

Fortuva

smart contracts final audit report

July 2025



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Contents

1. Disclaimer	3
2. Overview	4
3. Project centralization risks	8
4. Found issues	9
5. Contracts	11
6. Conclusion	23
Appendix A. Issues' severity classification	24
Appendix B. Issue status description	25
Appendix C. Centralization risks classification	26

1. Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the disclaimer below - please make sure to read it in full.

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2. Overview

HashEx was commissioned by the **Fortuva** team to perform an audit of their smart contract. The audit was conducted between **2025-07-08** and **2025-07-30**.

The purpose of this audit was to achieve the following:

- Identify potential security issues with smart contracts
- Formally check the logic behind given smart contracts.

Information in this report should be used for understanding the risk exposure of smart contracts, and as a guide to improving the security posture of smart contracts by remediating the issues that were identified.

The code was provided in a zip file.

SHA256 hashes of audited files:

d73910ac13e133c1c940b6858113b85880e694aa3851057d652f39f105bbacb0 lib.rs,

46cfc1d48074a670014b6b4adedcecad96d8778a259141f90fb711d7680971df instructions/
cancel_bet.rs,

b0976a5bc05e9eabcf31ca6ca61ba771c1144cebd10e32e5e60a1120475aece1 instructions/
claim_payout.rs,

e9c30e1e7f6361b59a4b3456e21f666daa03793a40ddfb2cfc4c48c931ec4ee5 instructions/
close_round.rs,

79916e36bfffef2c947df5d9a47269a57a88b57a2916e9fbd68fb1de105deb247 instructions/
end_start_round.rs,

2444f3c290fd22aa7bb290dc46a4b6d8f0e09c5410b3e923a58de6065156915a instructions/init.rs,

ff81f735d3860f7334b9591412d10a17d5e24dee49496be1fd8cb1512c97641f instructions/

lock_round.rs,

f3aa60a48011017e0538f603b5ac53f2848ea62619823cc4c59f7a287858573e instructions/

place_bet.rs,

e002bdc86babd81231791d177ea0cc9c6f631a032d85cf9874bc62cc78718938 instructions/

start_genesis.rs,

f3028e24f6764d1e21b066a248cd698f909564b428ac0f50b5a42c93af8a539e instructions/

update_config.rs,

9c73726f9c2d5501ae980cc2b0569c04e6aae91a7a30cd952cbb7b154b6f86bb instructions/

update_multisig.rs,

e81c6f28b23d060af25fd9e7694169acd9caf2308d6a524013aa8972610fcbc1 instructions/

withdraw_treasury.rs,

a1acd14052dfec69e55f13d3cefabb820ba25b275497a37d64928f842aaf26bc instructions/mod.rs,

e364c511fd0a2b31c4ddadf9f8a960737aaba6a8bf9a3cb6a98f32c45175ebb events/mod.rs,

6734bed38b7ca79eb2b87ba9532ea5e6e6b1148c8c9b3adca58060caa2fe52f9 errors/mod.rs,

7882e6493522e79b893b9360e772587dfd5bf596a133b075f282cf6060c8142 state/mod.rs,

d6e4743248675b1ba895423739798ac0728f253021306f1a519aaa7184ef909b state/config.rs,

2fbd6a580f063d1f6335deccbdb43713d597319a98bfc6fefe5280bcc29251f7 state/round.rs,

1d5db40bf69b78514052ab18836aa306ac31b88cf7e0e59142d30236558e29bb state/user_bet.rs.

SHA256 hashes of updated files:

6f6b4b2e0e0c135ad64d39230bceeb0d3f34b68e4ab0e7a793290a7999119feb lib.rs,

405297b9affe39a9144df1466d8c1334360d278aa914916afa7ec653d8f78695 instructions/

cancel_bet.rs,

ca61706a583b658d62de05ac96f9a251e6b3c9791553c62e37a0bcfa32ee9f9f instructions/

claim_payout.rs,

c5faf198cdd2928bc813400e1fbbd935659cfb486065b60cce9c5d6da679a049 instructions/

close_round.rs,

ef4148e42ef72a68370afcfe37c34489412b8eedbbb24c63d03fd8ebb3d02f80 instructions/

end_start_round.rs,

9c76aeb9f981f157f5eda386e5888c1a7aa3a527b32863af9f7402d54e85cac4 instructions/init.rs,

