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 Experiement : 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.

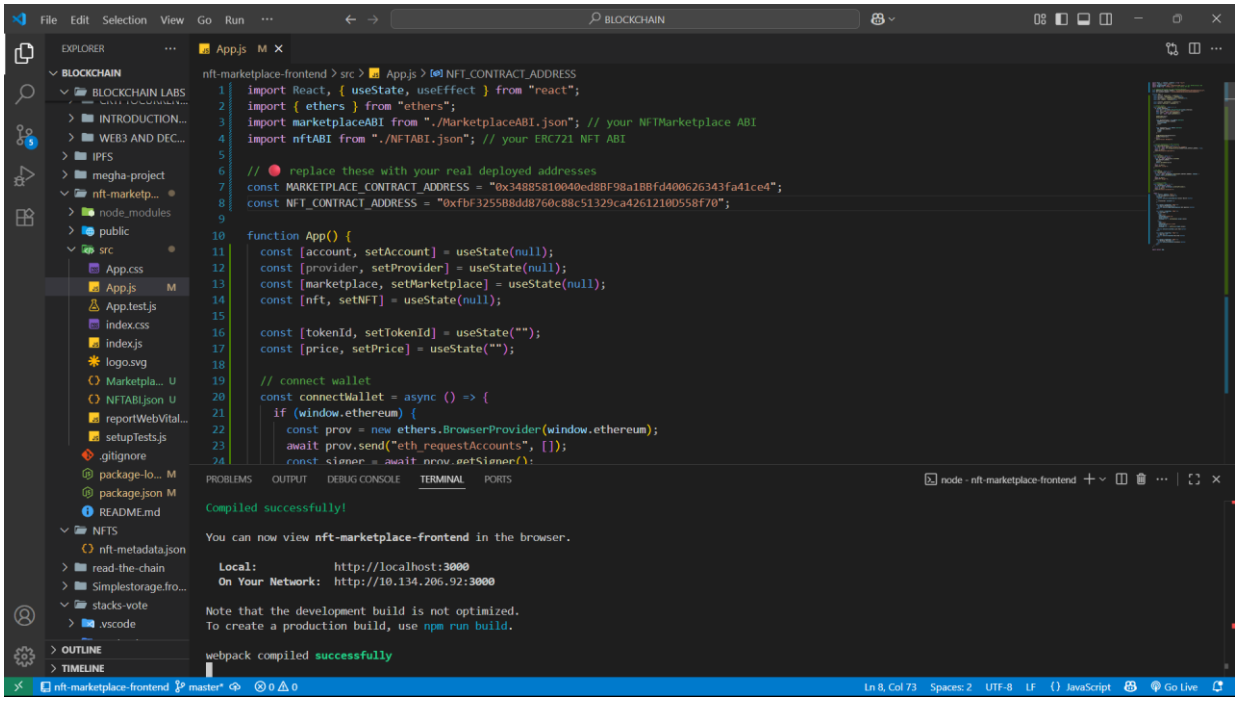
Software used

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

*As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.

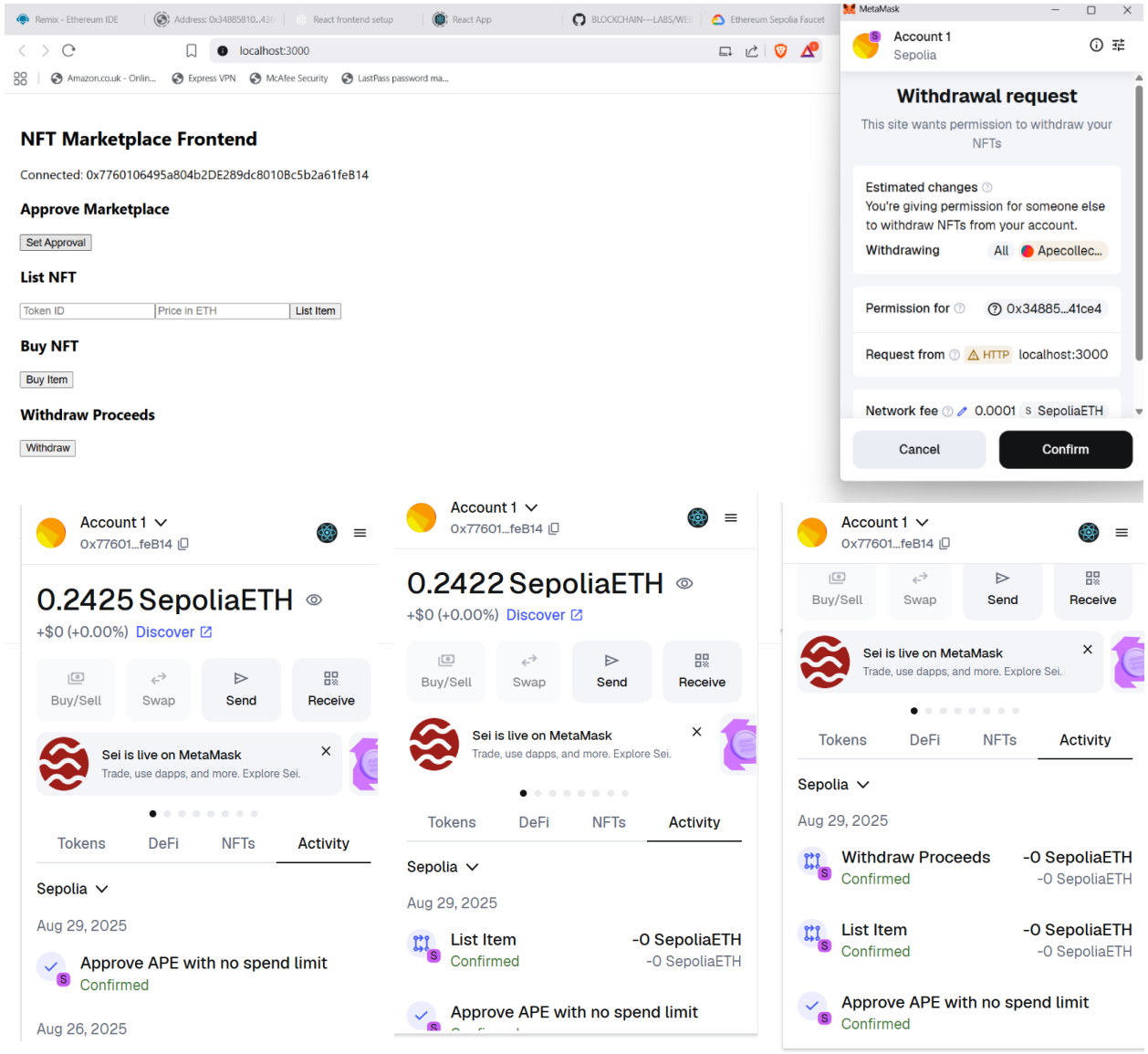
* Implementation Phase: Final Output (no error)

- **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.



*As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.

* 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**.

**As applicable according to the experiment.*
Two sheets per experiment (10-20) to be used.

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:

**As applicable according to the experiment.*
Two sheets per experiment (10-20) to be used.