**HIGH-FLYER Token Documentation**

[**1**](https://wisetoken.net/docs#sec-1)**Introduction**

**HIGH-FLYER Token**, hereinafter referred to as **Hi-Fly**, is an ERC-20 compliant smart contract designed for deployment on the Binance SmartChain. HI-FLYER is a decentralized, [**fairly launched**](https://wisetoken.net/docs#sec-2-2), [**automatically liquid**](https://wisetoken.net/docs#sec-2-3-1), **[trustlessly exchangeable](https://wisetoken.net/docs" \l "sec-2-3-1)**, [**interest-bearing**](https://wisetoken.net/docs#sec-2-3-5), [**bond-like**](https://wisetoken.net/docs#sec-1-1) token.

This document is a general technical specification of the HI-FLYER contract and its functionality.

[**1.1**](https://wisetoken.net/docs#sec-1-1)**HI-FLYER Token Purpose**

The core purpose of the HI-FLYER token — [**staking**](https://wisetoken.net/docs#sec-2-3-5) — is similar to both bonds and CDs (certificates of deposit): rewarding the holder with earned interest in exchange for locking up their funds for a period of time. HI-FLYER incorporates some of the features from both of these traditional instruments but improves greatly upon them.

**CDs** tend to be lower risk, lower return, and only pay out interest on their maturity date.

**Bonds** tend to be somewhat higher risk, higher return, and pay out interest regularly on a set schedule (typically every six months).

**HI-FLYER** is most similar to a bond, in that it earns relatively high interest, but allows users to withdraw it whenever they want.

**HI-FLYER is superior to bonds and CDs in every way:**

Hi HI-FLYER gives the staker complete flexibility in choosing exactly when to [**withdraw their interest**](https://wisetoken.net/docs#sec-2-3-5-3) during the life of the stake. You can withdraw interest daily, irregularly, wait until maturity, or whatever you like!

HI-FLYER stakes have higher return, much lower risk (due to being decentralized and trustless), and far higher flexibility than both bonds and CDs. No more trusting banks and governments to stay solvent and not change their rules. No more worrying that a bond issuer may default on you.

HI-FLYER is pure, immutable code.

[**1.2**](https://wisetoken.net/docs#sec-1-2)

The [**HI-FLYER contract source code is publicly viewable on GitHub**](https://github.com/wise-foundation) and was created by the same team that created Hi-Flyer Group [**A paid, professional audit of the HI-FLYER contract source code has been completed and included in this document**](https://wisetoken.net/docs#sec-7-3).

If you have any questions, or would like to discuss the project with the founders, developers, and the rest of the community, please join the official HI-FLYER Telegram group at **t.me/Hi-FlyerGroup**. We welcome all interested, respectful parties to our humble community.

[**1.3**](https://wisetoken.net/docs#sec-1-3)**Motivations and Principles**

Trusting your money in the custody of other humans is inherently risky. This glaring flaw in traditional financial instruments is a primary motivation for developing HI-FLYER. The HI-FLYER contract aims to ensure that a user can always be in full custody and control of their HI-FLYER tokens, even during the course of various economic activities.

The [**initial minting of HI-FLYER**](https://wisetoken.net/docs#sec-2-3-3), earning [**referral bonuses**](https://wisetoken.net/docs#sec-2-2-3), [**opening**](https://wisetoken.net/docs#sec-2-3-5-1) and [**closing stakes**](https://wisetoken.net/docs#sec-2-3-5-4), [**receiving interest**](https://wisetoken.net/docs#sec-2-3-5-4), and even [**selling HI-FLYER for BNB or other tokens**](https://wisetoken.net/docs#sec-2-3-1)  can all be done end-to-end without the user's HI-FLYER tokens ever being under the control of another person or system. Compare this to the world of banks you can('t) trust and traditional money managers that (don't) have your best interests at heart.

One very important aspect of owning cryptocurrencies is having a place to safely, easily, and quickly trade them when the need arises.

In exchange for and simultaneous to this liquidity pool deposit, Uniswap transfers to the HI-FLYER contract an appropriate amount of UNI liquidity tokens, which carry the sole power to later withdraw that liquidity pool. The HI-FLYER contract will automatically, immediately, and provably destroy these UNI tokens by transferring them to a known burn address. In doing so, the HI-FLYER contract ensures that this initial BNB/HI-FLYER liquidity pool cannot be withdrawn from Uniswap by any person, party, contract, or entity — for all eternity.

The HI-FLYER contract also allows users to earn interest on HI-FLYER token time deposits called [**stakes**](https://wisetoken.net/docs#sec-2-3-5), which are most similar to bonds, but more flexible. A stake earns interest like a bond, but with the added feature of allowing interest withdrawals at any time during the life of the stake; not somBNBing bonds allow. These bond-like interest-bearing stakes in HI-FLYER are always fully in the custody of the user and their wallet, never held, influenced, or able to be confiscated by any third party.

[**2**](https://wisetoken.net/docs#sec-2)**HI-FLYER Contract Functionality**

The HI-FLYER contract has several key properties and core functions, outlined in detail in the following sections. Some of the important mathematical calculations and data structures are also presented here. Various example scenarios of user and multi-user activity and contract state evolution are illustrated where appropriate.