13badfb5bc33d0ac015680ec7b17578d87c4ef398d36da4ebe7be0e472c5959f instructions/

lock_round.rs,

dbbb5d6e66ae08e7aa35013f8843bb0228a7aa0e54b1e22b3ad5cd42d3e97f9b instructions/

place_bet.rs,

673c37294886fdd24f83d70fbf3db458b1b1e4f6ab466f047c43a20ea31ddf2a instructions/

start_genesis.rs,

81a295c13759437b49df31df8f4eea3e5ad6e239365870091dd7b22e92c24156 instructions/

update_config.rs,

5617d7b6457079f4f8c493e0ee9be332697918c4a11d5d649d882671472305b6 instructions/

update_multisig.rs,

1f006b1f7c98d269803c3ab5b2e3a24933ca4f61ee50c4efbac3ee812d1c9982 instructions/

withdraw_treasury.rs,

a1acd14052dfec69e55f13d3cefabb820ba25b275497a37d64928f842aaf26bc instructions/mod.rs,

048cb3f72d424884aa94ccea524b83d17ea33bfb7a2648df774783a5255fb0d events/mod.rs,

a5aab80be6cff2519337a24d2e988bb672351a0f51aa85b1e468fa745e356867 errors/mod.rs,
7882e6493522e79b893b9360e772587dfd5bf596a133b075f282cfd6060c8142 state/mod.rs,
77cdfc607453942fc7d8e8c7ffe5662bfbf11b679e4b52fee376658b25e5d71f state/config.rs,
46e4aeb8822d15829b5f2c2b8b2533bc77f067c7480a833460bad4febfa66a8c state/round.rs,
1d5db40bf69b78514052ab18836aa306ac31b88cf7e0e59142d30236558e29bb state/user_bet.rs.

2.1 Summary

Project name	Fortuva
URL	https://app.fortuva.xyz
Platform	Solana
Language	Rust
Centralization level	● High
Centralization risk	● Medium

2.2 Contracts

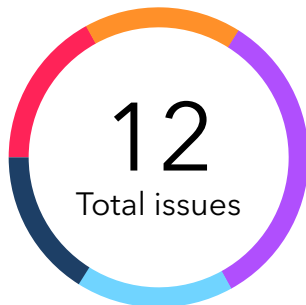
Name	Address
lib.rs	

3. Project centralization risks

The owner can update configuration to set up executor account, fee percent, pause state, round parameters. The time-related parameters may be misconfigured to prevent any round from successful finalization, meaning that all rounds may ended cancelled until the owner fixes the config parameters **round_duration**, **lock_duration**, **buffer_seconds**.

The executor can abstain from finalizing prediction rounds. The executor can manipulate prediction result within the buffer period from configuration.







4. Found issues



● Critical	2 (17%)
● High	2 (17%)
● Medium	4 (33%)
● Low	2 (17%)
● Info	2 (16%)

Cc3. lib.rs

ID	Severity	Title	Status
Cc3l7c	● Critical	Single signer can bypass multisig threshold	✓ Resolved
Cc3l7d	● Critical	Lack of address checks in update multisig instruction	✓ Resolved
Cc3l78	● High	Mutisig account resizing	✓ Resolved
Cc3l7b	● High	Incorrect oracle price calculation	✓ Resolved
Cc3l82	● Medium	Executor can influence results	🔄 Partially fixed
Cc3l7a	● Medium	Logic error may prevent round closure	✓ Resolved
Cc3l81	● Medium	Allowed bets for future round	✓ Resolved
Cc3l79	● Medium	cancel_bet instruction does not update treasury.amount	✓ Resolved
Cc3l7e	● Low	Unused config account in claim payout instruction	✓ Resolved

Cc3l83	 Low	Duplicated code	 Resolved
Cc3l7f	 Info	Naming inconsistency	 Resolved
Cc3l80	 Info	Pause state is ignored for claiming	 Acknowledged

5. Contracts

Cc3. lib.rs

Overview

The program implements a binary options prediction market with the following key actors and lifecycle:

- Admin: A multisig-controlled authority responsible for initializing the contract, updating critical operator configurations, and withdrawing treasury profits.
- Operator: A multisig-controlled authority for configuration changes (e.g., fees, durations).
- Executor: A designated hot-wallet/bot responsible for automating round transitions. It locks rounds, ends previous rounds, and starts new ones based on time and Pyth oracle data.
- User: An end-user who can place bets on "Bull" (price up) or "Bear" (price down) outcomes and claim rewards if they win.

