**Instruction**

**Important Notice: Please run the code in only the folder backend (public and src for frontend; FastAPI for backend) that you cloned from GitHub. The direction is backend/nft-Copy/src/pages.**

1. Set up Metamask

Add to Chrome as an extension

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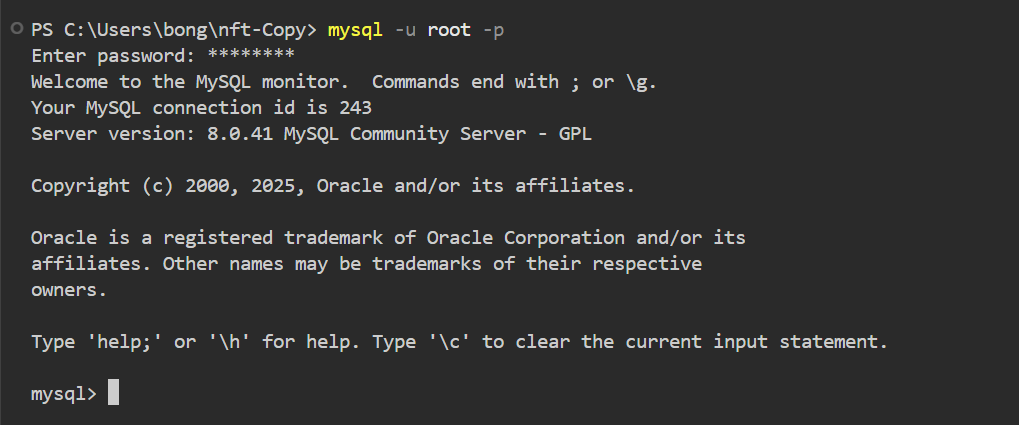
Create a new wallet

<https://metamask.io/>

* Create password
* Write down your 12 secret recovery phrase
* Confirm secret recovery phrase

1. Mysql download

* Download MySQL Server MSI installer into your machine (ver 8.0.41)
  + <https://dev.mysql.com/downloads/mysql/>
  + You will be prompted to select the setup type. Choose "Developer Default" if you want to install MySQL Server along with other MySQL tools (such as MySQL Workbench and MySQL Shell).
  + You will be asked to configure the MySQL Server. (use "Development Machine" if you're testing on a personal machine). Set the port (default is 3306), and leave it as is unless you have a reason to change it.
  + Set MySQL Root Password: Enter and confirm a root password (this is the administrative password for your MySQL installation). Keep this password safe as you'll need it to access the MySQL server.
  + Click Next after configuring. The installer will proceed to install MySQL Server based on your settings. Complete the Installation: After the installation is complete, click Next and Finish.
  + Add MySQL to environment variables
  + Connect to MySQL Server: Open vs code terminal, cd into nft-Copy folder
  + Run mysql-u <username>-p ( replace your username, usually root )
  + Enter your root password. You will successfully connect to the database



* + Open the Database folder, Mydatabase.sql file

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* + Run CREATE DATABASE nft\_marketplace; (use the code in the file and paste into the terminal)
  + Then USE nft\_marketplace; (use the code in the file and paste into the terminal)
  + Then (use the code in the file and paste into the terminal)

CREATE TABLE `nft\_items` (

  `id` int NOT NULL AUTO\_INCREMENT,

  `item\_name` varchar(255) NOT NULL,

  `item\_description` text,

  `author` varchar(255) DEFAULT NULL,

  `author\_wallet` varchar(255) DEFAULT NULL,

  `owner\_wallet` varchar(255) DEFAULT NULL,

  `current\_bid` decimal(10,6) DEFAULT NULL,

  `currency` varchar(10) DEFAULT 'ETH',

  `img\_url` varchar(500) DEFAULT NULL,

  `category` text,

  `bidding\_end\_time` timestamp NULL DEFAULT NULL,

  `author\_image` varchar(500) DEFAULT NULL,

  PRIMARY KEY (`id`)

) ENGINE=InnoDB AUTO\_INCREMENT=1 DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_0900\_ai\_ci;

* + Then (use the code in the file and paste into the terminal)

CREATE TABLE `transactions` (

  `id` int NOT NULL AUTO\_INCREMENT,

  `item\_id` int DEFAULT NULL,

  `item\_name` varchar(255) DEFAULT NULL,

  `bid\_amount` decimal(18,8) DEFAULT NULL,

  `bid\_time` timestamp NULL DEFAULT CURRENT\_TIMESTAMP,

  `owner\_wallet` varchar(255) DEFAULT NULL,

  `author\_wallet` varchar(255) DEFAULT NULL,

  `transaction\_hash` varchar(255) DEFAULT NULL,

  PRIMARY KEY (`id`),

  KEY `item\_id` (`item\_id`),

  CONSTRAINT `transactions\_ibfk\_1` FOREIGN KEY (`item\_id`) REFERENCES `nft\_items` (`id`) ON DELETE CASCADE

) ENGINE=InnoDB AUTO\_INCREMENT=1 DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_0900\_ai\_ci;

* Download MySQL workbench ( version 8.0.41 )
  + <https://dev.mysql.com/downloads/workbench/>
  + Add a new MySQL Connections (+) (click on the “+” button)
  + Named it LocalMySQL
  + Keep the Hostname: 127.0.0.1, Port: 3306, Username: root
  + Password: Store in vault, then enter your root password
  + Click Test Connection
  + If successful, click ok
* Check in your connections
  + Database named nft\_marketplace
  + 2 tables name nft\_items and transactions

1. Smart contracts setup

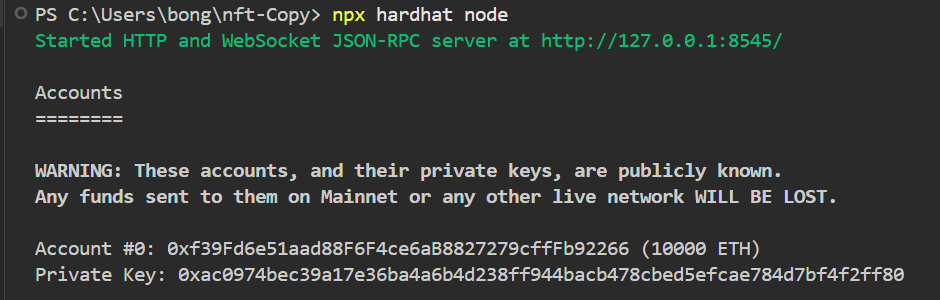
Import wallet

* Open folder backend in vs code
* Open terminal, navigate to group-project-spr-2025-g1\backend\nft-Copy
* Open hardhat.config.js

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* Copy these line and run one by one: ( lines in the comment of the code )
  + Npm install –save-dev hardhat
  + Npx hardhat
  + Npx hardhat node
  + (please keep this terminal running, do not interrupt)



* You will see 19 wallet account, copy 1 of their private key
* Open metamask extension
* Click on the Ethereum mainet icon

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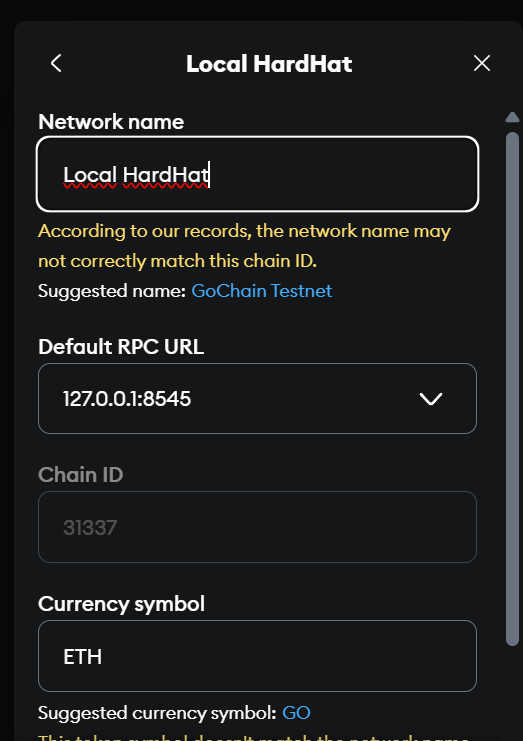
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* + Add a custom network

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* + Fill in the following details:
  + Network Name: Hardhat Local ( or any name the wallet suggested )
  + RPC URL: [**http://127.0.0.1:8545**](http://127.0.0.1:8545/)
  + Chain ID: 31337
  + Currency Symbol: ETH ( or any symbol the wallet suggested )
  + Save the network. Switch to the "Hardhat Local" network.



