TU Clausthal

Exercise – 9

Published on: 24.06.2024

Deadline: 01.07.2024 – 1:59pm

Task(s):

- Clone the Exercise GitHub repository: https://github.com/ETCE-LAB/ETCE-Exercises/
- The exercise is given to you in the form of a jupyter notebook. You can either install jupyter on your personal system, or use https://jupyter-cloud.gwdg.de/ (TIP: Jupyter Cloud allows you to clone the exercise repositorso you don't have to upload the jupyter notebook and other files manually)
- Programming language: Python 3.10+
  - **You only need to modify the „solution.ipynb" file**. More detailed instructions on where you need to insert your code can be found in this file.
  - The final cell in the solution.ipynb file grades your solution.
  - This will give you feedback on your solution.

To submit your solution, upload your modified ‚solution.ipynb' file to Moodle.

Task Description – Blockchain Consensus

In E09, you implemented the basic data structures of a blockchain, e.g., transactions, blocks, and chaining blocks together. However, so far, you have not implemented any consensus mechanism; one of the most important parts of any blockchain. In this exercise, you are supposed to implement a Proof-of-Work consensus mechanism.

This assignment extends E09 by adding a consensus mechanism. However to make sure we only grade E10 based on the tasks of E10, we have “correctly” implemented the E09 tasks in the ETCE/blockchain.py file. Hence, even If your solution for E09 did not get a perfect score, E10 by default uses the correct solution for E09.

Task(s):

Implement the classes where indicated in the space provided in the **solution.ipynb** file.

Also implement the scenario() function in **solution.ipynb**.