Test plan – Blockchain System

INTRODUCTION

The product we are interested in testing is our blockchain mining system.

OBJECTIVES AND TASKS

The following is a list of tests to perform:

1. Proper connection to the blockchain system
2. The stacking function works properly (produces us a large range of options for creating random addresses)
3. The Poof of Work system works as required
4. Block mining
5. Adding a new transaction to the blockchain system
6. Verification of the mining process

- For sections 2,4 - resistance to load conditions must be checked, ie the system must be burdened by creating a lot of occurrences in a short period of time (in order to verify that the system does indeed know how to handle different loads).

TESTING STRATEGY

In order to ensure that all the tests will work properly and test the system "from all possible directions", I will present the idea for the implementation of my test system.

First, I would like to divide the test group into subgroups, in order to ensure as thorough a test as possible. The division into subgroups will be done on the basis of "binding relationships": for example, for the Verification of the mining process test, it is necessary to check Block mining first.

Accordingly, the distribution will be made as follows:

- The blockchain system:
  1. Connection to the blockchain system
  2. Checking the correctness of the hash function
  3. Adding a new transaction to the blockchain system (*)
- The mining process:
  1. Block mining
  2. Adding a new transaction to the blockchain system (*)
- The verification process:
  1. The Poof of Work system works as required
  2. The connection between the Blockchain & the mining process – is working as expected.

It is also important to note that the order of the tests is also important that as can be seen, the verification process must be performed after the completion of the tests of stages 1 and 2 - since the tests in this part assume that all the tests in stages 1 and 2 worked properly.

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Performance and Stress Testing

As I mentioned earlier, I am interested in testing the durability of my system in situations of load:
On a standard blockchain system, thousands of transactions are made in very short periods of time, which requires the system to be durable in several aspects.

To do this, I would like to test the system in various load modes, including:

- Mining a large number of blocks properly in a short period of time - The purpose of this test will be to check how the system responds in good condition, and whether the user experience is compromised.
- Mining a large number of blocks improperly in a short period of time - The purpose of this test will be to check how the system responds in an improper situation where many users are trying to perform illegal actions, and whether the user experience is compromised.
- Adding and creating multiple transactions to the system properly in a short period of time - for the same reason outlined above.
- Adding and creating multiple transactions to the system incorrectly in a short period of time - for the same reason as detailed above.
- Perform multiple connections and disconnections from the system in a short period of time

HARDWARE & ENVIRONMENT REQUIREMENTS

In order to perform the tests properly, all that is required is a computer on which the blockchain system to be tested is installed.

TEST SCHEDULE

As I mentioned earlier, there are several subgroups that we are required to check in a certain order. Therefore, I will present the following schedule:

- 23.11.2021 – 30.11.2021 : The blockchain system
- 30.11.2021 – 6.12.2021 : The mining process
- 7.12.2021 – 14.12.2021 : The validation process
- 15.12.2021 – 16.12.2021 : Conclusions

It is important to note that for each test group a 7-day period is currently defined - when I take into account the fact that there are studies in parallel with the tests.

Furthermore, this is only an assessment, and this period may be longer / shorter depending on the test results.

At the end of the testing process, an evaluation of the system will be performed so that we can get the most accurate picture: The amount of falls of the system, the level of load that the system can withstand, etc.