Gas Optimization Report: NFTY Finance

Audit Period:
- 2/5/23 - 2/19/23

Lead Auditor:
- Harrison Leggio

Contracts:
- INFTYFinanceV1.sol
- NFTYERC721V1.sol
- NFTYFinanceV1.sol

INFTYFinanceV1.sol
https://github.com/NFTYLabs/nftyfinance-monorepo/issues/214

nSLOC: 63

Findings: 2

1. Reduce integer sizes in Loan struct to pack data into fewer slots. Durations, timestamps, and IDs can use integer sizes smaller than 256. Combined with proper re-ordering of values this struct can be packed into 5 slots (down from 9 slots)
2. Reduce integer sizes in LoanConfig struct to pack data into fewer slots. Interest and durations can use integer sizes smaller than 256. This struct can be packed into 4 slots (down from 7 slots)

NFTYERC721V1.sol
https://github.com/NFTYLabs/nftyfinance-monorepo/issues/212

nSLOC: 57

Findings: 3

1. Replace OpenZeppelin's base ERC721 implementation with Solady's base ERC721 implementation.
2. Replace OpenZeppelin's Ownable implementation with Solady's Ownable implementation.
3. Replace all occurrences of require statements with descriptive Custom Errors that do not include string error messages.

GASLITE

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NFTYFinanceV1.sol
https://github.com/NFTYLabs/nftyfinance-monorepo/issues/216

nSLOC: 486

Findings: 12

1. Replace OpenZeppelin's Ownable implementation with Solady's Ownable implementation.
2. Replace all occurrences of require statements with descriptive Custom Errors that do not include string error messages.
3. Cache `lendingDeskIdCounter` as it's being read from storage multiple times in the same function. At the end of the function, set the storage value equal to the in memory copy.
4. Wrap counter increment in an unchecked block as it will never overflow.
5. Use calldata for array parameters that are not being mutated.
6. Remove = 0 in for loop definitions.
7. Wrap lending desk balance increment in an unchecked block.
8. Splitting chained revert checks into singular individual revert checks is cheaper. Put the most common reverts earlier to trigger a short circuit.
9. Enable the optimizer and set to a high value.
10. Enable compilation viaIR.
11. There are duplicate checks in `makeLoanPayment` and `getLoanAmount` which calculate `amountDue`.

NFTY Remediations:

All recommendations implemented.