Hero Continental ChatGame

catalogue

0x0 Project background

This technical white paper explains some of the design logic and economic models behind the Hero core contract. Its all about solving the whole ecosystem of telegraph games. After Web3, humans will enter a whole new digital age. The hero mainland will become the dominant economy on the chain of the telegraph game, and its game technology adopts a new revolutionary means to play, allowing every telegraph user to simply participate in it. At present, the cryptocurrency game in the telegraph is centralized, homogenized, and the operation and gameplay is very complex, so users do not want to participate in the game just by watching the game instructions. And the game false data, false users can account for more than 90% of the real users. In short, real players can exceed 10% of the data. However, the gaming technology of Hero Hero will revolutionize that.

Hero mainland is a PVP, Token, NFT combined telegraph blockchain game. Belong to the Chat to Earn type, the game telegraph group sends a command to operate, the telegraph robot will complete the users intelligent contract interaction, to achieve the purpose of the game.

Smart contract is the most pioneering technology of blockchain. It is a computer program that runs automatically on the chain. In order to protect users privacy and data security, and in order to ensure fairness and security, the game process of Hero Mainland runs on the Binance intelligent chain, which includes the rules and conditions of the game, and all the data exists on the smart contract.

0x1 Preface

"Bitcoin" is the successful implementation of the p2p e-cash concept. Both professionals and the general public are beginning to appreciate the convenient combination of public transactions and work certificates as a trust model. Today, the user base of e-cash is growing steadily growing; consumers are attracted by low fees and the anonymity of e-cash provision, and merchants value their projected and scattered emissions. Bitcoin effectively proves that e-cash can be as simple as paper money and as convenient as a credit card.

However, Bitcoin does not complete the smart contract like the Binance smart chain. As a smart contract, it can complete a lot of blockchain functions. Hero mainland is built on the Binance Chain smart contract, which can solve the incompatible contradictions in the blockchain game through the ecology. It can be both inflated and deflationary. The GAMEFI, NFT ecosystem is destroyed to achieve deflation, the inflation is released through the game itself, the deflation is destroyed, and the inflation is released to users.

The game of Hero mainland is that users can play blockchain games in the simplest way. The biggest problem of blockchain games on the telegraph is the high threshold and complex operation. These shortcomings can already dissuade 99% of the users. Users dont have so much time to study how to open the Dapp, how to configure the wallet, how to transfer money, etc. Hero Continental will address these key problems.

0x10, the game features

0 threshold of the game: the bottom of the game runs on the EVM intelligent chain, the front end of the game is a telegraph bot running in the telegraph chat group, as long as the user in the group can type in the game.

Digital assets and scarcity: Blockchain games usually issue digital assets, such as virtual equipment, virtual game coins, virtual characters, etc. These assets are unique and scarce on the blockchain, and players can actually own them, and they also have value outside of the game world.

Decentralized world: Continental heroes tend to build decentralized virtual worlds, similar to the "metacocosmos," where players are free to explore, build, and interact, and these operations are subject to the rules and constraints of smart contracts.

Autonomy and control: Players often have more autonomy and control in the game, and they can freely trade, sell, lease or otherwise manage their digital assets, all transparent.

Interoperability: The assets of games are designed to achieve interoperability across platforms and across games. If you build multiple games in the future, that means you can migrate your virtual assets from one game to another, or use your digital tokens in multiple games.

Economic systems: Chat game Blockchain games often have complex economic systems, including tokens, currencies, and markets, that can encourage players to participate in the game world and create value.

Real world value: Digital assets in a game can have real world value because they can be traded inside and outside the game. This allows players to make gains or investments in the game.

In general, Hero Mainland combines the creativity of low-threshold entry with the transparency and decentralization of blockchain technology, providing players with more freedom and control, while also creating a virtual world with real value.

0x2 The major problem of the current blockchain game ecosystem

At 0x20, the threshold is too high, the game complexity is large, and the Fomo mood is low.

At present, the telegraph game on the market needs to start the web page or jump to the web page, but also bind the wallet and other operations, increasing the difficulty of operation, and the telegraph itself can actually explore the function is not much. Van lun chain branch has many years of WEB 3 and online game development experience, self-innovative gameplay. Hero mainland through the telegram chat and Binance intelligent chain combination, into a new gameplay. The main highlight is: simple, convenient, improve the telegraph group activity. And with its own game finance, and different from the ordinary game finance, the game income has a unique "capture" element. Can more improve the user fomo mood.

0x21 classic Token price determinants

The price of a token is determined by several factors, including:

Supply and demand: The basic economic principles of supply and demand are the main factor determining the price of a token. If demand for tokens is high and supply is limited, prices could rise. If demand is low and supply is high, prices may fall.

Sentiment: The overall perception and attitude towards tokens will also have a significant impact on their prices. Positive news and developments can increase sentiment and push up prices, while negative news and events can lower sentiment and lower prices.

Adoption and use: The wider the adoption and use of tokens, the higher the value may be. Tokens with strong use cases, a large active user base, and strong partnerships are more likely to add value over time.

Competition: The presence of similar or competing tokens also affects the price of the token. A new tokens with similar functions and use cases could reduce demand for the original tokens, resulting to a lower price.

Regulatory environment: The regulatory environment can also play a role in determining the price of tokens. If the token is subject to restrictive regulations, it may reduce demand and lower prices, while favorable regulations may increase demand and raise prices.

These are some of the key factors that may affect the price of a token, the cryptocurrency market is highly volatile and unpredictable, and token prices may be influenced by many other factors.

Tokens weigh the supply and demand relationship of typical models based on tokens, and consider the influence of domestic factors (such as blockchain financial growth rate, inflation rate, interest rate, etc.) and the overall market value factors.

0x22 The classic inflation-price incompatibility paradox

In classical economics, moderate inflation can stimulate the economy, but excessive inflation can cause violent fluctuations in the capital market and cause chaos in the capital market. According to the market rules, the greater the inflation, the lower the price. This has been fully reflected in the digital currency market. The total inflation of many coins cannot be controlled, leading to a lower price spiral.

Hero mainland to solve the classic inflation value incompatibility paradox through smart contracts. More algorithms can solve the problem of inflationary and deflation. The inflation part is given the weight to the node user. Through the combination of game output and NFT, the whole system locks in liquidity, reduces the positive correlation between inflation and price, makes inflation compatible with price, and forms a closed loop of ecological economy.

0x23 Hero mainland price algorithm scheme

Algorithmic price formula refers to the mathematical equation used to determine how the Token price should be established as conditions or other factors change. Depending on the assets assessed and the method of analysis, different models may be used.

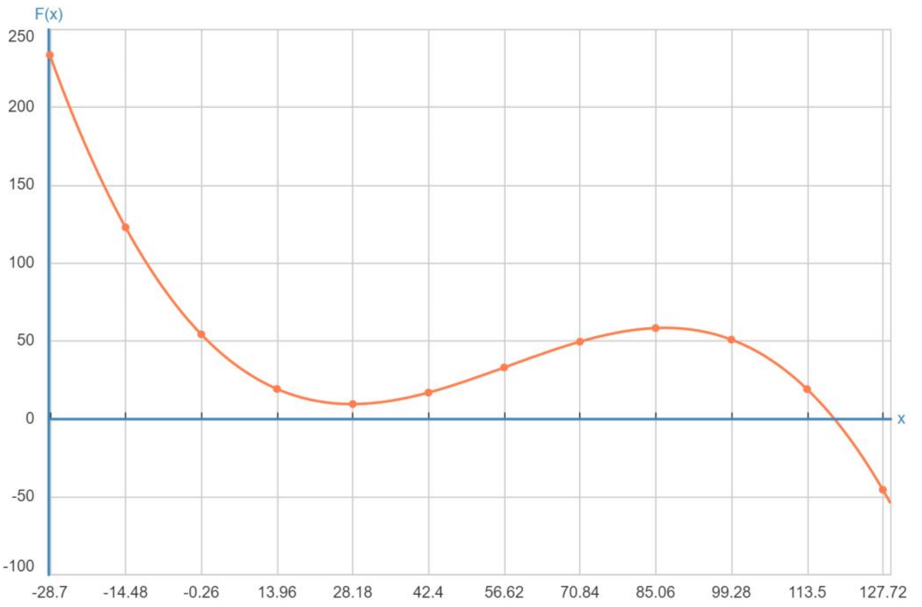
Hero mainland is a service as a platform. In order to enable many projects to have an ecosystem, it provides client services, which are destroyed or produced through contracts. The destruction of destruction permanently into the black hole address address (0). The Hero Continental contract releases the same proportion of Token within a certain period of time according to the players situation, and this part is issued as the proof of rights of players.

