The problem consists into elaborating an update system for a large number of players distributed on a map.

The logic of the problem has to be executed in proportion of 100% on the server.

The client-server communication has to be done using HTTP(s) protocol only.

The programming language used for the test should be any, but it would be nice if you could use Python.

The DB used for the test can be MySQL, Mongo or Redis. Feel free to use any as long as you have maximum performance out of it.

The performance of the implementation is the most important KPI of this test.

The test itself is as follows:

We have a map that consists in a 512x512 square, where a number of 20,000 (20K) players are randomly distributed.

Each of the players can trigger up to 4 tasks on the server (it is important to be a limited number, it cannot be infinite). As this is a test, each task should consist of only a timer which is stored and updated on the server. The timer for each task should be between 10s (ten seconds) and 10m (ten minutes). If the time of a task expires, the task is considered completely and then it is dismissed (erased from the DB).

Each player has a field of view around him of 32 x 32 squares (meaning that he can see what players around him do on an area of 32 x 32 squares).

Each of the players will start task(s) on the server with a random frequency. In case they have already reached the maximum number of tasks started, they have to wait until they are finished to start a new one.

At any time they can inspect the map and move the “field of view” on the map to see different portions of it, in real time.

When the server boots, the DB should be populated with data in an automated way only if it is empty .

By populating with data we mean that players will be added to the DB, so that we have 20K players in the database, with one(1) or more tasks started.

The client will start in a random position on the map and looks at the players in that area. While he looks at the map, the client will see the tasks for each player and their timers. If a timer expires, the task is being considered closed and immediately erased.

In the same time, a second client should be started (on the same machine or another machine) with the scope of simulating player activity on the server. This second client has to be able to start and stop tasks for the “players” on the map. The first client should see the updates.

How the clients see the tasks of the players on the map is not a subject of this test, so any graphical (or logs only) representation of the map is good.

On the next page you can find a small picture for a better understanding on the test.

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Imagine this is a small section of the map.

With green, you can see the players randomly distributed on the map.

Then, you can see the “field of view” on the clients with orange.

For each player in the field of view, the client should see the ongoing tasks.

Player[50,50] Task 1, timeLeft 20s; Task2, time left 1m:15s; Task3, time left 2m:30s

Player[40,45] Task 1, timeLeft 2s; Task2, time left 3m:15s;

Player[42,48] Task 1, timeLeft 32s;

Player[52,47] Task 1, timeLeft 52s; Task2, time left 8m:5s;

The refresh on the client should be as often as possible to keep the synchronization with the server to the maximum without killing the server processing power/db.

Good luck ☺.