[**2.1**](https://wisetoken.net/docs#sec-2-1)**General Properties**

The contract defines the token name as "HI-FLYER Token", the token symbol as "HI-FLY", and the number of decimals as18.

The contract has no special functionality granted to the deploying account, no administrative keys, and no concept of a contract owner. All users, including the founders and developers, have precisely equal access to the contract's functionality.

The contract, once deployed, is immutable. No proxy or delegate contracts are involved.

[**2.1.1**](https://wisetoken.net/docs#sec-2-1-1)**Token Supply**

The contract has no set token supply. The total initial supply minted by users through the [**Liquidity Transformer**](https://wisetoken.net/docs#sec-2-2) will fall within a defined range, determined partially by confined randomness, and partially by [**referral bonuses**](https://wisetoken.net/docs#sec-2-2-3).

The 50 day Liquidity Transformer has an average of five million HI-FLYER available each day, though some days have randomness involved. This means the total supply available in the LT will likely be around 250 million HI-FLYER. Due to referrer bonuses, there could be up to an additional 10% minted on top of that (i.e. up to 25 million more).

This total supply is then matched by a minted batch that is then [**sent permanently to Uniswap**](https://wisetoken.net/docs#sec-2-3-1). The amount of HI-FLYER sent to Uniswap will be up to 10% less than what was mintable through the LT and referral bonuses, due to the team reimbursement BNB. Regardless, the ratio of HI-FLYER/BNB sent to Uniswap will match exactly the ratio of mintable LT HI-FLYER (including referral bonus HI-FLYER) to LT BNB. This ensures that the initial Uniswap price matches the overall price of the LT.

The total supply of HI-FLYER in existence after the LT and Uniswap provision is subject to LT randomness, referral activity, and whBNBer the team reimbursement ends up being a full 10% or less due to the hardcoded cap.

For example, if we assume the randomness averages out, assume half of all possible referrer bonuses are earned, and assume the team reimbursement cap causes it to be only 5% of the LT BNB, then the total initial supply would be:

baseLTSupply = 250,000,000 HI-FLY  
referrer Bonuses = base LT Supply \* 5% = 12,500,000 HI-FLY  
total LT Supply = base LT Supply + referrer Bonuses = 262,500,000 HI-FLY  
uniswap Batch = total LT Supply \* 95% = 249,375,000 HI-FLY  
  
total Initial Supply = total LT Supply + uniswap Batch = 511,875,000 HI-FLYE

Though extremely unlikely (virtually impossible), the absolute minimum possible total initial supply (all random days get their minimum values, no referral bonuses, and a low enough LT BNB total that makes the team reimbursement exactly 10%) would be:

Base LT Supply = 180,000,010 HI-FLYER  
referrer Bonuses = base LT Supply \* 0% = 0 HI-FLYER  
total LT Supply = base LT Supply + referrer Bonuses = 180,000,010 HI-FLYER  
uniswap Batch = total LT Supply \* 90% = 162,000,009 HI-FLYER  
  
total Initial Supply = total LT Supply + uniswap Batch = 342,000,019 HI-FLYER

Though equally unlikely (virtually impossible), the absolute maximum possible total initial supply (all random days get their maximum values, maximum referral bonuses, and a high LT BNB total that makes the team reimbursement approach 0%) would be:

baseLTSupply = 319,999,990 HI-FLYER  
referrerBonuses = baseLTSupply \* 10% = 31,999,999 HI-FLYER  
totalLTSupply = baseLTSupply + referrerBonuses = 351,999,989 HI-FLYER  
uniswapBatch = totalLTSupply \* ~100% = 351,999,989 HI-FLYER  
  
totalInitialSupply = totalLTSupply + uniswapBatch = 703,999,978 HI-FLYER

The total token supply will [**inflate at a rate of 4% per year**](https://wisetoken.net/docs#sec-2-3-4), starting once the Liquidity Transformer Epoch ends and the [**Circulation Epoch**](https://wisetoken.net/docs#sec-2-3) begins. Some of the new tokens will be minted directly to stakers upon [**closing a stake**](https://wisetoken.net/docs#sec-2-3-5-4), and some minted to [**stake referrers**](https://wisetoken.net/docs#sec-2-3-5-5). If no stakes are closed on a given day, and no stakes scrape interest on that day,, no new tokens are actually minted that day, though they are earmarked to be minted later. Once a stake is closed, all tokens the stake had earmarked to it for all past days are then minted at once.

[**2.2**](https://wisetoken.net/docs#sec-2-2)**Liquidity Transformer Epoch**

The launch of the HI-FLYER contract will kick off an initial 50 day phase during which users may send BNB (or any ERC-20 token traded on Uniswap V2) to the contract in order to reserve HI-FLYER tokens. The tokens reserved can be [**minted by the users**](https://wisetoken.net/docs#sec-2-3-3) immediately following the end of the LT Epoch, i.e. the start of day 51.

Each day of the LT Epoch will have an amount of HI-FLYER tokens that are reservable by all those who deposit BNB to that day. Most days will have exactly five million HI-FLYER available, but the other days will have their available HI-FLYER amount randomly set within a predefined range. These random amounts will be determined by the contract shortly after the end of each random day, by leveraging the [**Provable**](https://provable.xyz/) (formerly called “Oraclize”) smart contract's Random Datasource interface. The generated randomness is delivered on-chain in a trustless and provably cryptographically secure manner. For more detailed information about Provable, please read their [**random datasource white paper**](https://provable.xyz/papers/random_datasource-rev1.pdf) and their [**security deep dive**](https://docs.provable.xyz/#security-deep-dive).