* Click on Account 1 icon

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* + Add an account or hardware wallet
  + Click import account
  + Paste your previously copied wallet private key and click import
  + You will see in your wallet have 10000 ETH

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* Open remix.ethereum.org
  + Click on contracts folder

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* + Create new file NFTBidding.sol
  + Open group-project-spr-2025-g1\backend\nft-Copy\SmartContract\MySmartContract.sol folder in vs code

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* + Copy all the code in MySmartContract.sol to NFTBidding.sol
  + Navigate to solidity compiler

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* + Click compile

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* + Navigate to Deploy and run transaction

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* + In environment tab:
    - Choose wallet connect
    - Click connect wallet
    - Choose metamask ( account you just imported )

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* + Click deploy

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* + Click confirm on metamask pop up

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* + See in remix terminal, click on your deployed block

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* + Copy contract address
  + Go to VS code, group-project-spr-2025-g1\backend\nft-Copy\src\config.js

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* + Paste your contract address to it
  + Go to folder FastAPI
  + Create a file named .env

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* + Paste these into that file

RPC\_URL=http://127.0.0.1:8545/

PRIVATE\_KEY=de9be858da4a475276426320d5e9262ecfc3ba460bfac56360bfa6c4c28b4ee0

CONTRACT\_ADDRESS=0xe1da8919f262ee86f9be05059c9280142cf23f48

DATABASE\_URL=mysql+mysqlconnector://root:16052005@localhost/nft\_marketplace

PINATA\_API\_KEY=685cba31ff9450bdfc46

PINATA\_API\_SECRET=2f5917c416d1a53a67bcfde304d9b316f1ae85e7c7ffaa08b3f0868cd4937ffa

PINATA\_JWT=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9..5M3gebHxg0WV6vEKG\_C2tuKQovmAt5ZOQHOfl\_dL9EA  *# If using JWT*

* + Paste your contract address to CONTRACT\_ADDRESS field
  + Paste your main wallet private key into PRIVATE\_KEY (Account 1)

Change your root user password of MySQL into DATABASE\_URL=mysql+mysqlconnector://root:<your-password>@localhost/nft\_marketplace

Open main.py, line 231, Change your root user password of MySQL into DATABASE\_URL=mysql+mysqlconnector://root:<your-password>@localhost/nft\_marketplace

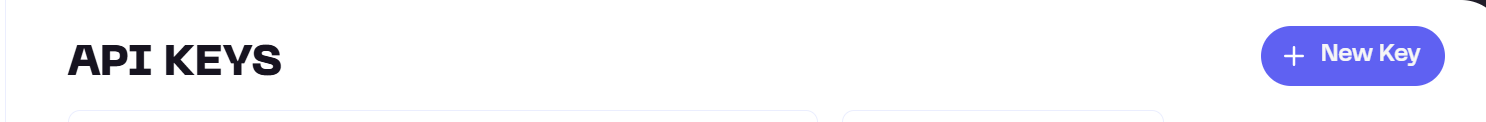
Pinata clound setup

* Open app.pinata.cloud and login
* Open API keys tab

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* Click +New Key



* Type your key name, Choose admin

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* Click generate key
* Copy API KEY INFO
* Open .env file
* Paste all your API KEY INFO into

PINATA\_API\_KEY=685cba31ff9450bdfc46

PINATA\_API\_SECRET=2f5917c416d1a53a67bcfde304d9b316f1ae85e7c7ffaa08b3f0868cd4937ffa

PINATA\_JWT=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9..5M3gebHxg0WV6vEKG\_C2tuKQovmAt5ZOQHOfl\_dL9EA  *# If using JWT*

1. Install library

* cd into group-project-spr-2025-g1\backend\nft-Copy
* Open a new terminal
* Run “npm install”
* Cd into FastAPI
* Run “pip install -r requirements.txt”

1. Run the program

Open new terminal

Cd into FastAPI folder ( keep this terminal running )

* + Run “uvicorn main:app - -reload”

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Open new terminal

Cd into nft-Copy folder ( keep this terminal running )

* + Run “npm start”

1. How to use the web. Go to these pages in the exact order below
   1. Create Yours
   * Import 4 wallets for best demonstration on the web

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* + - Click Connect Wallet ( it will show your current account ID )

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* + - Fill the Create NFT form with your NFT information ( choose category, place the price in decimal 0.000001 minimum )
    - Click Create NFT
    - You will see a message showing the id of your nft information being inserted into the database

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* + - Under that section you will see a static preview of the NFT

A screenshot of a video game

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* + - Create manually 3 NFT each wallet, total 12 NFTs (each wallet should represented an user or author so they should have unique name, started with @ ( create some item with bidding time is less than 1 day or with 0 day 0 hour 0 minute to test out the end bid function and the availability filter, also create 2 nft with same name and category to test out the counter at homepage). For author images and nfts, go into nft-copy/public/assets/images and choose the image you want. This is some example text:

Cyber Samurai #2048

A futuristic warrior from the neon-lit streets of Neo-Tokyo. This cyber samurai, wielding a plasma katana, is part of an exclusive 5,000-piece collection that merges tradition with technology.

