LIVE ETHEREUM TRANSACTIONS AND DASHBOARD

Blockchain Technology

Time: 60 mins

Introduction

In this class, the student/s will learn to create a sign-in and sign out page for the wallet. Student/s will also learn to perform and display live Ethereum transactions and display them.

Recall Commands

- db.reference() Sets the database reference folder path
- ref.set() Sets the values for keys in the referred database
- `.order_by_child`('database') Gets the username from the database
- `.equal_to(self.username)` Finds records that match the specified username
- request.form.get("senderAddress") Gets the input from the form

Vocabulary

- Sepolia is a blockchain testing tool that can be used without any risk to real Ethers or the Ethereum blockchain.

Learning Objectives

Student/s should be able to:

- ***Explain*** how the database can be used to sign in and sign out the user..
- ***Recall*** the Ganache server and introduce the Sepoilia live server to test the live transactions.
- ***Demonstrate*** how live transactions can be added and fetched from the database.

Activities

1. **Class Narrative:** *(2 mins)*
    - Brief the student/s that they have stored the account address on the firebase to prevent the address from disappearing. Now, they will implement the second phase to display live transactions on the dashboard.
2. **Concept Introduction Activity:** *(5 mins)*

- Let the student/s run the explore-activity to observe that the user needs to sign-in to access the wallet transactions and can sign out.
- We used the Sepolia-faucet to mine the ethereum transactions.
- Ethers are added to the wallet on mining Ethereum.

3. **Activity 1: Sign In and Sign Out the User** *(20 min)*

   Teacher Activity: *(10 mins)*

- Let students observe that the wallet should display accounts of the current user only.
- Demonstrate how to add the sign in and sign out functionality to display accounts of the current users.
- Let them note that the wallet doesn't display the account details on signing in. Explain how to fetch the user account details from the database and display them.

   Student Activity: *(10 mins)*

- Guide the student/s to add the sign in and sign out functionality to display accounts of the current users.
- Guide the students to fetch the user account details from the database and display them.

4. **Activity 2: Add Live Server and Mine Ethereum Transactions** *(12 min)*

   Teacher activity: *(7 mins)*

- Make the student/s observe that a new account has no balance so it cannot be used to make payments unless we receive payments from another account.
- Explain how Sepolia can be used as a live server to mine the ethereum transactions and earn Ethers.
- Demonstrate to the students to create an account and login on https://app.infura.io/
- Ask the students to replace the Ganache server with the Sepolia server.
- Guide the student/s to add the live server and mine the Ethereum transactions on Sepolia faucet server.(Link: https://sepolia-faucet.pk910.de/#/)

   Student Activity: *(5 mins)*

- Guide the students to add the live server and mine the Ethereum transactions on Sepolia faucet server.

5. **Activity 3: Add and Fetch Transactions with the Database** *(15 mins)*

Teacher Activity: *(8 mins)*

- Explain that the transactions are not displayed on the screen as they are not stored in the database.
- Demonstrate how to add the transactions to the database and fetch them from the database to display on the webpage.

Student Activity: *(7 mins)*

- Guide the students to add the transactions to the database and fetch them from the database to display on the webpage.

6. **Introduce the Post class project:** *(2 min)*
    - Encourage students to build the functionality in the wallet to comment the code for the sender account address and the Ganache server for the admin panel on refund.
7. **Test and Summarize the class learnings:** *(5 mins)*
    - Check for understanding through quizzes and summarize learning after respective activities.
    - Summarize the overall class learning towards the end of the class.
8. **Additional activities:**
    - Encourage the student/s to add an option on the GUI to switch the testnet type.
    - Encourage the student/s to add the functionality to check password when the user signs in.
9. **State the Next Class Objective:** *(1 min)*
    - In the next classes, you will learn to create transaction charts.

U.S. Standards:

CSTA: 2-AP-11, 2-AP-12, 2-AP-13, 2-AP-14, 2-AP-19

Links Table		
Activity	**Activity Name**	**Link**
Class Presentation	Live Ethereum Transactions and Dashboards	https://s3-whjr-curriculum-uploads.whjr.online/14ad6edc-cba2-4bcc-acf0-0e18509488f0.html
Explore Activity	Live Ethereum Transactions and Dashboards	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP
Teacher Activity 1.1	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS-BP

Teacher Reference: Teacher Activity 1.1 Solution	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS
Student Activity 1.1	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP
Teacher Reference: Student Activity 1.1 Solution	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS
Teacher Activity 1.2	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS-BP
Teacher Reference: Teacher Activity 1.2 Solution	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS
Student Activity 1.2	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP
Teacher Reference: Student Activity 1.2 Solution	Sign In and Sign Out the User	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS
Teacher Activity 2	Add Live Server and Mine Ethereum Transactions	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS-BP
Teacher Reference: Teacher Activity 2 Solution	Add Live Server and Mine Ethereum Transactions	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS
Student Activity 2	Add Live Server and Mine Ethereum Transactions	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP
Teacher Reference: Student Activity 2 Solution	Add Live Server and Mine Ethereum Transactions	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS
Teacher Activity 3	Add and Fetch Transactions with the Database	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS-BP
Teacher Reference: Teacher Activity 3 Solution	Add and Fetch Transactions with the Database	https://github.com/Tynker-Blockchain/TNK-M13-C100-TAS
Student Activity 3	Add and Fetch Transactions with the Database	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP

Teacher Reference: Student Activity 3 Solution	Add and Fetch Transactions with the Database	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS
Student's Additional Activity 1	Switch the Testnet	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP
Teacher Reference: Student's Additional Activity 1 Solution	Switch the Testnet	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS
Student's Additional Activity 2	Check the Password	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS-BP
Teacher Reference: Student's Additional Activity 2 Solution	Check the Password	https://github.com/Tynker-Blockchain/TNK-M13-C100-SAS
Post Class Project	Debug the Code	https://github.com/Tynker-Blockchain/TNK-M13-C100-PCP-BP
Teacher Reference: Post Class Project Solution	Debug the Code	https://github.com/Tynker-Blockchain/TNK-M13-C100-PCP