Each day's available HI-FLYER ends up getting split amongst the users who deposited BNB to that day, in direct proportion. In other words, a user that made a reservation on a particular LT day will later be able to mint the fraction of that day's available HI-FLYER that equals the fraction of the day's total BNB they personally sent in.

[**2.2.1**](https://wisetoken.net/docs#sec-2-2-1)**Token Reservation**

On any given day of the LT Epoch, users may choose to send BNB (or any ERC-20 token traded on Uniswap V2) to the contract and assign it to any of the LT Epoch days that have not yet concluded. We call this action a “token reservation”.

For example, during day 12, users may send and assign BNB to any of the days 12–50, but not to days 1–11, since those days have already concluded.

Each token reservation is assigned to a single day, but users may make as many such reservations as they wish, to as many different days as they wish.

The HI-FLYER contract front end will also include the ability for a user to spread a single reservation amount of BNB (or ERC-20) evenly across all remaining LT days. This “dollar cost averaging” feature saves gas for the user who wishes to reserve an equal part of each LT day.

Reservations can be made with BNB, but also with any ERC-20 token that's traded on Uniswap V2. This is done via direct integration with Uniswap, which swaps the ERC-20 for BNB as part of the reservation transaction. This is functionally the same as the users themselves swapping the ERC-20 for BNB on Uniswap, and then later sending the BNB to the HI-FLYER contract for a token reservation. The benefit of using the HI-FLYER reservation interface to do this is that it saves the user some gas fees and time.

Each single token reservation must be of a minimum BNB amount, to make spam attacks cost-prohibitive. The specific minimum amount will be finalized at a later date, closer to launch. This is because the price of BNB may change significantly between the time of this writing and the contract launch. The minimum will likely be in the neighborhood of $10 worth of BNB.

The contract will provide public interfaces for viewing the total amount of BNB currently assigned to each LT Epoch day across all users, as well as the total HI-FLYER available for each day (where that supply has been determined, in the case of random days). For days where the supply has not yet been finalized, the min/max range will also be retrievable from the contract.

[**2.2.2**](https://wisetoken.net/docs#sec-2-2-2)**Daily LT Supply Schedule**

Every LT day has an average of five million HI-FLYER available for reservation. Some of the days with randomly determined amounts have tight ranges only a few hundred million HI-FLYER in variance, and others are extremely variant, ranging from a single HI-FLYER to ten million HI-FLYER (technically 9,999,999 HI-FLYER, in order to preserve a strict average of five million per day). In this way, the LT Epoch provides various exciting options for users wishing to gamble with their BNB, and at various levels of risk/reward.

The following table outlines how many HI-FLYER will be available for user reservation on each day of the LT Epoch. Most days have exactly five million HI-FLYER available. The rest show two supply values: the minimum and maximum available that day. Each day is color coded for relative risk level, from none to high):

| **Sun** | **Mon** | **Tue** | **Wed** | **Thu** | **Fri** | **Sat** |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  | May 11  **5M** | May 12  **5M** | May 13  **5M** | May 14  **5M** |
| May 15  **5M** | May 16  **5M** | May 17  **5M** | May 18  **5.5M 4.5M** | May 19  **5M** | May 20  **5.5M 4.5M** | May 21  **5M** |
| May 22  **10M 1** | May 23  **5M** | May 24  **6M 4M** | May 25  **5M** | May 26  **6M 4M** | May 27  **6M 4M** | May 28  **5M** |
| May 29  **10M 1** | May 30  **5M** | Jun 1  **6.5M 3.5M** | Jun 2  **5M** | Jun 3  **6.5M 3.5M** | Jun 4  **5M** | Jun 5  **6.5M 3.5M** |
| Jun 6  **10M 1** | Jun 7  **5M** | Jun 8  **5M** | Jun 9  **7M 3M** | Jun 10  **5M** | Jun 11  **7M 3M** | Jun 12  **5M** |
| Jun 13  **10M 1** | Jun 14  **5M** | Jun 15  **7.5M 2.5M** | Jun 16  **7.5M 2.5M** | Jun 17  **5M** | Jun 18  **7.5M 2.5M** | Jun 19  **5M** |
| Jun 20  **10M 1** | Jun 21  **5M** | Jun 22  **10M 1** | Jun 23  **5M** | Jun 24  **10M 1** | Jun 25  **5M** | Jun 26  **10M 1** |
| Jun 27  **10M 1** | Jun 28  **10M 1** | Jun 29  **5M** | Jun 30  **5M** |  |  |  |

[**2.2.3**](https://wisetoken.net/docs#sec-2-2-3)**Reservation Referrals**

The HI-FLYER contract has a direct, one-level referral system that rewards both the referrer and referee when a user reserves HI-FLYER tokens in the LT. This referral system is an incentive to help increase the amount of BNB sent in, in turn funding a larger and more robust initial liquidity pool on Uniswap.