0x24 Hero mainland basic algorithm formula

Token Total output calculation:

$$\sum_{n=0}^{mint} = User(1)Mint + User(2)Mint + User(3)Mint + \ldots\ldots\ldots\ldots + User(n)Mint$$

Fitting the Token yield curve (in unit M):



X standard: total output

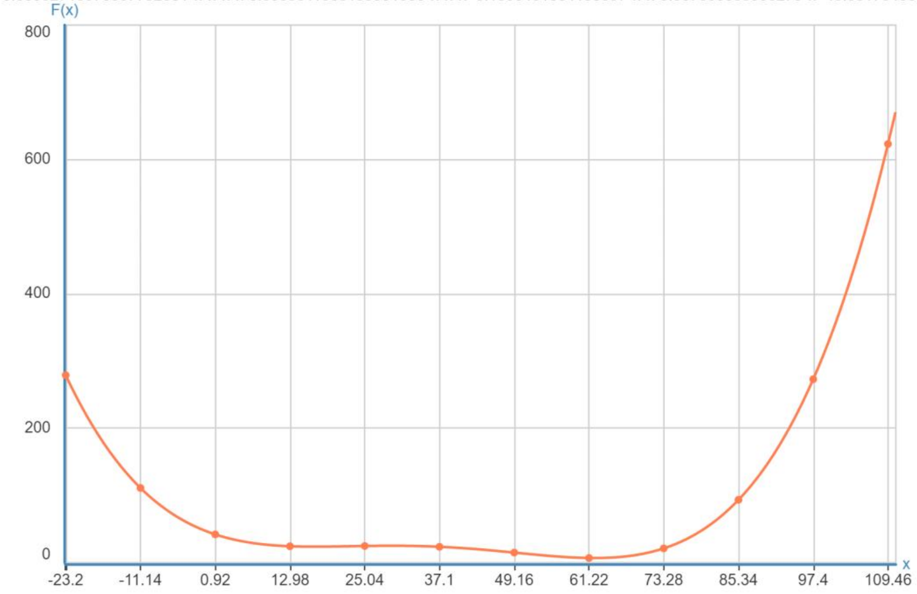
Y standard: total flow volume

Token combustion calculation:

$$Burn = \sum_{n=0}^{Game.burn} = Master.burn + Attack.burn + \ldots\ldots + Set.burn$$

The Token price curve

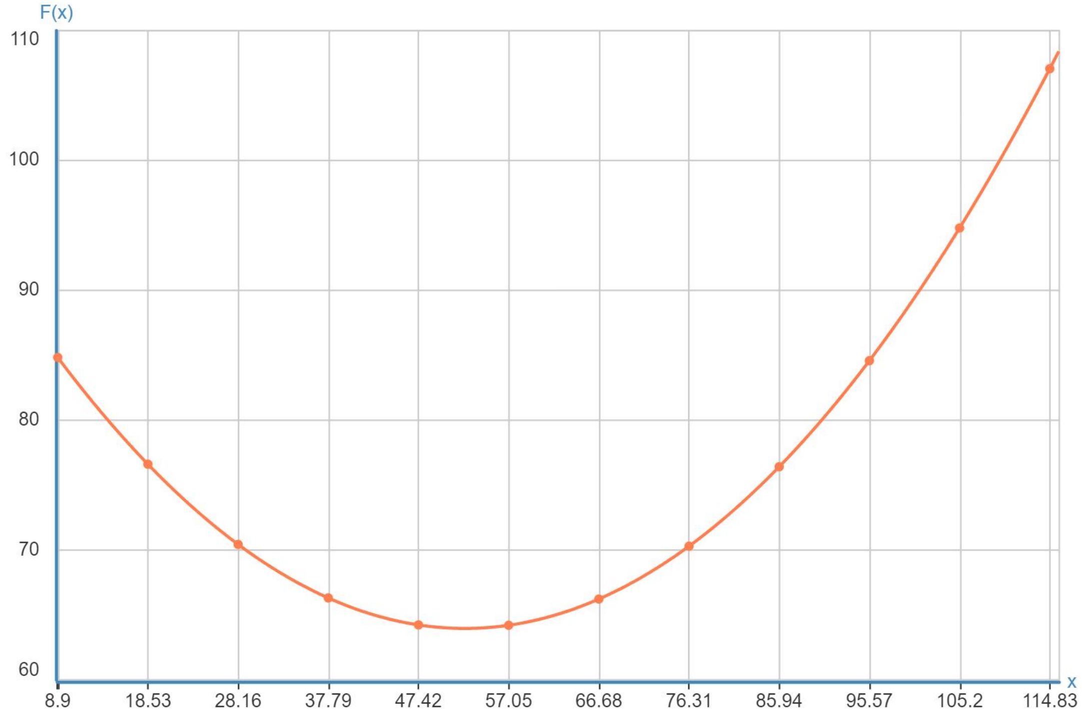
$$Price^{(n)} = Total \times Nft.price/(Total - Burn)$$



Fit the price curve:

X mark: Nft market value

Y standard: Token value



0x3 game reward ecology

0x30 game world ecology

Gamers: Hero Continental Creation players are created from when the project is launched. When everyone enters the game, it is fair. In the first stage, players can get the token by checking in and by increasing their fighting power. The second stage can get the attack power by pledging the Token.

Player revenue formula:

$$Reward = Attack \div Placefactor \times times$$

The 0x31 GameFi frame

Combined with Game (Game) Finance (Finance) Mining (Games)

GameFi The ecosystem uses cryptocurrencies, non-homogeneous tokens (NFT), and blockchain technology to create virtual games.

The game of hero mainland ecology consists of the following several subjects.

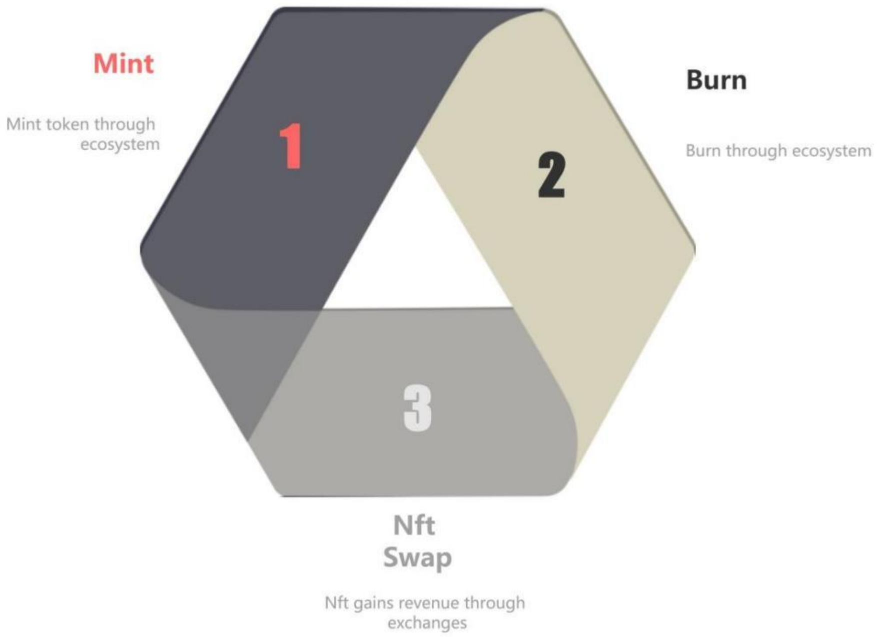
User: Play and trade virtual assets in games using the GameFi ecosystem. Make money in your play.