Round Lifecycle:

1. initialize: The contract is set up by the admin.
2. start_genesis_round: The executor starts the first round.
3. place_bet: Users bet on the currently active round before its lock_time.
4. lock_round / end_and_start_round: At the scheduled time, the executor fetches a price from Pyth to: Lock the current round's price. Settle the previous round (determine winner, calculate rewards). Start the next round.
5. claim_payout: Winning users claim their share of the prize pool from the settled round.
6. close_round: Once all winners from a round have claimed, the executor can close the round's account to reclaim its rent.

Issues

Cc3l7c Single signer can bypass multisig threshold

● Critical✓ Resolved

The `verify_multisig()` helper instruction, used by all administrative instructions (`update_config`, `withdraw_treasury`, `update_multisig`), contains a critical flaw in its signature verification logic. It iterates through the `remaining_accounts` provided in a transaction and increments a counter for each valid signature. However, it fails to check for duplicate signers.

This allows a single malicious signer, who is part of the multisig set, to bypass the required threshold by including their own public key multiple times in the transaction's `remaining_accounts`. This completely undermines the security of the multisig, allowing one malicious actor to unilaterally execute protected administrative functions.

```
fn verify_multisig<'info>(multisig: &Multisig, signers: &[AccountInfo<'info>]) ->
Result<()> {
    let mut valid_signatures = 0;

    for signer in signers.iter() {
        if signer.is_signer && multisig.signers.contains(signer.key) {
            valid_signatures += 1;
        }
    }

    require!(
        valid_signatures >= multisig.threshold,
        PoolErrorCode::NotEnoughSignatures
    );

    Ok(())
}
```

Recommendation

The `verify_multisig()` instruction must be modified to ensure that each unique signer is only counted once.

Cc3l7d Lack of address checks in update multisig instruction

● Critical

✓ Resolved

The `update_multisig()` instruction allows the `admin_multisig` to change the signers and threshold of the `operator_multisig`. However, the instruction's context `UpdateMultisig` does not enforce any relationship between the provided `config`, `operator_multisig`, and `admin_multisig` accounts.

```
#[derive(Accounts)]
pub struct UpdateMultisig<'info> {
    #[account()]
    pub config: Account<'info, Config>,
    #[account(mut)]
    pub operator_multisig: Account<'info, Multisig>,
    #[account(mut)]
    pub admin_multisig: Account<'info, Multisig>,
}
```

An attacker can create a transaction that passes a legitimate `operator_multisig` account but provides fake, attacker-controlled `config` and `admin_multisig` accounts. Because the function only checks that the public key of the fake `admin_multisig` matches a field in the fake config, and that the `operator_multisig` key matches another field, all checks pass. The attacker can then use their own fake `admin_multisig` (for which they have all the "required" signatures) to take control of the real `operator_multisig` account.

```
pub fn update_opmultisig(
    ctx: Context<UpdateMultisig>,
    new_signers: Vec<Pubkey>,
    new_threshold: u8,
) -> Result<()> {
```

```

    let config = &mut ctx.accounts.config; //@note Do I need config here? Is mutability
    required?
    let op_multisig = &mut ctx.accounts.operator_multisig;
    let ad_multisig = &mut ctx.accounts.admin_multisig;

    require!(config.operator_multisig == op_multisig .key(),
    PoolErrorCode::InvalidMultisig);
    require!(config.admin_multisig == ad_multisig.key(), PoolErrorCode::InvalidMultisig);
    ...
}

```

Recommendation

Ensure that the address of the config PDA passed to the instruction is exactly the same as was initialized in the `initialize()` instruction.

Cc3I78 Mutisig account resizing

● High

✓ Resolved

The Initialize instruction allocates space for the `admin_multisig` and `operator_multisig` accounts based on the length of the signers list passed in the instruction arguments.

```

#[derive(Accounts)]
#[instruction(round_duration: u64, min_bet_amount: u64, treasury_fee: u64, lock_duration:
u64, buffer_seconds: u64, executor: Pubkey, signers: Vec<Pubkey>, threshold: u8)]
pub struct Initialize<'info> {
    #[account(
        init,
        payer = admin,
        space = 8 + size_of::<Config>(),
        seeds = [b"config"],
        bump
    )]
    pub config: Account<'info, Config>,
    #[account(
        init,
        payer = admin,
        space = 8 + size_of::<Treasury>(),
        seeds = [b"treasury"],
        bump
    )]
    pub treasury: Account<'info, Treasury>,
}

