ERC721 Exercise 1

Intro

In this exercise you will create your own ERC721 token using the OpenZeppelin ERC721 Cairo Component. Then, you will add some minting functionality to it, and eventually test it.

Accounts

- 123 - Deployer & Owner
- 1 - Alice
- 2 - Bob

Tasks

Implement the ERC721 contract in `src/exercises/erc721/my_nft.cairo`

1. Create the interface `ERC721Mintable` with one function: `mint()`, which receives a `tokenId` and an `address` to mint the token to.
2. Load all needed modules and components from OpenZeppelin cairo contracts, make sure to load everything needed.
3. In the constructor: Set the owner of the contract, and initialize the ERC721 component with `name` and `symbol` of your choice
4. Implement an internal function to check if the caller is the owner of the contract
5. Implement the `ERC721Mintable` interface with an external `mint()` function, make sure that only the owner can call the `mint()` function.

Testing in the `src/exercises/erc721/test_erc721.cairo` file

1. Implement a utility `mint_nft()` function that will be used to mint NFTs for users
2. In the `test_mint` block
    1. Mint tokenId 1 to Alice
    2. Make sure that Alice is the owner of the tokenId 1
3. In the test `test_transfer` block
    1. Approve Bob to spend token id 1 on behalf of Alice
    2. Transfer tokenId 1 from Alice to Bob
    3. Check if Bob is the owner of the token id 1
    4. Check the the balance of Alice is 0 and the balance of Bob is 1

Useful links

Foundry testing

Openzeppelin docs for ERC721

Openzeppelin ERC721 implementation in Cairo