Crypto Mining

Problem Set

July 10th, 2021 Hackathon

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HACK YOUR LEARNING

Problem Description

You are a cryptocurrency miner that is trying to develop a tool to help you estimate and manage your crypto mining. You plan to develop a tool that utilizes the current price of bitcoin compared to USD. Using this information you will develop a tool to help forecast your returns.

Accessing Data

The current price of bitcoin is accessible from the Coindesk API. You only need to access this data at the start of your program run. The Application Programming Interface (API) returns a JSON file for the user, these files are very common in web based application development. More information about JSON files and how they are formatted can be found here.

Utilizing JSON Files

There are many different ways to access JSON files within Java code. One of the ways to complete this is to utilize a Buffered reader to read an input stream at the Coindesk that we provided. The data can be read into a string temporarily then converted to a Java object. You can analyze the JSON file provided at the URL and create a class in the format of the file. Then a library such as GSON can be used to convert the data from a string to the object.

This file has been provided!

CSV Files and Java

Your current setup will also be imported as a CSV file similar to the one here. Each mining device (there will be anywhere from 0 to 25) has a name, daily bitcoin output, and wattage. The daily Bitcoin output is based on around the clock operation (24hrs/day). For the purposes of this Hackathon it can be assumed that the miners make the same amount of coin for each hour of the day.

Deliverables

Your program should be able to do the following:

- Get the current price of Bitcoin from Coindesk
- Ask the user how much Bitcoin they would like to mine
- Return to the user how long it will take to produce the specified amount of bitcoin

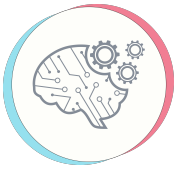
Extra Features

The idea of a hackathon is to encourage you to be creative and develop the problem with features that will supplement the deliverables. We encourage teams to come up with creative and original additions to their solution. If your team is stuck or looking for some inspiration feel free to use these ideas as a starting point.

- Identify which miners are more efficient and should be used at different times of the day
- Include energy costs in your calculations and compare energy providers
- Show users an estimated value in CAD
- Utilize a GUI instead of a command-line based interface
- Integrate other APIs

Rubric

Technical Complexity	/10
Implementation of given problem, use of Java I/O and API.	
Software Design	/10
Use of objects and classes with a UML Diagram.	
User Experience	/10
Intuitiveness, usability and how the project looks.	
Presentation	/10
How effectively was the solution and design process showcased? (5 Minute Presentation)	



API and CSV Tables

Coindesk API	https://api.coindesk.com/v1/bpi/currentprice.json
GSON Jar File	https://repo1.maven.org/maven2/com/google/code/gson/gson/2.8.7/gson-2.8.7.jar
Mining Setup CSV	https://drive.google.com/file/d/1BlL4K6wTdKlgKTjh4UQTMYbzn1_kI4kH/view?usp=sharing
Electricity Rates CSV	https://drive.google.com/file/d/11PhLHQRRP3CYFP6E7J3MFlKGlmAz93vV/view?usp=sharing
CAD-USD Conversion API	https://api.coindesk.com/v1/bpi/currentprice/CAD.json

Optional

Reading the Tables

Mining Setup CSV (Required)

Miner Name	Bitcoin Rate (Bitcoins Per Hour)	Wattage
Alpha Miner	0.00010294	823
Bravo Miner	0.00009748	544
Charlie Miner	0.00014734	923

Optional

Electricity Rate CSV (Optional)

If you plan on utilizing this table, you must also use the Wattage values in the Mining Setup CSV.

Hours	Energy Rate (Cents Per KWH)
0:00	6.423
1:00	6.338
2:00	6.332

Additional Support

Contact: General Mentors

Use the #Request-Mentor-Support Channel

Contact: Robert Brown - Content Creator

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