TRANSACTION CHARTS

TRANSACTION DASHBOARD

Time: 60 mins

Introduction

In this class, the student/s will learn to plot different types of graphs in python to create a transaction dashboard for wallet users.

Commands

● sorted(object, key=key, reverse=reverse)	returns a sorted list of the specified object, function key defines the order, and parameter reverse defines ascending or descending.
● json.dumps()	converts a subset of Python objects into a json string.
● float()	returns a floating-point number from a number or a string representation of a numeric value.

Vocabulary

- Bar Chart: are the pictorial representation of data in the form of rectangular bars, where the length of bars are proportional to the measure of data.
- Line Chart: is a chart that uses lines to connect individual data points.
- Markers: are symbols that you add to the chart to show data points.
- Indices: is plural of index and used to refer to numbers, symbols, and figures.
- Dashboard: is a way of displaying various types of visual data in one place.
- Reverse chronological order: is a way of arranging items or events in a sequence, such that the most recent or latest item comes first, followed by items in decreasing order of time. In other words, it's the opposite of chronological order, which arranges items from the earliest or oldest to the most recent.

Learning Objectives

Student/s should be able to:

- ***Recall*** how to mine and earn Ethers on a test network.
- ***Explain*** how to define tracing points and layout for plotting a graph..

- ***Create*** a transaction dashboard having different graphs for transaction history and balance history.

Activities

1. **Class Narrative:** *(2 mins)*

    - Brief the student/s that Jack wants to add a live transaction dashboard in the wallet for users to have a quick peek into transaction and balance history.
    - Explain that Jack must plot different graphs using python to create the dashboard.

2. **Concept Introduction Activity:** *(5 mins)*

    - Let the student/s play the explore-activity to observe the transaction history bar graph and balance history line graph.
    - Explain that currently the transactions are sorted with respect to type of transactions i.e. sent transactions first followed by received transactions. In an ideal situation, the transactions must be sorted in the reverse chronological order i.e. recent ones first.
    - Using the slides, explain that the student/s will learn:
        - to sort the transactions
        - to plot a bar graph
        - to create a transaction dashboard

3. **Activity 1: Sort the Transactions***(8 mins)*

    Student Activity: *(8 mins)*

    - Explain the correct order to display the transactions in the transaction history.
    - Explain how to sort a list of objects in Python using the “sorted()” method.
    - Guide the student/s to merge the sender and receiver list, sort it based on time, and display it in the wallet.

4. **Activity 2: Plot a Bar Graph** *(15 mins)*

    Teacher Activity: *(8 mins)* .

    - Explain how to create a layout dictionary and tracing point dictionary to plot a graph.
    - Demonstrate how to plot a bar graph for a sample data points..

    Student Activity: *(7 mins)*

- Guide the student/s to plot a bar graph for sample data with proper layout and labeling.

5. **Activity 3: Create Transaction Dashboard** *(15 mins)*

   Teacher Activity: *(6 mins)*

   - Explain how to calculate the values for tracing points, layout, and color list for the transaction history bar graph.
   - Demonstrate how to plot the transaction history bar graph by assigning the right values for tracing dictionary keys.

   Student Activity: *(9 mins)*

   - Guide the students to create the list of balances before each transaction using transaction amount and current balance.
   - Guide the students in assigning the right values for plotting the line graph to display balance history.

6. **Introduce the Post class project: (1 min)**
   - Encourage student(s) to plot a bar chart in the wallet to visualize the transaction history.

7. **Test and Summarize the class learnings:** *(5 mins)*
   - Check for understanding through quizzes and summarize learning after respective missions.
   - Summarize the overall class learning towards the end of the class.

8. **Additional activities:**
   - Encourage the student/s to plot a pie chart to show the number of sent and received transactions.
   - Encourage the student/s to create a doughnut chart to show the total amount sent and received.
9. **State the Next Class Objective:** *(1 min)*
   - In the next class, student/s will learn to integrate the wallet with a website using a payment gateway.

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	Transaction Charts	https://s3-whjr-curriculum-uploads.whjr.online/fb1b9bf7-3b10-4d99-8b83-4142136bc8a2.html
Explore Activity	Transaction Charts	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS-BP
Student Activity 1	Sort the Transactions	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS-BP
Teacher Reference: Student Activity 1 Solution	Sort the Transactions	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS
Teacher Activity 2	Plot a Bar Graph	https://github.com/Tynker-Blockchain/TNK-M13-C101-TAS-BP
Teacher Reference: Teacher Activity 2 Solution	Plot a Bar Graph	https://github.com/Tynker-Blockchain/TNK-M13-C101-TAS
Student Activity 2	Plot a Bar Graph	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS-BP
Teacher Reference: Student Activity 2 Solution	Plot a Bar Graph	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS
Teacher Activity 3	Create Transaction Dashboard	https://github.com/Tynker-Blockchain/TNK-M13-C101-TAS-BP
Teacher Reference: Teacher Activity 3 Solution	Create Transaction Dashboard	https://github.com/Tynker-Blockchain/TNK-M13-C101-TAS
Student Activity 3	Create Transaction Dashboard	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS-BP
Teacher Reference: Student Activity 3 Solution	Create Transaction Dashboard	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS
Student's Additional Activity 1	Transactions Pie Chart	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS-BP
Teacher Reference: Student's Additional Activity 1 Solution	Transactions Pie Chart	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS
Student's Additional Activity 2	Total Amount Doughnut Chart	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS-BP
Teacher Reference: Student's Additional Activity 2 Solution	Total Amount Doughnut Chart	https://github.com/Tynker-Blockchain/TNK-M13-C101-SAS
Post Class Project	Plot Transaction History Bar Chart	https://github.com/Tynker-Blockchain/TNK-M13-C101-PCP-BP

Teacher Reference: Post Class Project Solution	Plot Transaction History Bar Chart	https://github.com/Tynker-Blockchain/TNK-M13-C101-PCP