When a user makes a [**token reservation**](https://wisetoken.net/docs#sec-2-2-1), the front-end interface checks if their browser has a referral cookie stored. If such a cookie is present, the contract makes note of the referrer's BNB address and associates it with the referee's token reservation. The contract also tags the user's token reservation as having been through a referral, and this reservation is credited as having been 10% more BNB than it actually was. When the user [**mints their reserved tokens**](https://wisetoken.net/docs#sec-2-3-3) after the end of the LT Epoch, each token reservation that was through a referral will thus mint 10% more HI-FLYER than if it hadn't been through a referral.

Users may change the referral cookie stored in their browser at any time by clicking another referrer's link. If they do, their future token reservations would be associated with the new referrer. All past token reservations for that user remain as is; their previous referrer(s) do not lose credit for their existing referred token reservations.

[**2.2.3.1**](https://wisetoken.net/docs#sec-2-2-3-1)**Referrer Bonuses**

When the LT Epoch ends, referrers that have referred enough BNB into the system, via their referred users token reservations, can then mint an amount of bonus HI-FLYER.

The LT referrer bonus system has two tiers. Bonuses (paid in HI-FLYER) are based on how much total BNB their referral link brought in to the LT:

* *Refer 1 - 49.999999999999999999 BNB*  
  **Bonus = 0.05 BNB (paid in HI-FLYER)**
* *Refer 50 or more BNB*  
  **Bonus = 10% of BNB (paid in HI-FLYER), and**[**“CM Referrer”**](https://wisetoken.net/docs#sec-2-3-5-5)**status**

Examples:

* Alice refers a few friends who, in total, send 0.83 BNB into the LT. Alice fails to reach the 1 BNB minimum for the first tier, so she earns no bonus HI-FLYER.
* Bob refers several friends who, in total, send 3.6 BNB into the LT. Bob qualifies for the first bonus tier, so he earns a flat bonus of 0.05 BNB worth of HI-FLYER.
* Eve creates several HI-FLYER videos and publishes her referral link on them. Users clicking her referral link send a total of 64 BNB in to the LT. Eve qualifies for the top bonus tier, so she earns 6.4 BNB worth of HI-FLYER, as well as permanent [**“CM Referrer”**](https://wisetoken.net/docs#sec-2-3-5-5) status.

*Note: all referral bonuses are paid in HI-FLYER. When the LT ends, an effective total LT HI-FLYER/BNB exchange rate is calculated by looking at the total amount of BNB sent in by all users, and the total amount of HI-FLYER made available for reservation. This ratio is then used to calculate the amount of HI-FLYER for each referral bonus.*

[**2.3**](https://wisetoken.net/docs#sec-2-3)**Circulation Epoch**

When the final LT Epoch day ends, the Circulation Epoch begins. At this point, no further token reservations can be made.

[**Reserved HI-FLYER**](https://wisetoken.net/docs#sec-2-2-1) and [**referrer bonus HI-FLYER**](https://wisetoken.net/docs#sec-2-2-3-1) may now be minted by users, at their leisure. Users may begin [**staking HI-FLYER**](https://wisetoken.net/docs#sec-2-3-5). 90% or more of all BNB sent into the LT and a matching batch of HI-FLYER is automatically [**sent to Uniswap**](https://wisetoken.net/docs#sec-2-3-1), so users may begin trading HI-FLYER and BNB there. All [**standard ERC-20 functions**](https://wisetoken.net/docs#sec-2-4) involving minted tokens are also now available. At the start of the fifteenth day of the Circulation Epoch, there will be a one-time automatic [**share price**](https://wisetoken.net/docs#sec-2-3-5-2) increase of 10%.

Once the LT Epoch has ended, there is a public function in the contract that may be called by anyone to trigger the following one-time sequence of actions to start the Circulation Epoch:

1. Calculate the total BNB sent into the LT. Set aside 10% or 2,000 BNB, whichever is less, for the [**Hi-Flyer team reimbursement**](https://wisetoken.net/docs#sec-2-3-2) performed in Step 4 below. The remaining 90% (or more) of this BNB is the **“Uniswap Provision BNBer”**.
2. Calculate the total HI-FLYER that is available to be minted due to token reservations and referrer bonuses. Calculate the same fraction of this HI-FLYER (90% or more) that was used to determine the Uniswap Provision BNBer in Step 1 above. Immediately mint this amount of new HI-FLYER. This is the **“Uniswap Provision HI-FLYER”**.
3. Transfer the “Uniswap Provision BNBer” and “Uniswap Provision HI-FLYER” to the HI-FLYER/BNB Uniswap exchange pair contract, forming its initial liquidity pool. As part of this transfer, the HI-FLYER contract receives back from the Uniswap contract an amount of UNI-V2 liquidity tokens and immediately burns these by transferring them to a known burn address.
4. Transfer the 10% (or less) of LT BNB set aside in Step 1 to The Hi-Flyer team's BNB address.

[**2.3.1**](https://wisetoken.net/docs#sec-2-3-1)**Uniswap Provision**

The HI-FLYER contract's constructor function, executed when deploying the HI-FLYER contract, will make a call to the Uniswap V2 factory contract in order to create the Uniswap HI-FLYER/BNB exchange pair contract. This newly created exchange contract's address will be stored internally in the HI-FLYER contract.