```

```

    ])
    pub treasury: Account<'info, Treasury>,
    #[account(
        init,
        payer = admin,
        space = 8 + 4 + signers.len() * 32 + 1 + 1,
        seeds = [b"adminmultisig"],
        bump
    ])
    pub admin_multisig: Account<'info, Multisig>,
    #[account(
        init,
        payer = admin,
        space = 8 + 4 + signers.len() * 32 + 1 + 1,
        seeds = [b"operatormultisig"],
        bump
    ])
    pub operator_multisig: Account<'info, Multisig>,
    #[account(mut)]
    pub admin: Signer<'info>,
    pub system_program: Program<'info, System>,
}

```

However, the `update_multisig()` function allows the admin to change signers of the operator multisig. If the size of the signers list is bigger than the initial signers number, this will lead to data corruption.

Recommendation

Allocate space for `MAX_SIGNERS` and check that the new list of signers is always less than the `MAX_SIGNERS`.

Cc3l7b Incorrect oracle price calculation

● High

✓ Resolved

Prediction results are inquired from the Pyth price feed and stored in the program data by calling either the `lock_round()` or `end_and_start_round()`, both available only for executor role. The Pyth price feed returns price in the exp notation.

The `lock_round()` instruction converts that float price to u64 number, potentially losing the

precision. In worst case the resulting price can be calculated as zero, breaking further safety checks.

The `end_and_start_round()` instruction includes fixed multiplier `1e8` without checking if the price exp is lower than 8.

Moreover, if the round is locked via the `lock_round()` instruction and then the `end_and_start_round()` is called, the stored price without multiplier is compared with the multiplied one, resulting in completely false outcome.

```
let price_update = &ctx.accounts.pyth_price;
let maximum_age: u64 = 30;
let feed_id: [u8; 32] = get_feed_id_from_hex(
    "0xef0d8b6fda2ceba41da15d4095d1da392a0d2f8ed0c6c7bc0f4cfac8c280b56d"
)?;
let price = price_update.get_price_no_older_than(&Clock::get()?, maximum_age,
&feed_id)?;

let current_price = if price.exponent >= 0 {
    (price.price as u64)
        .checked_mul((10u64).pow(price.exponent as u32))
        .ok_or(PoolErrorCode::MathOverflow)?
} else {
    (price.price as u64)
        .checked_div((10u64).pow(price.exponent.abs() as u32))
        .ok_or(PoolErrorCode::MathOverflow)?
};

round.lock_price = current_price;
emit!(RoundLockedEvent {
    round_number: round.number,
    price: current_price,
    timestamp: now,
});
```


Recommendation

Use the same multiplier for both instructions. Include safety checks comparing multiplier with price exp.

Cc3l82 Executor can influence results

● Medium

🔗 Partially fixed

The executor account is responsible for locking the round price with `lock_round()` and for advancing the rounds with `end_and_start_round()`. The problem is although the round's lock time and close time are determined, the executor can call the program at any moment after that stored round deadlines. The prices are locked not for the round deadline timestamps but for the transaction timestamp, so the executor can postpone his calls to increase the chance of desired result.

```
pub fn end_and_start_round(ctx: Context<EndAndStartRound>) -> Result<()> {
    let config = &mut ctx.accounts.config;
    let previous_round = &mut ctx.accounts.previous_round;
    let current_round = &mut ctx.accounts.current_round;
    let new_round = &mut ctx.accounts.new_round;
    let treasury = &mut ctx.accounts.treasury;

    require!(ctx.accounts.executor.key() == config.executor,
PoolErrorCode::UnauthorizedExecutor);
    require!(!config.is_paused, PoolErrorCode::ContractPaused);
    require!(config.current_round > 0, PoolErrorCode::GenesisRoundNotStarted);
    require!(config.genesis_locked, PoolErrorCode::GenesisRoundNotLocked);
    require!(current_round.is_active, PoolErrorCode::RoundNotActive);
    let now = Clock::get()?.unix_timestamp;
    require!(now >= previous_round.close_time, PoolErrorCode::RoundNotClosed);
    require!(previous_round.lock_price != 0, PoolErrorCode::RoundNotLocked);

    let price_update = &ctx.accounts.pyth_price;
    let maximum_age: u64 = 30;
    let feed_id: [u8; 32] = get_feed_id_from_hex(
        "0xef0d8b6fda2ceba41da15d4095d1da392a0d2f8ed0c6c7bc0f4cfac8c280b56d"
    );
    let price = price_update.get_price_no_older_than(&Clock::get()?, maximum_age,
&feed_id?);
```

```
...  
}
```

Recommendation

Consider getting the price for the stored round deadline instead of transaction timestamp.

