

Build a Market – Basic NFT Marketplace Logic



**Objective/Aim:**  
  
 To understand the basic logic behind an NFT (Non-Fungible Token) marketplace by simulating the

minting, listing, buying, and transferring of NFTs in a decentralized environment.

**Apparatus/Software Used:**

* Laptop / PC
* Hardhat / Remix IDE (for writing and deploying contracts)
* Node.js & npm (for smart contract environment)
* MetaMask wallet (for testing transactions)
* Word/Docs for documentation

**Theory/Concept:**

* What are NFTs?  
   NFTs are unique cryptographic tokens stored on the blockchain. Unlike cryptocurrencies (fungible), NFTs represent unique ownership of digital or physical assets (art, music, certificates, collectibles).
* NFT Marketplace Logic:
* Minting: Creating a new NFT with unique metadata.
* Listing: Putting the NFT up for sale with a price.
* Buying: Another user purchases the NFT by paying cryptocurrency.
* Transfer of Ownership: NFT ownership is securely transferred from seller to buyer.
* Smart Contracts in NFT Marketplaces
* Written in Solidity (Ethereum).
* Handle rules for minting, listing, and transferring NFTs.
* Ensure trustless, decentralized trade without intermediaries.

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**Procedure:**

Set Up Environment

* Install Node.js and Hardhat (or open Remix IDE).

Write a Basic NFT Contract

* Use ERC-721 standard from OpenZeppelin.

Implement Marketplace Functions

* Function to list an NFT for sale (price, token ID).

Deploy and Test

* Deploy the contract to local blockchain.

Verify Transactions

* Check balances of buyer and seller.

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**Observation Table:**

* Each NFT minted has a unique token ID and metadata.
* Ownership of NFTs changes only when transactions are verified on-chain.
* Listings ensure NFTs cannot be sold twice at the same time.

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* The logic guarantees secure exchange without central authority.

