sol#769-779):
        - (success,returndata) = target.delegatecall(data) (zapper.sol
            ↪ #777)
Low level call in TransferHelper.safeApprove(address,address,uint256) (
    ↪ zapper.sol#1058-1071):
        - (success,data) = token.call(abi.encodeWithSelector(0x095ea7b3,
            ↪ to,value)) (zapper.sol#1064-1066)
Low level call in TransferHelper.safeTransfer(address,address,uint256) (
    ↪ zapper.sol#1073-1086):
        - (success,data) = token.call(abi.encodeWithSelector(0xa9059cbb,
            ↪ to,value)) (zapper.sol#1079-1081)
Low level call in TransferHelper.safeTransferFrom(address,address,
    ↪ address,uint256) (zapper.sol#1088-1102):
        - (success,data) = token.call(abi.encodeWithSelector(0x23b872dd,
            ↪ from,to,value)) (zapper.sol#1095-1097)
Low level call in TransferHelper.safeTransferETH(address,uint256) (
    ↪ zapper.sol#1104-1107):
        - (success) = to.call{value: value}(new bytes(0)) (zapper.sol
            ↪ #1105)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #low-level-calls

Function IHyperswapRouter01.WFTM() (zapper.sol#10) is not in mixedCase
Function IUniswapV2Pair.DOMAIN_SEPARATOR() (zapper.sol#201) is not in
    ↪ mixedCase
Function IUniswapV2Pair.PERMIT_TYPEHASH() (zapper.sol#203) is not in
    ↪ mixedCase
```

```
Function IUniswapV2Pair.MINIMUM_LIQUIDITY() (zapper.sol#234) is not in
    ↪ mixedCase
Function IUniswapV2Router01.WETH() (zapper.sol#282) is not in mixedCase
Parameter Zap.zapInToken(address,uint256,address,address,address)._from
    ↪ (zapper.sol#1427) is not in mixedCase
Parameter Zap.zapInToken(address,uint256,address,address,address)._to (
    ↪ zapper.sol#1429) is not in mixedCase
Parameter Zap.zapInToken(address,uint256,address,address,address).
    ↪ _recipient (zapper.sol#1431) is not in mixedCase
Parameter Zap.estimateZapInToken(address,address,address,uint256)._from
    ↪ (zapper.sol#1458) is not in mixedCase
Parameter Zap.estimateZapInToken(address,address,address,uint256)._to (
    ↪ zapper.sol#1459) is not in mixedCase
Parameter Zap.estimateZapInToken(address,address,address,uint256).
    ↪ _router (zapper.sol#1460) is not in mixedCase
Parameter Zap.estimateZapInToken(address,address,address,uint256)._amt (
    ↪ zapper.sol#1461) is not in mixedCase
Parameter Zap.zapIn(address,address,address)._to (zapper.sol#1534) is
    ↪ not in mixedCase
Parameter Zap.zapIn(address,address,address)._recipient (zapper.sol
    ↪ #1536) is not in mixedCase
Parameter Zap.zapAcross(address,uint256,address,address)._from (zapper.
    ↪ sol#1544) is not in mixedCase
Parameter Zap.zapAcross(address,uint256,address,address)._toRouter (
    ↪ zapper.sol#1546) is not in mixedCase
Parameter Zap.zapAcross(address,uint256,address,address)._recipient (
    ↪ zapper.sol#1547) is not in mixedCase
Parameter Zap.zapOut(address,uint256,address,address)._from (zapper.sol
    ↪ #1573) is not in mixedCase
Parameter Zap.zapOut(address,uint256,address,address)._recipient (zapper
    ↪ .sol#1576) is not in mixedCase
Parameter Zap.zapOutToken(address,uint256,address,address,address)._from
    ↪  (zapper.sol#1627) is not in mixedCase
```

```
Parameter Zap.zapOutToken(address,uint256,address,address,address)._to (
    ↪ zapper.sol#1629) is not in mixedCase
Parameter Zap.zapOutToken(address,uint256,address,address,address).
    ↪ _recipient (zapper.sol#1631) is not in mixedCase
Parameter Zap.swapToken(address,uint256,address,address,address)._from (
    ↪ zapper.sol#1662) is not in mixedCase
Parameter Zap.swapToken(address,uint256,address,address,address)._to (
    ↪ zapper.sol#1664) is not in mixedCase
Parameter Zap.swapToken(address,uint256,address,address,address).
    ↪ _recipient (zapper.sol#1666) is not in mixedCase
Parameter Zap.swapToNative(address,uint256,address,address)._from (
    ↪ zapper.sol#1674) is not in mixedCase
Parameter Zap.swapToNative(address,uint256,address,address)._recipient (
    ↪ zapper.sol#1677) is not in mixedCase
Variable Zap.WNATIVE (zapper.sol#1410) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #conformance-to-solidity-naming-conventions

Redundant expression "this (zapper.sol#1258)" inContext (zapper.sol
    ↪ #1252-1261)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #redundant-statements

Variable IHyperswapRouter01.addLiquidity(address,address,uint256,uint256
    ↪ ,uint256,uint256,address,uint256).amountADesired (zapper.sol#15)
    ↪ is too similar to IHyperswapRouter01.addLiquidity(address,address
    ↪ ,uint256,uint256,uint256,uint256,address,uint256).amountBDesired
    ↪ (zapper.sol#16)
Variable IUniswapV2Router01.addLiquidity(address,address,uint256,uint256
    ↪ ,uint256,uint256,address,uint256).amountADesired (zapper.sol#287)
    ↪  is too similar to IUniswapV2Router01.addLiquidity(address,
    ↪ address,uint256,uint256,uint256,uint256,address,uint256).
    ↪ amountBDesired (zapper.sol#288)
```

```
Variable Zap._swapNativeToEqualTokensAndProvide(address,address,uint256,
    ↪ address,address).token0Amount (zapper.sol#1837-1842) is too
    ↪ similar to Zap._swapNativeToEqualTokensAndProvide(address,address
    ↪ ,uint256,address,address).token1Amount (zapper.sol#1843-1848)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #variable-names-are-too-similar

renounceOwnership() should be declared external:
        - Ownable.renounceOwnership() (zapper.sol#1318-1321)
transferOwnership(address) should be declared external:
        - Ownable.transferOwnership(address) (zapper.sol#1327-1334)
estimateZapInToken(address,address,address,uint256) should be declared
    ↪ external:
        - Zap.estimateZapInToken(address,address,address,uint256) (zapper
            ↪ .sol#1457-1531)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation
    ↪ #public-function-that-could-be-declared-external
zapper.sol analyzed (13 contracts with 78 detectors), 75 result(s) found
```

Conclusion:

Most of the vulnerabilities found by the analysis have already been addressed by the smart contract code review.

5 Conclusion

In this audit, we examined the design and implementation of DefySwap contract and discovered several issues of varying severity. DefySwap team addressed 18 issues raised in the initial report and implemented the necessary fixes, while classifying the rest as a risk with low-probability of occurrence. Shellboxes' auditors advised DefySwap Team to maintain a high level of vigilance and to keep those findings in mind in order to avoid any future complications.

SHELLBOXES

For a Contract Audit, contact us at contact@shellboxes.com