

 Build a Market – Basic NFT Marketplace Logic

**Objective/Aim:**  
  
 To study the fundamental logic behind an NFT marketplace and implement a smart contract that enables users to

mint, list, purchase, and transfer NFTs.

**Apparatus/Software Used:**

* Personal Computer / Laptop
* Remix IDE (for Solidity smart contract deployment)
* MetaMask (Ethereum wallet for transactions)
* Pinata (for IPFS storage)
* Visual Studio Code

**Theory/Concept:**

* **NFT Marketplace Definition:**  
   An NFT marketplace is a decentralized platform that allows users to create, buy, sell, and trade non-fungible tokens (NFTs). These platforms operate on blockchain technology, ensuring transparency and ownership security.
* **Working Mechanism:**

1. **Wallet Integration:** Users first connect a crypto wallet (e.g., MetaMask) to interact with the marketplace
2. **Minting NFTs:** A digital file (art, video, music, etc.) is uploaded. Its metadata (title, description, image link) is saved on decentralized storage like IPFS. A smart contract generates a token ID for the new NFT.
3. **Listing NFTs:** The creator/owner lists their NFT for sale at a fixed price or through auction. Listing information is stored in the marketplace’s smart contract.
4. **Purchasing:** Interested buyers pay using cryptocurrency. The smart contract automatically transfers the token ownership to the buyer and the payment to the seller.
5. **Confirmation:** The completed trade is recorded on the blockchain. The buyer’s wallet reflects ownership, which can be verified through a blockchain explorer.



**Procedure:**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Upload the desired digital asset (image, video, or file) to decentralized storage (IPFS/Pinata).
2. Create a metadata JSON file containing details such as name, description, and asset link.
3. Write a smart contract (commonly ERC-721 standard) to define NFT creation and transfer rules.
4. Deploy the smart contract using Remix IDE and call the mint() function to generate a new NFT.
5. Record ownership of the NFT, which is assigned to the wallet address of the creator.
6. List the NFT for sale by adding price details to the contract.
7. Execute a test purchase to verify the buying process and ownership transfer.

**Observation Table:**

z A demo NFT marketplace smart contract was successfully deployed and tested. The system

allowed:

* Minting of unique NFTs with metadata.
* Listing tokens for sale at a set price.
* Secure purchase of NFTs using cryptocurrency.
* Automatic transfer of ownership and funds through the smart contract.

The experiment demonstrated how NFT marketplaces rely on blockchain to ensure secure, transparent, and immutable digital asset transactions.