Token: The ecology of Hero Hero uses full chain mode, which can be used as virtual assets in games and other ecological applications.

Smart game contracts: smart contracts used in the ecosystem to support game trading and economic models. Let the game destruction and game additional issuance to achieve a certain balance.

Architecture platform: a developer platform that provides technical support for the ecosystem and develops new features.

Through these elements, the Hero Continental ecosystem tries to solve the incompatible economic model and combine the results with smart contracts into the gaming space, providing a stable, transparent, and credible closed loop of economic gaming.


Mint
Mint token through ecosystem
1
Burn
Burn through ecosystem
2
3
Nft Swap
Nft gains revenue through exchanges

0x32, the financial ecology

It mainly consists of three parts:

Coin: To release the players user revenue through mint casting, which is actually the increase in circulation.

Burning: Burning off the Token through the ecosystem. The amount of combustion can be calculated and adjusted according to the ecological situation.

NFT economy: Buy NFT through the game player configuration, and buy back part of the TOKEN.

Through these three parts, the economic loop of the whole ecology of the hero mainland, to avoid malicious inflation and high deflation.

0x33 Heroes Continental game

Hero Continental game ecology only provides the basic consumption as a game platform, while the game itself requires other project parties to enter the whole ecology. There are two main tokens, namely, Hero Continental Game and Hero Continental NFT.

Token (n) (Token of the participating ecological project party)

Aggression / defense force

Hero mainland to increase the game base attributes token

1 point = 1 token

1 token = 1 point of attack or defense

Entering the heroic mainland war system, each player will be sheltered by the city, adding different yuan (revenue) according to the city the player is in.

scene

1. The game begins

In The Land of Heroes, the legendary treasure has long been lost, and anyone who gets it will gain incredible power and have the ability to rule over the whole continent. However, the treasure also attracted the greedy eyes of the ancient demon Lord, who intended to use the power to conquer the world. Players must join their respective races to search for and compete for treasures and gold coins in a world full of magic, war, and adventure.

As a warrior, players can sign in to get a token for their adventures. Players can play the role of killing heroes, building and improving their fighting abilities through expeditions around the world. Players can also go to other cities, communicate with different forces, defeat various powerful enemies, and win epic battles to build an immortal legend.

Kingdom of Man- -City of the firmament

Background: The city of the sky is located on the top of the snow-capped mountains, symbolizing justice and order. The magnificent castle is inhabited by brave knights and wise mages, guarding the balance of the continent. Key buildings:

Spirit Forest-Starlight Valley

Background: The Valley of Starlight is a lush forest, and the home of the elves is composed of tall tree houses, and the starlight is the source of their magic. Key buildings:

Orc camp-the animal bone plateau

Background: The orcs built their camps on the desolate plateau, and the violent soldiers were constantly trained to prepare for any war. Key buildings:

The kingdom of the dead-The Shadow mausoleum

Background: The Shadow mausoleum is the gathering place of the undead, where the ancient undead army sleeps, waiting for the time of recovery. Key buildings:

Demon Territory-Abyss Fire Field

Background: The demon domain is a world full of chaos and destruction, with lava everywhere and flames everywhere. Key buildings:

Dragon clan-day flame nest

Background: The dragon people live in the hot volcanoes, the sky flame nest lies deep in the Flaming Mountains, and the hot lava rivers and burning rocks surround the mysterious place. Every dragon of the dragon clan has a powerful power, they control the power of fire and storm between heaven and earth. Tianyan Nest is a holy land for the dragon people to breed and store treasures, guarding many artifacts left over from ancient times.

Lost treasure

On this continent, every race has heard about the legend of the "creation device". Not only does the artifact empower the holder, but it can even resurrect an entire race of warriors. In order to compete for this artifact, elves, humans, orcs, undead and demons have been out, launched an unprecedented battle for treasures.

However, the ambition of the demon Lord is not only for the artifact, he also hopes to open the void, summon the ancient chaotic creatures, and then conquer the whole continent. Each race must unite to fight against the demon Lord, or in the search for artifacts, fighting for territory and against each other.

2. Income from Token (n)

User revenue is determined based on user attack power and city base and NFT bonus,

Output token = (attack force / (city base) Xnft addition) * min

If the attack force is greater than the defense force of the other side, it can rob the income of the other side

3、Formula formula of deflationary T-H attenuation:

The initial value of A0 is the base yield, λ represents the attenuation constant, and the hero mainland represents the yield, the more the greater the destruction, because the player will produce consumption when attacking other players, t represents the time variable.

$$Y = A0 \times e^{-\lambda t}$$

4. Race and patriarch system

In order to beat other cities, each city produces a patriarch, who earns twice as much as other players, and wins the title by challenging the patriarch to defeat the patriarch.

0x34 NFT

The limited version of the hero Continental game NFT is the subsidiary property of the game.

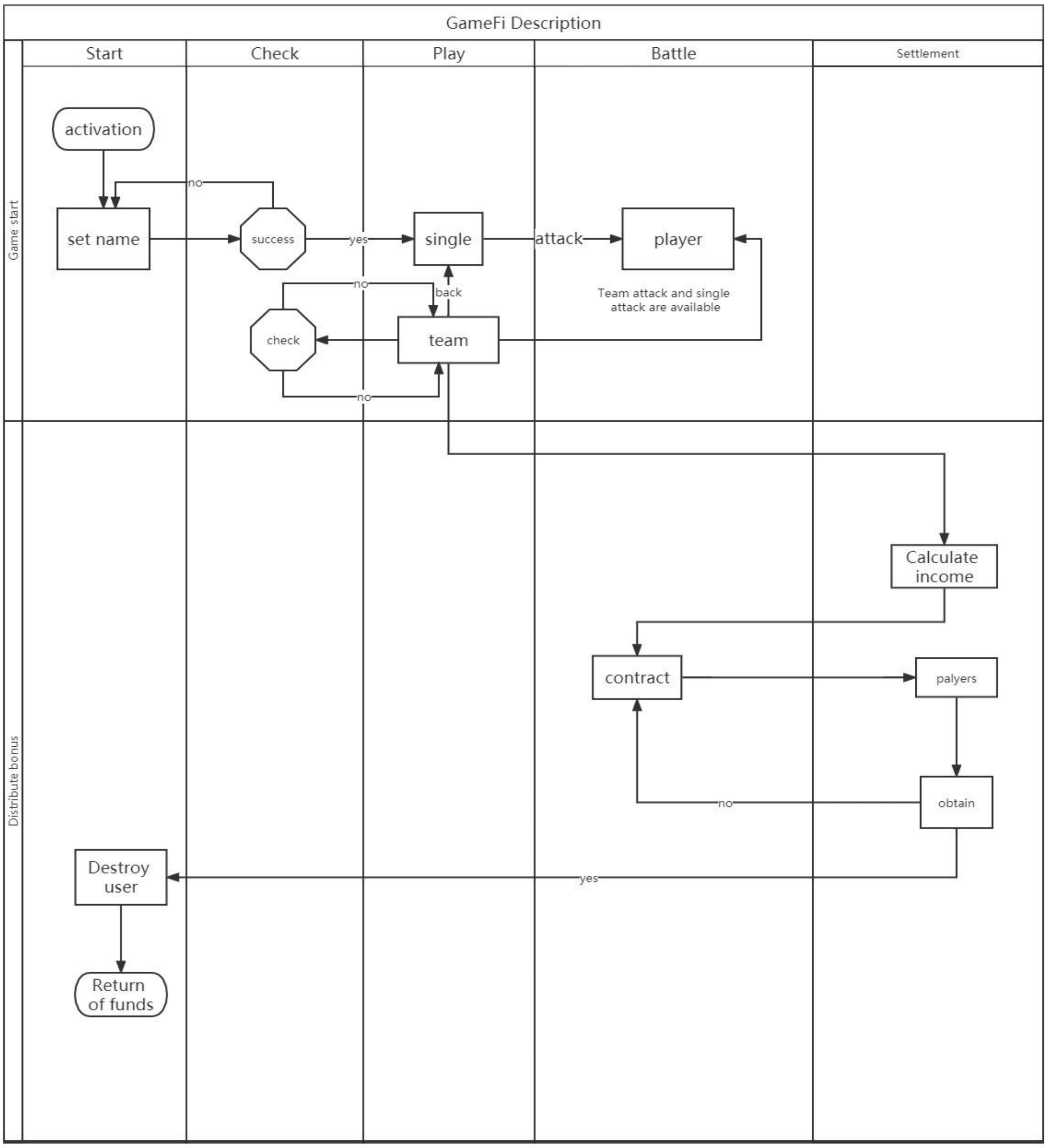
1. Users can go to the NFT exchange to buy NFT items to improve the players attributes.

2. The NFT equipment for the heroic Continental War is limited edition.

Add three ordinary attributes and two special attributes. The attack force defense was increased by percentage, and the attack cooldown was reduced by N seconds. Special attributes for the cross-city attack "Star fall", movement is unrestricted "dimensional transition".

NFT has endorsed the economic ecology of the heroic mainland. NFT sales are all the main coins on the chain. After the sale, the hero mainland tokens are regularly repurchased to solve the problem of ecological price and inflation conflict.

3. Game flow chart



0x35 Game operation instructions

View personal information: xx

View the current location player: dqwj

happy encounter:qy

Attack player: kill + player name

Move: yd + location name, such as: yd Wudang

Shenwu heart method view: zb

Clocking in: qd (get a random token)

Personal address token / nft view: zh

View the local player: wj / player

See other players: enter ck + player name for example: ck Zhang Sanfeng

Turn out token: \ n For example: turn out 0x2121212121212122222222222 quantity 100

0x4 game logic contract on the BSCTEST chain

Order contract: 0x3Da20901f8afc7b9EFF7Ac865f0FBa1dde6E7806 The game master contract completes the game basic running command.

Config Contract 0x9342E43EB9968bE6820F05ED2aF8D53752C89E9b Set the game parameters contract

User contract 0x40b4598384C0E871113D455b30E4B8ee110813A0 to store the user information contract

Math Contract 0xBA35751a0e8092Dc58BEb09E0F931E71930adbE0 Calculate the game data contract

Token contract 0x868D07Ec80CE520f56204067e4564cebA23205FE game token contract

Nft 0x4edA93289cFf16885e237F2e005aF1e8235AA31a Treasure is the representative of the NFT contract.

