



School: Campus:
Academic Year: Subject Name: Subject Code:
Semester: Program: Branch: Specialization:
Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment : Build a Market – Basic NFT Marketplace Logic

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

- ☐ Initialize Contracts & Wallet Connection
 - Import ethers.js and ABIs for NFT & Marketplace.
 - Connect to MetaMask using BrowserProvider.
 - Fetch connected account and signer.
- ☐ Approve Marketplace
 - Call the NFT contract's setApprovalForAll(marketplaceAddress, true) to allow the marketplace to manage NFTs.
- ☐ List NFT
 - Input tokenId and price.
 - Call marketplace contract's listItem(nftAddress, tokenId, price) function.
 - Store the listing in the marketplace contract.
- ☐ Buy NFT
 - Call marketplace contract's buyItem(nftAddress, tokenId, {value: price}).
 - Transfer ETH from buyer to seller and ownership of NFT to buyer.
- ☐ Withdraw Proceeds
 - Seller calls withdrawProceeds().
 - Marketplace transfers accumulated ETH to seller's wallet.

Software used

1. MetaMask Wallet
2. Remix IDE.
3. MS Word.
4. Brave for researching.

* Implementation Phase: Final Output (no error)

□ Setup Frontend

- Create a React app and integrate MetaMask wallet connection.
- Import NFT and Marketplace ABIs.
- Use useState to manage account, provider, marketplace, NFT, tokenId, and price.

□ Connect Wallet

- Request accounts from MetaMask (eth_requestAccounts).
- Set account and signer for transactions.

□ Approve Marketplace

- User clicks **Set Approval**.
- Marketplace gets permission to manage NFTs.

□ List NFT

- User enters **Token ID** and **Price**.
- Marketplace contract stores the listing.

□ Buy NFT

- Buyer clicks **Buy Item**.
- Transaction transfers ETH to seller and NFT to buyer.

□ Withdraw Proceeds

- Seller clicks **Withdraw**.
- ETH balance accumulated from sales is sent to seller's account.

```

1 import React, { useState, useEffect } from "react";
2 import { ethers } from "ethers";
3 import marketplaceABI from "../MarketplaceABI.json"; // your NFTMarketplace ABI
4 import nftABI from "../NFTABI.json"; // your ERC721 NFT ABI
5
6 // replace these with your real deployed addresses
7 const MARKETPLACE_CONTRACT_ADDRESS = "0x34885810040ed8BF98a18Bfd400626343fa41ce4";
8 const NFT_CONTRACT_ADDRESS = "0xfbf325588dd8760c88c51329ca42612100558f70";
9
10 function App() {
11   const [account, setAccount] = useState(null);
12   const [provider, setProvider] = useState(null);
13   const [marketplace, setMarketplace] = useState(null);
14   const [nft, setNFT] = useState(null);
15
16   const [tokenId, setTokenId] = useState("");
17   const [price, setPrice] = useState("");
18
19   // connect wallet
20   const connectWallet = async () => {
21     if (window.ethereum) {
22       const prov = new ethers.BrowserProvider(window.ethereum);
23       await prov.send("eth_requestAccounts", []);
24       const signer = await prov.getSigner();

```

Compiled successfully!