Update

A buffer has been implemented, during which the executor must set the **lock_price** or **close_price** of the round. Consequently, the executor can now only wait for a desired price within this buffer period. In a configuration where the buffer time is significantly shorter than the round's duration, this substantially limits the executor's ability to manipulate the outcome of the round.

Severity of the issue was reduced from high to medium one.

Cc3l7a Logic error may prevent round closure

● Medium

✓ Resolved

The **close_round()** instruction is used to close round's account after all winners have claimed their rewards. It checks if number of claimed users is equal to the number of winners.

However, there is copy-paste error in the logic: when end price is less than the lock price, it incorrectly checks **round.total_bull_count** instead of **round.total_bear_count**.

```
pub fn close_round(ctx: Context<CloseRound>) -> Result<()> {  
    ...  
  
    if round.end_price > round.lock_price {  
        require!(round.total_bull_count == round.claimed_count,  
PoolErrorCode::RoundNotClosed);  
    }  
    else if round.end_price < round.lock_price {  
        require!(round.total_bull_count == round.claimed_count,  
PoolErrorCode::RoundNotClosed);  
    }  
  
    ...  
}
```

}

Cc3l81 Allowed bets for future round

● Medium

✔ Resolved

Users are allowed to call the `place_bet()` function with the round number equal to the current round store in the config or the `current+1`. The problem is the start of the next round is not predefined at the moment of placing such bet. Round switching is controlled by the executor role and the only constraint is that the next round can't precede the `close_time` of the previous one.

```
pub fn place_bet(
    ctx: Context<PlaceBet>,
    amount: u64,
    predict_bull: bool,
    round_number: u64,
) -> Result<()> {
    let config = &ctx.accounts.config;
    let round = &mut ctx.accounts.round;
    let user_bet = &mut ctx.accounts.user_bet;
    let treasury = &mut ctx.accounts.treasury;

    require(!(config.is_paused, PoolErrorCode::ContractPaused);
    require!(round.is_active, PoolErrorCode::RoundNotActive);
    let now = Clock::get()?.unix_timestamp;

    require!(
        round.number == config.current_round || round.number == config.current_round + 1,
        PoolErrorCode::InvalidRound
    );
    require!(round.number == round_number, PoolErrorCode::InvalidRound);
    require!(round.lock_price == 0, PoolErrorCode::RoundLocked);
    require!(now < round.lock_time, PoolErrorCode::RoundLocked);
    require!(amount >= config.min_bet_amount, PoolErrorCode::BetBelowMinimum);
    require!(user_bet.amount == 0, PoolErrorCode::AlreadyBetInRound);
    ...
}
```

Recommendation

Provide sufficient information to users about possibility of freezing bets or remove bets for the next round.

Cc3I79 **cancel_bet** instruction does not update **treasury.amount**

● Medium

✓ Resolved

The program maintains the treasury balance in two places:

1. The actual lamports held by the treasury PDA.
2. An internal counter **treasury.amount** within the treasury account's data.