0x5 contract code

The NFT contract code

```
// File: openzeppelin-contracts-master/contracts/introspection/IERC165.sol

// SPDX-License-Identifier: MIT

pragma solidity ^0.6.2;

/**
* @dev Interface of the ERC165 standard, as defined in the
* https://eips.ethereum.org/EIPS/eip-165[EIP].
*
* Implementers can declare support of contract interfaces, which can then be
* queried by others ({ERC165Checker}).
*
* For an implementation, see {ERC165}.
*/
interface IERC165 {
/**
* @dev Returns true if this contract implements the interface defined by
* `interfaceId`. See the corresponding
* https://eips.ethereum.org/EIPS/eip-165#how-interfaces-are-identified[EIP section]
* to learn more about how these ids are created.
```

```
*
* This function call must use less than 30 000 gas.
*/
function supportsInterface(bytes4 interfaceId) external view returns (bool);
}

// File: openzeppelin-contracts-master/contracts/token/ERC1155/IERC1155.sol

pragma solidity ^0.6.2;

/**
* @dev Required interface of an ERC1155 compliant contract, as defined in the
* https://eips.ethereum.org/EIPS/eip-1155[EIP].
*
* _Available since v3.1._
*/
interface IERC1155 is IERC165 {
/**
* @dev Emitted when `value` tokens of token type `id` are transferred from `from` to
`to` by `operator`.
*/
event TransferSingle(address indexed operator, address indexed from, address
indexed to, uint256 id, uint256 value);

/**
* @dev Equivalent to multiple {TransferSingle} events, where `operator`, `from` and
`to` are the same for all
* transfers.
*/
event TransferBatch(address indexed operator, address indexed from, address
indexed to, uint256[] ids, uint256[] values);

/**
* @dev Emitted when `account` grants or revokes permission to `operator` to
transfer their tokens, according to
* `approved`.
*/
event ApprovalForAll(address indexed account, address indexed operator, bool
approved);

/**
* @dev Emitted when the URI for token type `id` changes to `value`, if it is a
non-programmatic URI.
*
```

```
* If an {URI} event was emitted for `id`, the standard
* https://eips.ethereum.org/EIPS/eip-1155#metadata-extensions[guarantees] that `value` will equal the value
* returned by {IERC1155MetadataURI-uri}.
*/
event URI(string value, uint256 indexed id);

/**
* @dev Returns the amount of tokens of token type `id` owned by `account`.
*
* Requirements:
*
* - `account` cannot be the zero address.
*/
function balanceOf(address account, uint256 id) external view returns (uint256);

/**
* @dev xref:ROOT:erc1155.adoc#batch-operations[Batched] version of {balanceOf}.
*
* Requirements:
*
* - `accounts` and `ids` must have the same length.
*/
function balanceOfBatch(address[] calldata accounts, uint256[] calldata ids) external view returns (uint256[] memory);

/**
* @dev Grants or revokes permission to `operator` to transfer the callers tokens, according to `approved`,
*
* Emits an {ApprovalForAll} event.
*
* Requirements:
*
* - `operator` cannot be the caller.
*/
function setApprovalForAll(address operator, bool approved) external;

/**
* @dev Returns true if `operator` is approved to transfer ``account``s tokens.
*
* See {setApprovalForAll}.
*/
function isApprovedForAll(address account, address operator) external view returns
```

```
(bool);

/**
* @dev Transfers `amount` tokens of token type `id` from `from` to `to`.
*
* Emits a {TransferSingle} event.
*
* Requirements:
*
* - `to` cannot be the zero address.
* - If the caller is not `from`, it must be have been approved to spend ``from``s tokens
via {setApprovalForAll}.
* - `from` must have a balance of tokens of type `id` of at least `amount`.
* - If `to` refers to a smart contract, it must implement
{IERC1155Receiver-onERC1155Received} and return the
* Acc the heroes of the Continental ance magic value.
*/
function safeTransferFrom(address from, address to, uint256 id, uint256 amount,
bytes calldata data) external;

/**
* @dev xref:ROOT:erc1155.adoc#batch-operations[Batched] version of
{safeTransferFrom}.
*
* Emits a {TransferBatch} event.
*
* Requirements:
*
* - `ids` and `amounts` must have the same length.
* - If `to` refers to a smart contract, it must implement
{IERC1155Receiver-onERC1155BatchReceived} and return the
* Acc the heroes of the Continental ance magic value.
*/
function safeBatchTransferFrom(address from, address to, uint256[] calldata ids,
uint256[] calldata amounts, bytes calldata data) external;
}

// File:
openzeppelin-contracts-master/contracts/token/ERC1155/IERC1155MetadataURI.sol

pragma solidity ^0.6.2;

/**
* @dev Interface of the optional ERC1155MetadataExtension interface, as defined
* in the https://eips.ethereum.org/EIPS/eip-1155#metadata-extensions[EIP].
*
* _Available since v3.1._
*/
interface IERC1155MetadataURI is IERC1155 {
/**
* @dev Returns the URI for token type `id`.
*
* If the `\{id\}` substring is present in the URI, it must be replaced by
* clients with the actual token type ID.
*/
function uri(uint256 id) external view returns (string memory);
}

// File:
openzeppelin-contracts-master/contracts/token/ERC1155/IERC1155Receiver.sol

pragma solidity ^0.6.2;

/**
* _Available since v3.1._
*/
interface IERC1155Receiver is IERC165 {

/**
@dev Handles the receipt of a single ERC1155 token type. This function is
called at the end of a `safeTransferFrom` after the balance has been updated.
To acc Hero Continental the transfer, this must return
`bytes4(keccak256("onERC1155Received(address,address,uint256,uint256,bytes)"))`
(i.e. 0xf23a6e61, or its own function selector).
@param operator The address which initiated the transfer (i.e. msg.sender)
@param from The address which previously owned the token
@param id The ID of the token being transferred
@param value The amount of tokens being transferred
@param data Additional data with no specified format
@return
`bytes4(keccak256("onERC1155Received(address,address,uint256,uint256,bytes)"))`
if transfer is allowed
*/
function onERC1155Received(
address operator,
address from,
uint256 id,
uint256 value,
bytes calldata data
)
external
returns(bytes4);

/**
@dev Handles the receipt of a multiple ERC1155 token types. This function
is called at the end of a `safeBatchTransferFrom` after the balances have
been updated. To acc Hero Continental the transfer (s), this must return
`bytes4(keccak256("onERC1155BatchReceived(address,address,uint256[],uint256[],bytes)"))`
(i.e. 0xbc197c81, or its own function selector).
@param operator The address which initiated the batch transfer (i.e. msg.sender)
@param from The address which previously owned the token
@param ids An array containing ids of each token being transferred (order and length must match values array)
@param values An array containing amounts of each token being transferred (order and length must match ids array)
@param data Additional data with no specified format
@return
`bytes4(keccak256("onERC1155BatchReceived(address,address,uint256[],uint256[],bytes)"))` if transfer is allowed
*/
function onERC1155BatchReceived(
address operator,
address from,
uint256[] calldata ids,
uint256[] calldata values,
bytes calldata data
)
external
returns(bytes4);
}

// File: openzeppelin-contracts-master/contracts/GSN/Context.sol

pragma solidity ^0.6.2;

/*
* @dev Provides information about the current execution context, including the
* sender of the transaction and its data. While these are generally available
* via msg.sender and msg.data, they should not be accessed in such a direct
* manner, since when dealing with GSN meta-transactions the account sending and
* paying for execution may not be the actual sender (as far as an application
* is concerned).
*
* This contract is only required for intermediate, library-like contracts.
*/
abstract contract Context {
function _msgSender() internal view virtual returns (address payable) {
return msg.sender;
}

function _msgData() internal view virtual returns (bytes memory) {
this; // silence state mutability warning without generating bytecode - see https://github.com/ethereum/solidity/issues/2691
return msg.data;
}
}

// File: openzeppelin-contracts-master/contracts/introspection/ERC165.sol

pragma solidity ^0.6.2;

/**
* @dev Implementation of the {IERC165} interface.
*
* Contracts may inherit from this and call {_registerInterface} to declare
* their support of an interface.
*/
contract ERC165 is IERC165 {
/*
* bytes4(keccak256(supportsInterface(bytes4))) == 0x01ffc9a7
*/
bytes4 private constant _INTERFACE_ID_ERC165 = 0x01ffc9a7;

/**
* @dev Mapping of interface ids to whether or not its supported.
*/
mapping(bytes4 => bool) private _supportedInterfaces;

constructor () internal {
// Derived contracts need only register support for their own interfaces,