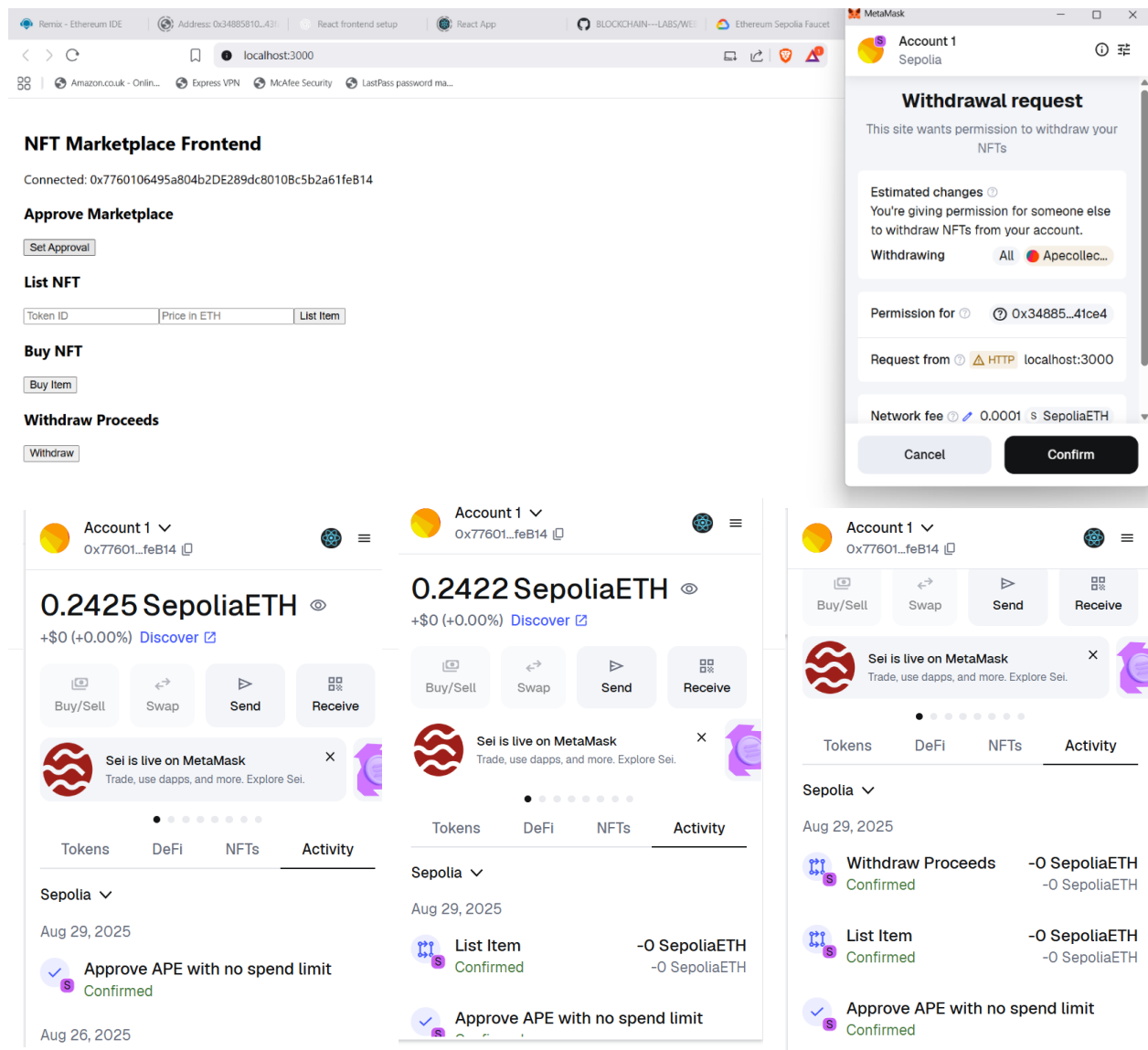
You can now view nft-marketplace-frontend in the browser.

Local: http://localhost:3000
On Your Network: http://10.134.206.92:3000

Note that the development build is not optimized.
To create a production build, use `npm run build`.

webpack compiled successfully

* Implementation Phase: Final Output (no error)



* Observations:

- ☐ Wallet connection with MetaMask works, and the connected account is displayed.
- ☐ Approval allows the marketplace contract to manage NFTs successfully.
- ☐ NFTs can be listed with a token ID and price in ETH.
- ☐ Buyers can purchase NFTs, transferring both ownership and ETH securely.
- ☐ Sellers can withdraw proceeds, and the amount is reflected in MetaMask.
- ☐ All transactions (approval, listing, buying, withdrawing) are confirmed on Sepolia testnet.
- ☐ Sepolia ETH enables testing without real cost.
- ☐ Marketplace flow follows the sequence: **Approval → Listing → Buying → Withdrawing.**

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No. :

Signature of the Faculty: