

GBP-13 Define token format (GRC721)

I. Overview

- GRC721 token format is based on GRC20 token format, and the smart contract is written in decorated JavaScript (djs).

- It contains many state variables:

- `_name` [1]
- `_symbol` [2]
- `_owners` [3]
- `_balances` [4]
- `_tokenApprovals` [5]
- `_operatorApprovals` [6]

And methods:

- `constructor(name_ : string, symbol_ : string)` [1]
- `balanceOf(owner : string) : number` [2]
- `ownerOf(tokenId : number) : string` [3]
- `name() : string` [4]
- `symbol() : string` [5]
- `approve(to : string, tokenId : number)` [6]
- `getApproved(tokenId : number) : string` [7]
- `setApprovalForAll(operator : string, approved : boolean)` [8]
- `isApprovedForAll(owner : string, operator : string) : string` [9]
- `transferFrom(from : string, to : string, tokenId : number)` [10]
- `_exists(tokenId : number) : boolean` [11]
- `_isApprovedOrOwner(spender : string, tokenId : number) : boolean` [12]
- `_mint(to : string, tokenId : number)` [13]
- `_burn(tokenId : number)` [14]
- `_transfer(from : string, to : string, tokenId : number)` [15]
- `_approve(to : string, tokenId : number)` [16]
- `_beforeTokenTransfer(from : string, to : string, tokenId : number)` [17]

II. Contract State

[1]: Token name

[2]: Token symbol

- [3]: Mapping from token ID to owner address
- [4]: Mapping owner address to token count
- [5]: Mapping from token ID to approved address
- [6]: Mapping from owner to operator approvals

III. Contract's Methods

- [1]: Initializes the contract by setting a `name` and a `symbol` to the token collection.
- [2]: check balances of an account address
- [3]: owner of a token
- [4]: name of token
- [5]: symbol of token
- [6]: approve token to other account
- [7]: check approval of a token
- [8]: set approval for a token
- [9]: check whether a account is operator of another's token
- [10]: transfer token from an account to others.
- [11]: check if a address existed
- [12]: check if a account own or is approved for a token
- [13]: mint a tokenId
- [14]: burn a tokenId
- [15]: transfer token from an account to others
- [16]: approve token for an account.
- [17]: do something before transferring token.