// we register support for ERC165 itself here
_registerInterface(_INTERFACE_ID_ERC165);
}

/**
```

```
* @dev See {IERC165-supportsInterface}.
*
* Time complexity O(1), guaranteed to always use less than 30 000 gas.
*/
function supportsInterface(bytes4 interfaceId) public view override returns (bool) {
return _supportedInterfaces[interfaceId];
}

/**
* @dev Registers the contract as an implementer of the interface defined by
* `interfaceId`. Support of the actual ERC165 interface is automatic and
* registering its interface id is not required.
*
* See {IERC165-supportsInterface}.
*
* Requirements:
*
* - `interfaceId` cannot be the ERC165 invalid interface (`0xffffffff`).
*/
function _registerInterface(bytes4 interfaceId) internal virtual {
require(interfaceId != 0xffffffff, "ERC165: invalid interface id");
_supportedInterfaces[interfaceId] = true;
}
}

// File: openzeppelin-contracts-master/contracts/math/SafeMath.sol

pragma solidity ^0.6.2;

/**
* @dev Wrappers over Soliditys arithmetic operations with added overflow
* checks.
*
* Arithmetic operations in Solidity wrap on overflow. This can easily result
* in bugs, because programmers usually assume that an overflow raises an
* error, which is the standard behavior in high level programming languages.
* `SafeMath` restores this intuition by reverting the transaction when an
* operation overflows.
*
* Using this library instead of the unchecked operations eliminates an entire
* class of bugs, so its recommended to use it always.
*/
library SafeMath {
/**
```

```
* @dev Returns the addition of two unsigned integers, reverting on
* overflow.
*
* Counterpart to Soliditys `+` operator.
*
* Requirements:
*
* - Addition cannot overflow.
*/
function add(uint256 a, uint256 b) internal pure returns (uint256) {
uint256 c = a + b;
require(c >= a, "SafeMath: addition overflow");

return c;
}

/**
* @dev Returns the subtraction of two unsigned integers, reverting on
* overflow (when the result is negative).
*
* Counterpart to Soliditys `-` operator.
*
* Requirements:
*
* - Subtraction cannot overflow.
*/
function sub(uint256 a, uint256 b) internal pure returns (uint256) {
return sub(a, b, "SafeMath: subtraction overflow");
}

/**
* @dev Returns the subtraction of two unsigned integers, reverting with custom
message on
* overflow (when the result is negative).
*
* Counterpart to Soliditys `-` operator.
*
* Requirements:
*
* - Subtraction cannot overflow.
*/
function sub(uint256 a, uint256 b, string memory errorMessage) internal pure
returns (uint256) {
require(b <= a, errorMessage);
uint256 c = a - b;

return c;
}

/**
* @dev Returns the multiplication of two unsigned integers, reverting on
* overflow.
*
* Counterpart to Soliditys `*` operator.
*
* Requirements:
*
* - Multiplication cannot overflow.
*/
function mul(uint256 a, uint256 b) internal pure returns (uint256) {
// Gas optimization: this is cheaper than requiring a not being zero, but the
// benefit is lost if b is also tested.
// See: https://github.com/OpenZeppelin/openzeppelin-contracts/pull/522
if (a == 0) {
return 0;
}

uint256 c = a * b;
require(c / a == b, "SafeMath: multiplication overflow");

return c;
}

/**
* @dev Returns the integer division of two unsigned integers. Reverts on
* division by zero. The result is rounded towards zero.
*
* Counterpart to Soliditys `/` operator. Note: this function uses a
* `revert` opcode (which leaves remaining gas untouched) while Solidity
* uses an invalid opcode to revert (consuming all remaining gas).
*
* Requirements:
*
* - The divisor cannot be zero.
*/
function div(uint256 a, uint256 b) internal pure returns (uint256) {
return div(a, b, "SafeMath: division by zero");
}
```

```
/**
* @dev Returns the integer division of two unsigned integers. Reverts with custom
message on
* division by zero. The result is rounded towards zero.
*
* Counterpart to Soliditys `/` operator. Note: this function uses a
* `revert` opcode (which leaves remaining gas untouched) while Solidity
* uses an invalid opcode to revert (consuming all remaining gas).
*
* Requirements:
*
* - The divisor cannot be zero.
*/
function div(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {
require(b > 0, errorMessage);
uint256 c = a / b;
// assert(a == b * c + a % b); // There is no case in which this doesnt hold

return c;
}

/**
* @dev Returns the remainder of dividing two unsigned integers. (unsigned integer
modulo),
* Reverts when dividing by zero.
*
* Counterpart to Soliditys `%` operator. This function uses a `revert`
* opcode (which leaves remaining gas untouched) while Solidity uses an
* invalid opcode to revert (consuming all remaining gas).
*
* Requirements:
*
* - The divisor cannot be zero.
*/
function mod(uint256 a, uint256 b) internal pure returns (uint256) {
return mod(a, b, "SafeMath: modulo by zero");
}

/**
* @dev Returns the remainder of dividing two unsigned integers. (unsigned integer
modulo),
* Reverts with custom message when dividing by zero.
```

```
*
* Counterpart to Soliditys `%` operator. This function uses a `revert`
* opcode (which leaves remaining gas untouched) while Solidity uses an
* invalid opcode to revert (consuming all remaining gas).
*
* Requirements:
*
* - The divisor cannot be zero.
*/
function mod(uint256 a, uint256 b, string memory errorMessage) internal pure returns (uint256) {
require(b != 0, errorMessage);
return a % b;
}
}

// File: openzeppelin-contracts-master/contracts/utils/Address.sol

pragma solidity ^0.6.2;

/**
* @dev Collection of functions related to the address type
*/
library Address {
/**
* @dev Returns true if `account` is a contract.
*
* [IMPORTANT]
* ====
* It is unsafe to assume that an address for which this function returns
* false is an externally-owned account (EOA) and not a contract.
*
* Among others, `isContract` will return false for the following
* types of addresses:
*
*   - an externally-owned account
*   - a contract in construction
*   - an address where a contract will be created
*   - an address where a contract lived, but was destroyed
* ====
*/
function isContract(address account) internal view returns (bool) {
// This method relies on extcodesize, which returns 0 for contracts in
// construction, since the code is only stored at the end of the
// constructor execution.

uint256 size;
// solhint-disable-next-line no-inline-assembly
assembly { size := extcodesize(account) }
return size > 0;
}

/**
* @dev Replacement for Soliditys `transfer`: sends `amount` wei to
* `recipient`, forwarding all available gas and reverting on errors.
*
* https://eips.ethereum.org/EIPS/eip-1884[EIP1884] increases the gas cost
* of certain opcodes, possibly making contracts go over the 2300 gas limit
* imposed by `transfer`, making them unable to receive funds via
* `transfer`. {sendValue} removes this limitation.
*
*
https://diligence.consensys.net/posts/2019/09/stop-using-soliditys-transfer-now/[Learn more].
*
* IMPORTANT: because control is transferred to `recipient`, care must be
* taken to not create reentrancy vulnerabilities. Consider using
* {ReentrancyGuard} or the
*
https://solidity.readthedocs.io/en/v0.5.11/security-considerations.html#use-the-checks-effects-interactions-pattern[checks-effects-interactions pattern].
*/
function sendValue(address payable recipient, uint256 amount) internal {
require(address(this).balance >= amount, "Address: insufficient balance");

// solhint-disable-next-line avoid-low-level-calls, avoid-call-value
(bool success, ) = recipient.call{ value: amount }("");
require(success, "Address: unable to send value, recipient may have reverted");
}

/**
* @dev Performs a Solidity function call using a low level `call`. A
* plain`call` is an unsafe replacement for a function call: use this
* function instead.
*
* If `target` reverts with a revert reason, it is bubbled up by this
* function (like regular Solidity function calls).
*
```

```
* Returns the raw returned data. To convert to the expected return value,
* use https://solidity.readthedocs.io/en/latest/units-and-global-variables.html?highlight=abi.decode#abi-encoding-and-decoding-functions[`abi.decode`].
*
* Requirements:
*
* - `target` must be a contract.
* - calling `target` with `data` must not revert.
*
* _Available since v3.1._
*/
function functionCall(address target, bytes memory data) internal returns (bytes memory) {
return functionCall(target, data, "Address: low-level call failed");
}

/**
* @dev Same as {xref-Address-functionCall-address-bytes-}[`functionCall`], but with
* `errorMessage` as a fallback revert reason when `target` reverts.
*
* _Available since v3.1._
*/
function functionCall(address target, bytes memory data, string memory errorMessage) internal returns (bytes memory) {
