TU Clausthal

Exercise – 11

Published on: 17.07.2023

Deadline: 24.07.2023 – 1:59pm

Submission:

- Create a file info.txt containing the *address of the deployed smart contract*, another file abi.json that contains the ABI of your smart contract, and <smartContractName>.sol containing the source code of your smart contract.
- Create a zip file “Ex11-<Your StudIP Username>.zip“ containing these three files
- To submit your solution zip file, „lab10-yourstudipusername.zip“ in the timed submission folder in StudIP named ***“Ex11 Submissions”***.

Blockchain Smart Contract Energy Trading

Our last exercise leads us back to the initial IoT tasks related to buying and selling energy. Write a smart contract that can be used to trade energy. Following functions required:

1. createOffer(offerID, amountToSell, pricePerUnit) → creates an offer to sell energy from the seller side (offerID, amountToSell(in kWh) and pricePerUnit(in gwei) are all integers)
2. listOffers() → returns a list of offers that are not yet closed
3. closeOffer(offerID) → offer should not be available anymore after energy was sold
4. buyEnergy(offerID) → buy energy by paying ETH, if the offerID is not closed (Just return True/False depending on whether enough ETH is provided when calling this method). After the offer is fulfilled, automatically close the offer, i.e, offer should not be accessible.

   You can use the following template if you like: https://sync.academiccloud.de/index.php/s/q8qf722D0eUFUZt

Task(s):

1. Deploy the smart contract on the Sepolia Ethereum test network.
2. Create an offer on your contract with amountToSell=10 and pricePerUnit=100000000 gwei (0.1 ETH).
3. Don't close the offer.
4. Submit the exercise by following the instructions on the previous page