



# 리액트로 구현하는 이더리움 ERC-721

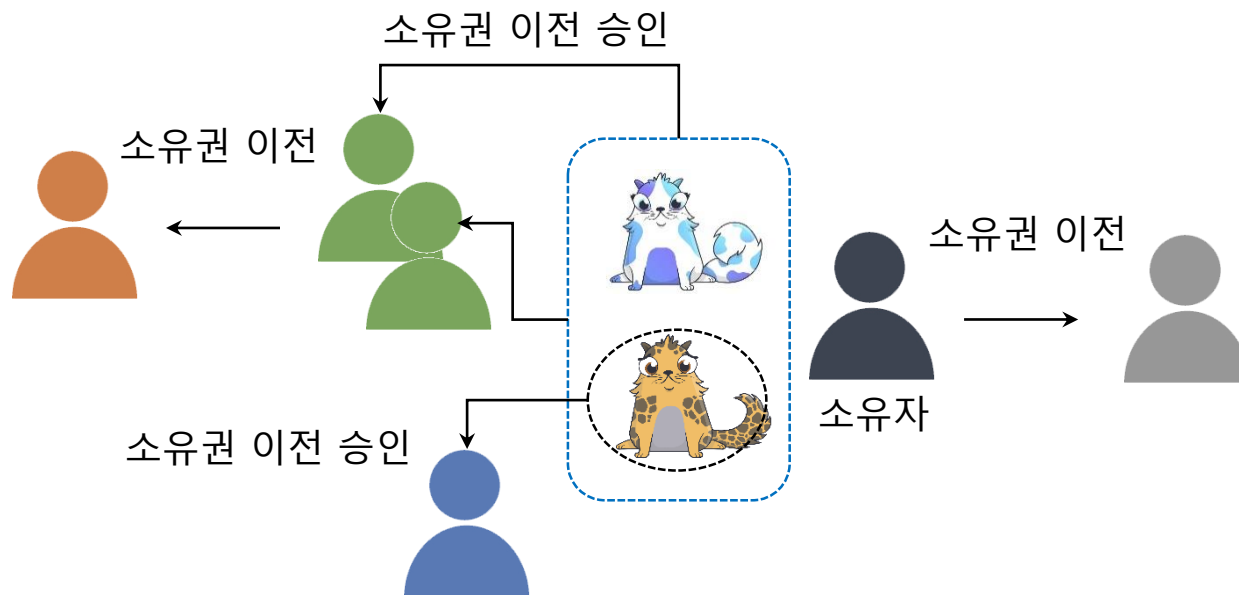


# 1. ERC-721

- A standard interface for non-fungible tokens, also known as deeds.

“Non-fungible” : 가치가 서로 상이한 유일한 것

“Deed” : 소유권(권리) 증명 ➤ a legal document that is an official record of an agreement or official proof that someone owns land or a building



# 1. ERC-721

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- interface 인터페이스

- ✓ 구현부(body)가 전혀 없이 함수를 선언한 컨트랙트  
(하나라도 구현한 것이 있으면 추상 컨트랙트)
- ✓ 함수는 external로 선언되어야 하고 생성자와 상태변수를 가질 수 없음
- ✓ 다중 인터페이스 가능  

```
contract DeedToken is ERC721, ERC165 {  
    ...  
}
```

# 1. ERC-721

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- ERC-721 표준에 정의된 인터페이스

- ✓ ① **ERC721**    메인 인터페이스

- ② **ERC721TokenReceiver**

- ✓ ③ **ERC721Metadata**

- ✓ ④ **ERC721Enumerable**

} 확장 인터페이스

# 1. ERC-721

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- ERC-721 메인 인터페이스

```
pragma solidity ^0.4.20;

/// @title ERC-721 Non-Fungible Token Standard
/// @dev See https://github.com/ethereum/EIPs/blob/master/EIPS/eip-721.md
/// Note: the ERC-165 identifier for this interface is 0x80ac58cd.

interface ERC721 /* is ERC165 */ {

    event Transfer(address indexed _from, address indexed _to, uint256 indexed _tokenId);
    event Approval(address indexed _owner, address indexed _approved, uint256 indexed _tokenId);
    event ApprovalForAll(address indexed _owner, address indexed _operator, bool _approved);

    function balanceOf(address _owner) external view returns (uint256);
    function ownerOf(uint256 _tokenId) external view returns (address);
    function safeTransferFrom(address _from, address _to, uint256 _tokenId, bytes data) external payable;
    function safeTransferFrom(address _from, address _to, uint256 _tokenId) external payable;
    function transferFrom(address _from, address _to, uint256 _tokenId) external payable;
    function approve(address _approved, uint256 _tokenId) external payable;
    function setApprovalForAll(address _operator, bool _approved) external;
    function getApproved(uint256 _tokenId) external view returns (address);
    function isApprovedForAll(address _owner, address _operator) external view returns (bool);
}

interface ERC165 {
    function supportsInterface(bytes4 interfaceID) external view returns (bool);
}
```

# 1. ERC-721

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- **ERC-721 : ERC721Metadata, ERC721Enumerable**

```
interface ERC721Metadata /* is ERC721 */ {  
    function name() external view returns (string _name);  
    function symbol() external view returns (string _symbol);  
    function tokenURI(uint256 _tokenId) external view returns (string);  
}
```

```
interface ERC721Enumerable /* is ERC721 */ {  
    function totalSupply() external view returns (uint256);  
    function tokenByIndex(uint256 _index) external view returns (uint256);  
    function tokenOfOwnerByIndex(address _owner, uint256 _index) external view returns (uint256);  
}
```

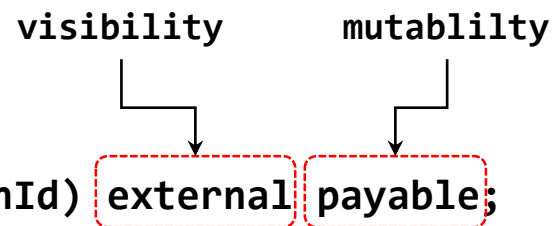
# 1. ERC-721

- 기타 사항

- ✓ 솔리디티 컴파일러 버전에 따른 영향 – 함수 정의 변경

- ✓ 명시적인 mutability

```
function transferFrom(address _from, address _to, uint256 _tokenId) external payable;
```

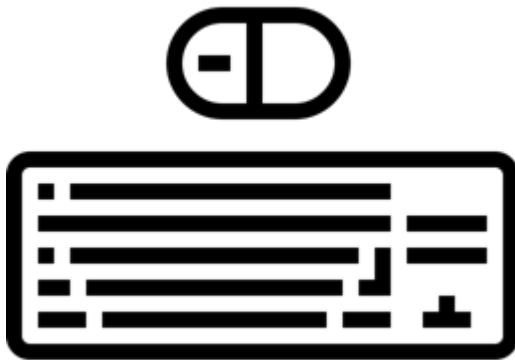


- ✓ visibility는 public으로 바꿀 수 있음.

- ✓ 토큰 ID는 애플리케이션이 결정. 이더리움 내에서 유일한 값(컨트랙트 주소+토큰 ID)

# 다음 시간에는...

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- ERC-721 Standards