return functionCallWithValue(target, data, 0, errorMessage);
}

/**
* @dev Same as {xref-Address-functionCall-address-bytes-}[`functionCall`],
* but also transferring `value` wei to `target`.
*
* Requirements:
*
* - the calling contract must have an ETH balance of at least `value`.
* - the called Solidity function must be `payable`.
*
* _Available since v3.1._
*/
function functionCallWithValue(address target, bytes memory data, uint256 value) internal returns (bytes memory) {
return functionCallWithValue(target, data, value, "Address: low-level call with value failed");
}
```

```
/**
* @dev Same as
{xref-Address-functionCallWithValue-address-bytes-uint256-}[`functionCallWithValue
`], but
* with `errorMessage` as a fallback revert reason when `target` reverts.
*
* _Available since v3.1._
*/
function functionCallWithValue(address target, bytes memory data, uint256 value,
string memory errorMessage) internal returns (bytes memory) {
require(address(this).balance >= value, "Address: insufficient balance for call");
require(isContract(target), "Address: call to non-contract");

// solhint-disable-next-line avoid-low-level-calls
(bool success, bytes memory returndata) = target.call{ value: value }(data);
return _verifyCallResult(success, returndata, errorMessage);
}

/**
* @dev Same as {xref-Address-functionCall-address-bytes-}[`functionCall`],
* but performing a static call.
*
* _Available since v3.3._
*/
function functionStaticCall(address target, bytes memory data) internal view returns
(bytes memory) {
return functionStaticCall(target, data, "Address: low-level static call failed");
}

/**
* @dev Same as {xref-Address-functionCall-address-bytes-string-}[`functionCall`],
* but performing a static call.
*
* _Available since v3.3._
*/
function functionStaticCall(address target, bytes memory data, string memory
errorMessage) internal view returns (bytes memory) {
require(isContract(target), "Address: static call to non-contract");

// solhint-disable-next-line avoid-low-level-calls
(bool success, bytes memory returndata) = target.staticcall(data);
return _verifyCallResult(success, returndata, errorMessage);
}
```

```
/**
* @dev Same as {xref-Address-functionCall-address-bytes-}[`functionCall`],
* but performing a delegate call.
*
* _Available since v3.3._
*/
function functionDelegateCall(address target, bytes memory data) internal returns (bytes memory) {
return functionDelegateCall(target, data, "Address: low-level delegate call failed");
}

/**
* @dev Same as {xref-Address-functionCall-address-bytes-string-}[`functionCall`],
* but performing a delegate call.
*
* _Available since v3.3._
*/
function functionDelegateCall(address target, bytes memory data, string memory errorMessage) internal returns (bytes memory) {
require(isContract(target), "Address: delegate call to non-contract");

// solhint-disable-next-line avoid-low-level-calls
(bool success, bytes memory returndata) = target.delegatecall(data);
return _verifyCallResult(success, returndata, errorMessage);
}

function _verifyCallResult(bool success, bytes memory returndata, string memory errorMessage) private pure returns(bytes memory) {
if (success) {
return returndata;
} else {
// Look for revert reason and bubble it up if present
if (returndata.length > 0) {
// The easiest way to bubble the revert reason is using memory via assembly

// solhint-disable-next-line no-inline-assembly
assembly {
let returndata_size := mload(returndata)
revert(add(32, returndata), returndata_size)
}
} else {
revert(errorMessage);
}
}
}
}

// @dev Implementation for different URIs for every token
contract TokenURI {
// mapping for token URIs
mapping(uint256 => string) private _tokenURIs;

function _tokenURI(uint256 tokenId) internal view returns (string memory) {
return _tokenURIs[tokenId];
}

function _setTokenURI(uint256 tokenId, string memory tokenUri) virtual internal {
_tokenURIs[tokenId] = tokenUri;
}
}

// File: openzeppelin-contracts-master/contracts/token/ERC1155/ERC1155.sol
pragma solidity ^0.6.2;

/**
*
* @dev Implementation of the basic standard multi-token.
* See https://eips.ethereum.org/EIPS/eip-1155
* Originally based on code by Enjin: https://github.com/enjin/erc-1155
*
* _Available since v3.1._
*/
contract ERC1155 is Context, ERC165, IERC1155, IERC1155MetadataURI, TokenURI {
using SafeMath for uint256;
using Address for address;

// Mapping from token ID to account balances
mapping (uint256 => mapping(address => uint256)) private _balances;

// Mapping from account to operator approvals
mapping (address => mapping(address => bool)) private _operatorApprovals;

// Used as the URI for all token types by relying on ID substitution, e.g. https://token-cdn-domain/{id}.json
string private _uri;

/*
```

```
*       bytes4(keccak256(balanceOf(address,uint256))) == 0x00fdd58e
*       bytes4(keccak256(balanceOfBatch(address[],uint256[]))) == 0x4e1273f4
*       bytes4(keccak256(setApprovalForAll(address,bool))) == 0xa22cb465
*       bytes4(keccak256(isApprovedForAll(address,address))) == 0xe985e9c5
*         bytes4(keccak256(safeTransferFrom(address,address,uint256,uint256,bytes)))
== 0xf242432a
*        bytes4(keccak256(safeBatchTransferFrom(address,address,uint256[],uint256[],
bytes))) == 0x2eb2c2d6
*
*       => 0x00fdd58e ^ 0x4e1273f4 ^ 0xa22cb465 ^
*          0xe985e9c5 ^ 0xf242432a ^ 0x2eb2c2d6 == 0xd9b67a26
*/
bytes4 private constant _INTERFACE_ID_ERC1155 = 0xd9b67a26;

/*
*       bytes4(keccak256(uri(uint256))) == 0x0e89341c
*/
bytes4 private constant _INTERFACE_ID_ERC1155_METADATA_URI = 0x0e89341c;

/**
* @dev See {_setURI}.
*/
constructor (string memory uri) public {
_setURI(uri);

// register the supported interfaces to conform to ERC1155 via ERC165
_registerInterface(_INTERFACE_ID_ERC1155);

// register the supported interfaces to conform to ERC1155MetadataURI via ERC165
_registerInterface(_INTERFACE_ID_ERC1155_METADATA_URI);
}

/**
* @dev See {IERC1155MetadataURI-uri}.
*
* This implementation returns the same URI for *all* token types. It relies
* on the token type ID substitution mechanism
* https://eips.ethereum.org/EIPS/eip-1155#metadata[defined in the EIP].
*
* Clients calling this function must replace the `\{id\}` substring with the
* actual token type ID.
*/
function uri(uint256 id) external view virtual override returns (string memory) {
return _tokenURI(id);
}

/**
* @dev See {IERC1155-balanceOf}.
*
* Requirements:
*
* - `account` cannot be the zero address.
*/
function balanceOf(address account, uint256 id) public view override returns
(uint256) {
require(account != address(0), "ERC1155: balance query for the zero address");
return _balances[id][account];
}

/**
* @dev See {IERC1155-balanceOfBatch}.
*
* Requirements:
*
* - `accounts` and `ids` must have the same length.
*/
function balanceOfBatch(
address[] memory accounts,
uint256[] memory ids
)
public
view
override
returns (uint256[] memory)
{
require(accounts.length == ids.length, "ERC1155: accounts and ids length
mismatch");

uint256[] memory batchBalances = new uint256[](accounts.length);

for (uint256 i = 0; i < accounts.length; ++i) {
require(accounts[i] != address(0), "ERC1155: batch balance query for the zero
address");
batchBalances[i] = _balances[ids[i]][accounts[i]];
}

return batchBalances;
}
```

```
/**
* @dev See {IERC1155-setApprovalForAll}.
*/
function setApprovalForAll(address operator, bool approved) public virtual override {
require(_msgSender() != operator, "ERC1155: setting approval status for self");

_operatorApprovals[_msgSender()][operator] = approved;
emit ApprovalForAll(_msgSender(), operator, approved);
}

/**
* @dev See {IERC1155-isApprovedForAll}.
*/
function isApprovedForAll(address account, address operator) public view override
returns (bool) {
return _operatorApprovals[account][operator];
}

/**
* @dev See {IERC1155-safeTransferFrom}.
*/
function safeTransferFrom(
address from,
address to,
uint256 id,
uint256 amount,
bytes memory data
)
public
virtual
override
{
require(to != address(0), "ERC1155: transfer to the zero address");
require(
from == _msgSender() || isApprovedForAll(from, _msgSender()),
"ERC1155: caller is not owner nor approved"
);

address operator = _msgSender();

_beforeTokenTransfer(operator, from, to, _asSingletonArray(id),
_asSingletonArray(amount), data);
```

```
_balances[id][from] = _balances[id][from].sub(amount, "ERC1155: insufficient balance for transfer");
_balances[id][to] = _balances[id][to].add(amount);

emit TransferSingle(operator, from, to, id, amount);

_doSafeTransferAcc Hero mainland anceCheck (operator, from, to, id, amount, data);
}

/**
* @dev See {IERC1155-safeBatchTransferFrom}.