This newly created Uniswap HI-FLYER/BNB exchange pair contract will simply lie dormant until the Circulation Epoch begins and the Uniswap provision transfer is executed, using the stored address. No minted HI-FLYER exists until that point, so no liquidity can be added until then.

As part of sending the Uniswap provision HI-FLYER and BNB to the exchange pair contract, a UniswapV2Router contract is used, which internally wraps the BNB into WBNB (wrapped BNB), as is standard in Uniswap V2.

The UniswapV2Router contract returns an amount of UNI-V2 liquidity tokens to the HI-FLYER contract as part of the Uniswap provision transaction. These UNI-V2 liquidity tokens represent ownership of the liquidity pool the HI-FLYER contract just sent in, and carry the sole power to withdraw that liquidity. The HI-FLYER contract has no code or function allowing such a liquidity withdrawal. However, as a further show of the Hi-Flyer team's commitment to making HI-FLYER a totally trustless system, the HI-FLYER contract will automatically and irrevocably destroy these UNI-V2 liquidity tokens upon receipt. This is done by transferring them to a known “burn address”, such as0x0.

Once the Uniswap provision is complete, users are free to use Uniswap's front end to swap HI-FLYER into BNB, and vice-versa. They may also choose to deposit their own liquidity pools of HI-FLYER/BNB in order to earn fees from traders.

[**2.3.2**](https://wisetoken.net/docs#sec-2-3-2)**Hi-Flyer Team Reimbursement**

Prior to deploying the HI-FLYER contract, the Hi-Flyer team will determine its total expenses incurred in developing and launching HI-FLYER. These will include wages paid to developers, fees paid to lawyers, marketing spend, and the cost of the audit.

This expense total is represented in the contract source code as a hardcoded amount of 2,000 BNB.

When the LT Epoch closes and the Circulation Epoch begins, the total BNB sent into the LT gets divided into two buckets:

* 10% of the LT BNB (not to exceed 2,000 BNB)
* All remaining LT BNB

The 10% (or less) bucket of BNB is then transferred to an BNB address owned by the Hi-Flyer team. The other bucket (90%+) is sent to Uniswap to create the first liquidity pool for HI-FLYER.

[**2.3.3**](https://wisetoken.net/docs#sec-2-3-3)**Minting Tokens**

Once the LT Epoch has ended and the Circulation Epoch has begun, users may now mint HI-FLYER tokens, either due to having [**reserved HI-FLYER in the LT Epoch**](https://wisetoken.net/docs#sec-2-2-1) or having [**earned referral bonus HI-FLYER**](https://wisetoken.net/docs#sec-2-2-3-1), or both.

The minting of HI-FLYER is done on-demand by the user, in a single batch, through the front-end interface. The interface will show how many HI-FLYER the user can mint, broken down by reservation and/or referral bonus sources. Users may mint their HI-FLYER immediately, or wait as long as they like, without penalty.

Users will likely want to mint their HI-FLYER sooner rather than later in order to take advantage of [**staking**](https://wisetoken.net/docs#sec-2-3-5) them to earn interest, which becomes less profitable the longer one waits.

[**2.3.4**](https://wisetoken.net/docs#sec-2-3-4)**Supply Inflation**

The total circulating supply of HI-FLYER inflates at a constant rate of 4% per year. At the end of every day of the Circulation Epoch, the contract calculates how many new HI-FLYER will need to be minted for that day in order to achieve that rate of inflation.

totalHi-FlyerSupply = circulatingHi-Flyer + stakedHi-Flyer  
dailyInflationRate = (1.04 ^ (1 / 365) - 1)  
dailyInflationRate =~ 0.0001074597820279  
  
newHi-FlyerToday = totalHi-FlyerSupply × dailyInflationRate

These new daily inflation HI-FLYER are not immediately minted. Instead, they are earmarked for distribution to two parties: three quarters (3% inflation) to all active [**stake shares**](https://wisetoken.net/docs#sec-2-3-5-2) on that day, and one quarter (1% inflation) to all active, qualified [**CM shares**](https://wisetoken.net/docs#sec-2-3-5-5) that day. Each active stake is earmarked a fraction of this new HI-FLYER in proportion to the stake's shares percentage of the total share pool that day. The same apportionment scheme is used for the HI-FLYER earmarked to qualified CM shares.

An example scenario:

On day X, suppose there are:  
  100,000,000 total circulating HI-FLYER  
  30,000,000 total staked HI-FLYER  
  10,000,000 total shares  
  
The total new HI-FLYER that will be generated this day is then:  
  newHi-FlyerDayX = (100,000,000 + 30,000,000) × 0.0001074597820279  
  newHi-FlyerDayX = 13,969.771663627 HI-FLYER  
  
This new HI-FLYER is split into two amounts:  
  three quarters for stake shares (i.e. 3% inflation)  
  one quarter for CM shares (i.e. 1% inflation)  
  
Now, suppose user A has an active stake that is 2,000,000 shares.  
On day X, this user's stake then gets some HI-FLYER earmarked for it:  
  
  userANewHi-FlyerDayX = newHi-FlyerDayX × (3/4) × stakeShares / totalShares  
  userANewHi-FlyerDayX = 13,969.771663627 × (3/4) × 2,000,000 / 10,000,000  
  userANewHi-FlyerDayX = 2,095.46574954405 HI-FLYER

[**2.3.5**](https://wisetoken.net/docs#sec-2-3-5)**Staking**

The HI-FLYER contract allows users to stake their HI-FLYER, locking it up for a period of days, in order to earn interest. This is the primary function of the contract during the [**Circulation Epoch**](https://wisetoken.net/docs#sec-2-3).