Galactic Ape #375

Straight from the Andromeda galaxy, this cosmic ape sports a golden space suit and glowing cybernetic eyes. With only 1,000 in existence, owning this NFT grants access to an intergalactic community of collectors.

Pixel Punk #777

A glitch in the system gave birth to this unique pixelated rebel. With a mohawk of pure code and a jacket made of encrypted data, this NFT represents the digital counterculture of the metaverse.

Ethereal Goddess #88

A mesmerizing celestial being, draped in a nebula-inspired cloak, radiating cosmic energy. This 1/1 piece is a tribute to the limitless beauty of the blockchain universe.

Meta Dragon #999

Forged in the fiery depths of the Ethereum blockchain, this legendary dragon NFT symbolizes power, wisdom, and scarcity. Only 500 exist, making it a prized digital collectible.

Shadow Rogue #321

A stealthy figure lurking in the dark alleys of the metaverse. With glowing red eyes and a cyber-cloak that shifts between dimensions, this NFT is a rare find among digital assassins.

Mecha Titan #X-09

A towering machine built from blockchain-infused alloys. This NFT represents strength, innovation, and the unstoppable march of technology in the digital realm.

Crypto Kitty #Moonbeam

A cosmic feline with fur that shimmers like the night sky. This adorable yet mysterious NFT is part of an exclusive series of celestial pets traveling through the Ethereum blockchain.

Neon Racer #45

A speed demon from a futuristic cyber-city, leaving behind a trail of electric blue light. This NFT is perfect for adrenaline junkies who thrive in the fast-paced world of digital collectibles.

Zombie Punk #666

Risen from the depths of the blockchain, this undead punk carries the scars of lost transactions and abandoned wallets. A true relic of the decentralized underworld.

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* + - After finishing creating, you will also see 12 item details appear in nft\_items table.

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* + Go to Item Details page
    - Use 4 wallet respectively, click connect wallet to make sure you change the user, the button is in the corner of asset 1.
    - Each wallet should place bid on 3 others author NFTs, not his own NFTs. Place small bid, minimum 0.000001 to allow smart contracts execute smoothly.
    - After bid, confirm the transaction on metamask, then you will see the current bid and owner change to your status and the transaction details will be inserted into transactions table. Check it out. For all warnings messages, please check out the report

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If you meets the time error (“z” contain in time format), use this fix at line 358 and 359 in main.py:

*# Ensure bid\_time is a string before parsing*

        bid\_time\_str = str(bid.bid\_time).replace("Z", "+00:00")  *# Replace "Z" with timezone info*

        bid\_time\_parsed = datetime.fromisoformat(bid\_time\_str)

And this fix in line 141 of ItemDetails.jsx:  
bid\_time: new Date().toISOString().replace("Z", "+00:00"),

* + Go to Author page, You will see each author create 3 nft and their details. If you stuck at preloading screen, just click reload

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* + Go to Item Details page again, roll to the bottom. You will see a transaction filter (oldest, newest, highest, lowest) there, try it out

A screenshot of a phone

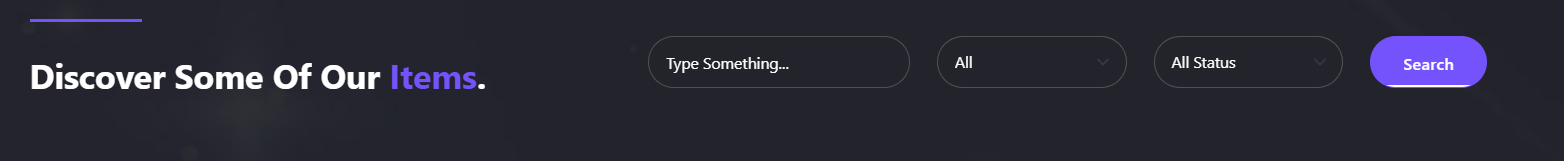
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* + Go to Explore page. In the first section, you will see the top 4 highest bid NFT, if you want to try it out, go to Item Details and place some higher bid and go back, you will see them appear here

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* + - In the second section, try out the search and filter. The Availability filter: Available mean still have more than 24h to bid, ending soon mean less than 24h, and close mean time over.



* + - In the last section, it will show top seller ( top author ) and their NFT counts

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* + Move to Home page
    - In the slider, you will see item per category. If there are 2 item with the same name and category, it will show item 1/3 and 2/3

Screens screenshot of a video game

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* + Go to Create Yours page again: click connect wallet, scroll down you will see your nfts and transactions history