*/
function safeBatchTransferFrom(
address from,
address to,
uint256[] memory ids,
uint256[] memory amounts,
bytes memory data
)
public
virtual
override
{
require(ids.length == amounts.length, "ERC1155: ids and amounts length mismatch");
require(to != address(0), "ERC1155: transfer to the zero address");
require(
from == _msgSender() || isApprovedForAll(from, _msgSender()),
"ERC1155: transfer caller is not owner nor approved"
);

address operator = _msgSender();

_beforeTokenTransfer(operator, from, to, ids, amounts, data);

for (uint256 i = 0; i < ids.length; ++i) {
uint256 id = ids[i];
uint256 amount = amounts[i];

_balances[id][from] = _balances[id][from].sub(
amount,
"ERC1155: insufficient balance for transfer"
);
_balances[id][to] = _balances[id][to].add(amount);
}

emit TransferBatch(operator, from, to, ids, amounts);

_doSafeBatchTransferAcc Hero mainland anceCheck (operator, from, to, ids, amounts,
data);
}

/**
* @dev Sets a new URI for all token types, by relying on the token type ID
* substitution mechanism
* https://eips.ethereum.org/EIPS/eip-1155#metadata[defined in the EIP].
*
* By this mechanism, any occurrence of the `\{id\}` substring in either the
* URI or any of the amounts in the JSON file at said URI will be replaced by
* clients with the token type ID.
*
* For example, the `https://token-cdn-domain/\{id\}.json` URI would be
* interpreted by clients as
*
`https://token-cdn-domain/0000000000000000000000000000000000000000000000
00000000000004cce0.json`
* for token type ID 0x4cce0.
*
* See {uri}.
*
* Because these URIs cannot be meaningfully represented by the {URI} event,
* this function emits no events.
*/
function _setURI(string memory newuri) internal virtual {
_uri = newuri;
}

/**
* @dev Creates `amount` tokens of token type `id`, and assigns them to `account`.
*
* Emits a {TransferSingle} event.
*
* Requirements:
*
* - `account` cannot be the zero address.
* - If `to` refers to a smart contract, it must implement
{IERC1155Receiver-onERC1155Received} and return the
* Acc the heroes of the Continental ance magic value.
```

```
*/
function _mint(address account, uint256 tokenId, uint256 amount, string memory
tokenUri, bytes memory data) internal virtual {
require(account != address(0), "ERC1155: mint to the zero address");

address operator = _msgSender();

_beforeTokenTransfer(operator, address(0), account, _asSingletonArray(tokenId),
_asSingletonArray(amount), data);

_balances[tokenId][account] = _balances[tokenId][account].add(amount);
_setTokenURI(tokenId, tokenUri);

emit TransferSingle(operator, address(0), account, tokenId, amount);

_doSafeTransferAcc Hero mainland anceCheck (operator, address (0), account,
tokenId, amount, data);
}

/**
* @dev Internal function to set the token URI for a given token.
* Reverts if the token ID does not exist.
* @param tokenId uint256 ID of the token to set its URI
* @param tokenUri string URI to assign
*/
function _setURI( uint256 tokenId,   string memory tokenUri) internal virtual {
_setTokenURI(tokenId, tokenUri);
}

function _setTokenURI(uint256 tokenId, string memory tokenUri) internal override {
super._setTokenURI(tokenId, tokenUri);
}

/**
* @dev xref:ROOT:erc1155.adoc#batch-operations[Batched] version of {_mint}.
*
* Requirements:
*
* - `ids` and `amounts` must have the same length.
* - If `to` refers to a smart contract, it must implement
{IERC1155Receiver-onERC1155BatchReceived} and return the
* Acc the heroes of the Continental ance magic value.
*/
function _mintBatch(address to, uint256[] memory ids, uint256[] memory amounts,
bytes memory data) internal virtual {
require(to != address(0), "ERC1155: mint to the zero address");
require(ids.length == amounts.length, "ERC1155: ids and amounts length mismatch");

address operator = _msgSender();

_beforeTokenTransfer(operator, address(0), to, ids, amounts, data);

for (uint i = 0; i < ids.length; i++) {
_balances[ids[i]][to] = amounts[i].add(_balances[ids[i]][to]);
}

emit TransferBatch(operator, address(0), to, ids, amounts);

_doSafeBatchTransferAcc Hero mainland anceCheck (operator, address (0), to, ids, amounts, data);
}

/**
* @dev Destroys `amount` tokens of token type `id` from `account`
*
* Requirements:
*
* - `account` cannot be the zero address.
* - `account` must have at least `amount` tokens of token type `id`.
*/
function _burn(address account, uint256 id, uint256 amount) internal virtual {
require(account != address(0), "ERC1155: burn from the zero address");

address operator = _msgSender();

_beforeTokenTransfer(operator, account, address(0), _asSingletonArray(id), _asSingletonArray(amount), "");

_balances[id][account] = _balances[id][account].sub(
amount,
"ERC1155: burn amount exceeds balance"
);

emit TransferSingle(operator, account, address(0), id, amount);
}

/**
```

```
* @dev xref:ROOT:erc1155.adoc#batch-operations[Batched] version of {_burn}.
*
* Requirements:
*
* - `ids` and `amounts` must have the same length.
*/
function _burnBatch(address account, uint256[] memory ids, uint256[] memory
amounts) internal virtual {
require(account != address(0), "ERC1155: burn from the zero address");
require(ids.length == amounts.length, "ERC1155: ids and amounts length
mismatch");

address operator = _msgSender();

_beforeTokenTransfer(operator, account, address(0), ids, amounts, "");

for (uint i = 0; i < ids.length; i++) {
_balances[ids[i]][account] = _balances[ids[i]][account].sub(
amounts[i],
"ERC1155: burn amount exceeds balance"
);
}

emit TransferBatch(operator, account, address(0), ids, amounts);
}

/**
* @dev Hook that is called before any token transfer. This includes minting
* and burning, as well as batched variants.
*
* The same hook is called on both single and batched variants. For single
* transfers, the length of the `id` and `amount` arrays will be 1.
*
* Calling conditions (for each `id` and `amount` pair):
*
* - When `from` and `to` are both non-zero, `amount` of ``from``s tokens
* of token type `id` will be   transferred to `to`.
* - When `from` is zero, `amount` tokens of token type `id` will be minted
* for `to`.
* - when `to` is zero, `amount` of ``from``s tokens of token type `id`
* will be burned.
* - `from` and `to` are never both zero.
* - `ids` and `amounts` have the same, non-zero length.
*
```

```
* To learn more about hooks, head to
xref:ROOT:extending-contracts.adoc#using-hooks[Using Hooks].
*/
function _beforeTokenTransfer(
address operator,
address from,
address to,
uint256[] memory ids,
uint256[] memory amounts,
bytes memory data
)
internal virtual
{ }

function _doSafeTransferAcc Hero Continental anceCheck (
address operator,
address from,
address to,
uint256 id,
uint256 amount,
bytes memory data
)
private
{
if (to.isContract()) {
try IERC1155Receiver(to).onERC1155Received(operator, from, id, amount, data)
returns (bytes4 response) {
if (response != IERC1155Receiver(to).onERC1155Received.selector) {
revert("ERC1155: ERC1155Receiver rejected tokens");
}
} catch Error(string memory reason) {
revert(reason);
} catch {
revert("ERC1155: transfer to non ERC1155Receiver implementer");
}
}
}

function _doSafeBatchTransferAcc Hero Continental anceCheck (
address operator,
address from,
address to,
uint256[] memory ids,
uint256[] memory amounts,
bytes memory data
)
private
{
if (to.isContract()) {
try IERC1155Receiver(to).onERC1155BatchReceived(operator, from, ids, amounts, data) returns (bytes4 response) {
if (response != IERC1155Receiver(to).onERC1155BatchReceived.selector) {
revert("ERC1155: ERC1155Receiver rejected tokens");
}
} catch Error(string memory reason) {
revert(reason);
} catch {
revert("ERC1155: transfer to non ERC1155Receiver implementer");
}
}
}

function _asSingletonArray(uint256 element) private pure returns (uint256[] memory)
{
uint256[] memory array = new uint256[](1);
array[0] = element;

return array;
}
}

pragma solidity ^0.6.2;

contract NFTTokens is ERC1155 {
address public governance;
uint256 public nftCount;

modifier onlyGovernance() {
require(msg.sender == governance, "only governance can call this");

_;
}

constructor(address governance_) public ERC1155("MateXgame") {
governance = governance_;
nftCount = 0;
}
```

```
function addNewcard(uint256 initialSupply,string calldata _tokenUri) external onlyGovernance {
nftCount++;
uint256 nftTokenClassId = nftCount;
_mint(msg.sender, nftTokenClassId, initialSupply, _tokenUri, "");
}

function getMetaverseCount() public view   returns(uint256) {
return nftCount;
}
function setURI( uint256 tokenId,string calldata tokenUri) external onlyGovernance {
_setURI(tokenId, tokenUri);
}
}
```

0x6 Reference

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