Users may open as many stakes as they like. After a stake reaches full maturity, the user may close it at any time to receive their full principal, plus interest, without penalty.

Unlike some other stakeable tokens, HI-FLYER never penalizes a mature stake, no matter how late it is eventually closed. This allows users much more flexibility, especially for taxable income purposes. Also, should a user pass away before being able to close their stakes in a timely fashion, the HI-FLYER contract thus remains in compliance with estate laws of various jurisdictions that make it illegal to penalize the assets of a deceased person.

[**2.3.5.1**](https://wisetoken.net/docs#sec-2-3-5-1)**Opening Stakes**

When a user opens a new stake, they choose an amount of HI-FLYER to stake, and a stake length in days. The minimum stake amount is 0.000000000001 HI-FLYER (1000000 YODA). The minimum stake length is one day, and the maximum stake length is 15,330 days (just under 42 years).

Once a stake is opened, it is in “Pending” status. This means that the stake won't technically begin until the following day. A user may close a stake in Pending status, receiving back the stake's principal, without penalty or interest.

Pending stakes become “Active” status once the next day begins. At this point, closing the stake before it reaches “Mature” status will incur a penalty.

When a stake is opened, the HI-FLYER tokens staked are actually burned by the contract and converted into [**“shares”**](https://wisetoken.net/docs#sec-2-3-5-2). These shares exist for the life of the stake. Once the stake is closed, the shares are destroyed, and HI-FLYER is minted back to the user (along with any interest added and penalties deducted.

[**2.3.5.2**](https://wisetoken.net/docs#sec-2-3-5-2)**Shares and Interest**

When a stake is opened, its HI-FLYER principal is burned and converted into shares. These shares represent the stake size and length as well as, indirectly, how early the stake was opened. The amount of shares a newly opened stake gets is determined by a global “share price” tracked in the HI-FLYER contract, as well as a percentage bonus based on the length of the stake. This share price only increases, hence staking earlier is better than later.

Stakes earn interest daily through the HI-FLYER supply inflation, as well as from other [**stakes' penalties**](https://wisetoken.net/docs#sec-2-3-5-4) paid. The [**HI-FLYER supply inflates**](https://wisetoken.net/docs#sec-2-3-4) at about 4% per year. Three quarters of that inflation (i.e. 3% APR) is distributed daily to all active stakes, in proportion to their shares as compared to the total share pool. The remaining one quarter (i.e. 1% APR) is distributed daily to the [**CM referrer shares**](https://wisetoken.net/docs#sec-2-3-5-5) in the same proportional manner.

Depending on the length of the stake, a bonus amount of shares will be generated on top of the amount determined by the staked amount of HI-FLYER and current share price. This bonus scales linearly from slightly above 0% for a one day stake, to 25% for a 5 year stake, and then to 30% for a 42 year stake. For instance, a stake with a length of 1.5 years will generate1.5 \* 5% = 7.5% bonus shares.

The share price starts at some predetermined value denominated in HI-FLYER per share. Whenever any stake is closed, the contract calculates a ratio of that stake's total return (principal + interest - penalty) to its shares. If this ratio is greater than the current share price, then the share price is immediately set to this new, increased value.

The share price can only increase over time, albeit fairly slowly. This ensures that earlier stakes get more shares than later stakes of the same amount of HI-FLYER. This share price increase mechanism also prevents users from being able to compound their interest with a sequence of smaller stakes in order to try and outperform a single long stake of the same size.

On the start of the fifteenth day of the [**Circulation Epoch**](https://wisetoken.net/docs#sec-2-3), the share price will be automatically increased by 10% as a one-time event. This creates a very strong incentive for users to open their stakes during the first two weeks of the Circulation Epoch. Waiting until day fifteen to open a stake will mean you get roughly 9% less shares than you would have on the previous day, for the same amount of HI-FLYER staked. In turn, that means roughly 9% less interest earned by the stake.

[**2.3.5.3**](https://wisetoken.net/docs#sec-2-3-5-3)**Scraping Stake Interest**

Users will have the ability to withdraw (scrape) any amount of earned interest from an Active stake (i.e. before the stake fully matures).

Users can choose exactly how much interest they wish to scrape, up to the maximum (all accrued, unscraped interest from all previous days). Scraping interest from an Active stake can be done multiple times over the course of the stake.

Scraping interest is possible starting on day 2 of the active stake. On day 1 (the first active day), the stake has not yet completed a full day of being active, and thus has not yet accrued any interest.

When a stake is closed, whBNBer Active or Mature, the interest minted back to the user only includes interest that hasn't already been scraped.

Scraping interest will not affect the stake's principal, but will reduce the number of shares the stake has going forward. This effectively means that the stake will earn slightly less interest on the current and all future days of the stake than it otherHi-Flyer would have. This share reduction also prevents users from being able to end up with more overall shares if they choose to immediately re-stake their scraped interest.