Most functions like **place_bet()** and **withdraw_treasury()** correctly update both. However, the **cancel_bet()** function fails to do so. It transfers lamports from the treasury PDA back to the user but does not decrement the **treasury.amount** field.

```
pub fn cancel_bet(ctx: Context<CancelBet>, round_number: u64) -> Result<()> {
    let config = &ctx.accounts.config;
    let round = &mut ctx.accounts.round;
    let user_bet = &ctx.accounts.user_bet;
    let treasury = &mut ctx.accounts.treasury;

    require!(config.is_paused, PoolErrorCode::ContractNotPaused);
    require!(round.number == round_number, PoolErrorCode::InvalidRound);
    require!(
        user_bet.round_number == round_number,
        PoolErrorCode::InvalidRound
    );
    require!(!user_bet.claimed, PoolErrorCode::AlreadyClaimed);

    require!(treasury.amount >= user_bet.amount,
        PoolErrorCode::InsufficientTreasuryFunds);

    let amount = user_bet.amount;
    **treasury.to_account_info().try_borrow_mut_lamports()? -= amount;
    **ctx
        .accounts
```

```
.user
.to_account_info()
.try_borrow_mut_lamports()? += amount;

if user_bet.predict_bull {
    round.total_bull_amount = round
        .total_bull_amount
        .checked_sub(amount)
        .ok_or(PoolErrorCode::MathOverflow)?;
    round.total_bull_count = round
        .total_bull_count
        .checked_sub(1)
        .ok_or(PoolErrorCode::MathOverflow)?;
} else {
    round.total_bear_amount = round
        .total_bear_amount
        .checked_sub(amount)
        .ok_or(PoolErrorCode::MathOverflow)?;
    round.total_bear_count = round
        .total_bear_count
        .checked_sub(1)
        .ok_or(PoolErrorCode::MathOverflow)?;
}

ctx.accounts.user_bet.close(ctx.accounts.user.to_account_info()?);

emit!(BetCanceled {
    user: ctx.accounts.user.key(),
    round_number,
    amount,
    timestamp: Clock::get()?.unix_timestamp,
});
Ok(())
}
```

Recommendation

Update treasury amount in the `cancel_bet()` instruction or remove tracking treasury amount at all.

Cc3l7e Unused config account in claim payout instruction ● Low ✓ Resolved

The config account is passed to the `claim_payout()` instruction, but is never read or used. We recommend removing the unused account.

Cc3l83 Duplicated code ● Low ✓ Resolved

The `end_and_start_round()` function contains second safety check for round's state.

```
require!(current_round.is_active, PoolErrorCode::RoundNotActive);
```

Cc3l7f Naming inconsistency ● Info ✓ Resolved

The block in lib.rs exposes a function named `update_multisig()`, but the implementation in the `update_multisig.rs` uses `update_opmultisig()`.

Cc3l80 Pause state is ignored for claiming ● Info ✓ Acknowledged

The program contains pausing option in its config, which is checked for the most of functions. However, the `claim_payout()` function allows claiming even in the paused state.

6. Conclusion

2 critical, 2 high, 4 medium, 2 low severity issues were found during the audit. 2 critical, 2 high, 3 medium, 2 low issues were resolved in the update. The reviewed contracts are highly dependent on the owner's account. See the centralization risks chapter. This audit includes recommendations on code improvement and the prevention of potential attacks.

Appendix A. Issues' severity classification

- **Critical.** Issues that may cause an unlimited loss of funds or entirely break the contract workflow. Malicious code (including malicious modification of libraries) is also treated as a critical severity issue. These issues must be fixed before deployments or fixed in already running projects as soon as possible.
- **High.** Issues that may lead to a limited loss of funds, break interaction with users, or other contracts under specific conditions. Also, issues in a smart contract, that allow a privileged account the ability to steal or block other users' funds.
- **Medium.** Issues that do not lead to a loss of funds directly, but break the contract logic. May lead to failures in contracts operation.
- **Low.** Issues that are of a non-optimal code character, for instance, gas optimization tips, unused variables, errors in messages.
- **Informational.** Issues that do not impact the contract operation. Usually, informational severity issues are related to code best practices, e.g. style guide.

Appendix B. Issue status description

- ✔ **Resolved.** The issue has been completely fixed.
- 🔄 **Partially fixed.** Parts of the issue have been fixed but the issue is not completely resolved.
- 🕒 **Acknowledged.** The team has been notified of the issue, no action has been taken.
- ❓ **Open.** The issue remains unresolved.

Appendix C. Centralization risks classification

Centralization level

High. The project owners can manipulate user's funds, lock user's funds on their will (reversible or irreversible), or maliciously update contracts parameters or bytecode.

Medium. The project owners can modify contract's parameters to break some functions of the project contract or contracts, but user's funds remain withdrawable.

Low. The contract is trustless or its governance functions are safe against a malicious owner.

Centralization risk

High. Lost ownership over the project contract or contracts may result in user's losses. Contract's ownership belongs to EOA or EOAs, and their security model is unknown or out of scope.

Medium. Contract's ownership is transferred to a contract with not industry-accepted parameters, or to a contract without an audit. Also includes EOA with a documented security model, which is out of scope.

Low. Contract's ownership is transferred to a well-known or audited contract with industry-accepted parameters.

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