Scraping interest may cause a [**share price**](https://wisetoken.net/docs#sec-2-3-5-2) increase, just as when [**closing a stake**](https://wisetoken.net/docs#sec-2-3-5-4). Stakes track exactly how much cumulative scraped interest the user has scraped over the course of the stake, for the purpose of these calculations. The process for determining the possible share price increase and the stake shares reduction is as follows:

First, calculate a possible new share price based on the stake's pseudo-return (principal plus all scraped interest thus far, including this scrape) divided by the stake's initial shares:

newSharePrice = (stakePrincipal + cumulativeScrapedInterest) / stakeInitialShares

Next, if this new share price is greater than the current global share price, update the global share price (which may have just increased due to this scrape):

if (newSharePrice > globalSharePrice) globalSharePrice = newSharePrice

Next, calculate an amount of shares to be removed from the stake, based on the interest being scraped now and the global share price:

stakeSharesToRemove = interestBeingScrapedNow / globalSharePrice

Finally, reduce the stake's current shares:

stakeCurrentShares = stakeCurrentShares - stakeSharesToRemove

[**2.3.5.4**](https://wisetoken.net/docs#sec-2-3-5-4)**Closing Stakes**

A user may close a stake at any time. Depending on the stake's status (where the stake is in its lifecycle), different things will happen:

* Closing a **Pending** stake - the stake shares are destroyed. The entire stake principal is minted back to the user, without interest or penalty.
* Closing an **Active** (premature) stake - the stake shares are destroyed. The stake principal is penalized (see below) and minted back to the user along with all interest accumulated thus far.
* Closing a **Mature** stake - the stake shares are destroyed. The entire stake principal and all interest accumulated is minted back to the user. There are never any penalties for closing a Mature stake, no matter how late.

The penalty deducted from the principal (staked Hi-Flyer) when closing an Active stake is as follows:

If the stake is one day long:  
  penaltyAmount = stakedHi-Flyer × 0.1  
  
If the stake is two or more days long:  
  penaltyAmount = stakedHi-Flyer × (.1 + .8 × ((daysLeft - 1) / (stakedDays - 1)))

Thus, if you close an Active stake that was 100 days long on its final day before maturity, you get a 10% penalty applied to the principal. If you close the same stake on the first day of it being Active, you get a 90% penalty. The penalty scales linearly between those two extremes.

Any such HI-FLYER penalized from a stake's return is earmarked for distribution to all active stake shares that day. These penalty distributions are only realized by those stakes' shares when each of those stakes end.

**[2.3.5.5](https://wisetoken.net/docs" \l "sec-2-3-5-5)  Stake Referrals**

Just as the HI-FLYER contract includes a referral program to incentivize users to help bring more BNB into the [**Liquidity Transformer**](https://wisetoken.net/docs#sec-2-2), it also provides a referral program for staking.

When a user opens a new stake, the front-end interface checks whether the browser has a referral cookie, just as it does when making a [**token reservation**](https://wisetoken.net/docs#sec-2-2-1) in the LT Epoch. If such a cookie is present, AND the new stake is at least 365 days long, the contract tags this new stake with the referrer's address.

A referred stake generates 10% extra shares for the staker (beyond what it would have if not referred) as well an equal (but without the 10% bonus) amount of “critical mass shares” (a.k.a. “CM shares”) for the referrer. The system-wide pool of CM shares gets earmarked one quarter of the daily inflation HI-FLYER, but only for referrers that have qualified as CM referrers.

To qualify as a CM referrer, a user must have reached a total of $10,000 worth of referred stakes of 365+ days in length. If a user meets this condition, they are immediately and forever tagged as a CM referrer, and cannot ever lose that distinction, regardless of if their referees close all their stakes.

Another way to qualify as a CM referrer is to have referred 50 BNB of token reservations in the [**referral system of the LT Epoch**](https://wisetoken.net/docs#sec-2-2-3-1). Users reaching that level are automatically pre-qualified as CM referrers forever.

Calculating a new stake's USD value is only done once, when the stake is opened. The HI-FLYER/USD exchange rate used for this calculation will be determined by querying the Uniswap HI-FLYER/BNB and BNB/DAI exchange pair contracts' price oracle interfaces.

[**2.3.6**](https://wisetoken.net/docs#sec-2-3-6)**Liquidity Provider Staking**

HI-FLYER has an additional way of staking that rewards liquidity providers for the HI-FLYER/BNB pair if certain conditions are met. If the liquidity percentage of HI-FLYER on Uniswap falls below 20%, then you may stake your LP tokens with the HI-FLYER contract and start earning interest (on top of the trading fees you already get).

This new money comes from the 3% inflation for stakers such that, the 3% for stakers slowly decreases and the 0% for LPs slowly increases. Once this triggers, it will become valuable for a certain amount of people to LP stake since there is now a new pot of money available for LPs to earn daily interest.

An additional perk for LP staking is that you may end your stake at any time and collect your LP tokens. When the Uniswap liquidity goes back above 30%, the rewards slowly start diminishing. The staking inflation will creep back up towards 3% and the LP inflation will creep back towards 0% until triggered again.

This is a safeguard in the system that will most likely not be triggered for years if at all. Users can still choose to add to liquidity themselves at any time in order to earn about 6% ROI from fees, but the additional incentive of shares interest doesn't trigger until needed.

[**2.4**](https://wisetoken.net/docs#sec-2-4)**ERC-20 Functionality**

The HI-FLYER contract conforms fully with the ERC-20 token standard, as proposed in [**EIP-20**](https://github.com/ethereum/EIPs/blob/master/EIPS/eip-20.md). This is essentially a set of functions that a token contract must implement in order to be an ERC-20 token.

This ERC-20 standard compliance means that applications, websites, exchanges, and smart contracts can very easily integrate with or be built on top of the HI-FLYER contract.

[**4**](https://wisetoken.net/docs#sec-4)**Conclusion**

The Hi-Flyer team sincerely hopes that our efforts to provide the general public with a trustless, decentralized, interest-bearing instrument will bear fruit, and that HI-FLYER will be a great success. But, we can't achieve these goals without the help of the community around us.

The HI-FLYER project was started not with the intention to profit, but from the desire to create some BNB incredibly useful for the world. We hope this document has made our vision and intentions clear.

We welcome any questions, comments, or criticism you may have. We also have some need for various types of contributors to the project.

Please join us in the [**official HI-FLYER Telegram group at t.me/Hi-FlyerToken**](https://t.me/WiseToken) and the [**official HI-FLYER Discord server**](https://discord.gg/keJUb4W) to discuss the HI-FLYER project with the founders, developers, supporters, critics, and the rest of the community.

[**5**](https://wisetoken.net/docs#sec-5)**Acknowledgements**

The Hi-Flyer team would like to sincerely thank the following people and groups that have been and continue to be instrumental in making HI-FLYER a reality and a success:

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* **Peter** - for your conception, guidance, and managing our Github and account
* **Olamide and Tobi**  — for your continued support of the many incipient projects.

[**6**](https://wisetoken.net/docs#sec-6)**Availability**

Its source code is maintained at [**https://github.com/ High**](https://github.com/%20High) **Flyer**

[**7**](https://wisetoken.net/docs#sec-7)**Appendices**

[**Appendix A**](https://wisetoken.net/docs#sec-7-1)**Terminology**

* **HI-FLYER** — the token and contract described herein.
* **YODA** — the base unit of the HI-FLYER token, analogous to wei for BNB, or satoshi for BTC. One HI-FLYER equals one quintillion YODA (1,000,000,000,000,000,000).
* [**Stake**](https://wisetoken.net/docs#sec-2-3-5) — a time locked deposit of HI-FLYER which earns interest over time.
* [**Liquidity Transformer Epoch**](https://wisetoken.net/docs#sec-2-2) — the first fifty days of the contract's existence, during which users may deposit BNB to reserve part of the initial supply of HI-FLYER.
* [**Circulation Epoch**](https://wisetoken.net/docs#sec-2-3) — the epoch immediately following the end of the LT Epoch, during which users may mint their tokens reserved in the LT Epoch, transfer tokens, stake tokens, etc.
* [**Uniswap**](https://wisetoken.net/docs#sec-2-3-1) — a decentralized, non-custodial ERC-20 token and BNB exchange on the Binance SmartChain. The HI-FLYER contract is integrated directly with Uniswap. General info on Uniswap is [**here**](https://uniswap.org/), Uniswap exchange stats are are [**here**](https://uniswap.info/), and the main exchange is [**here**](https://app.uniswap.org/).
* **ERC-20** — a standard interface for BNB smart contract tokens. ERC stands for “BNB Request for Comment”. The original EIP (BNB Improvement Proposal) describing ERC-20 tokens can be found [**here**](https://github.com/ethereum/EIPs/blob/master/EIPS/eip-20.md).

[**Appendix B**](https://wisetoken.net/docs#sec-7-2)**Coding Standards**

* The HI-FLYER contract is written entirely in Solidity and compiled with solc 0.6.0.
* The code should adhere to the formats prescribed by the [**style guide**](https://solidity.readthedocs.io/en/v0.7.2/style-guide.html) section of in the official [**Solidity 0.6.2 documentation**](https://solidity.readthedocs.io/en/v0.7.2/).
* All public interfaces (at a minimum) should be annotated using the **[NatSpec format](https://solidity.readthedocs.io/en/v0.7.2/natspec-format.html)**.
* Unit tests should provide 100% coverage of the source code. All conceivable edge and corner cases should be covered.
* Function and variable names should convey their purpose and usage as clearly and tersely as possible, in plain English. Avoid using digits, unnecessary abbreviations, acronyms, shorthand, or slang.
* Functions should be as short as is practical. They should do what their name implies, and not much else. A good rule of thumb is that a function should try to be viewable in its entirety on a typical monitor, at a typical font size, if at all possible.
* Comments should be employed Hi-Flyerly. Dont comment to explain what code does. Good function and variable names will accomplish that. Rather, use comments to explain why something is coded a certain way, Use comments to explain any non-obvious technical points or decisions involved in a piece of code.
* require() function calls should return a short but descriptive error message, always prefixed with "HI-FLYER: ".
* Avoid duplicated code (don't repeat yourself).
* Wherever possible and practical, write with gas efficiency as a priority. Some parts of the code may sacrifice minuscule gas efficiencies for various important reasons. When deemed to be of greater value, code legibility, clean architecture, and a straightforward and fully featured end-user experience should take priority over such tiny gas savings.

[**References**](https://wisetoken.net/docs#sec-8)

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