Esercizio facoltativo su RPC

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Elective exercise on RPC

- Solve an embarrassingly parallel problem choosing between:
  - Matrix-vector product
  - Password cracking using brute-force attack
- Use RPC (Java RMI or Go)
- Master-worker architecture of the server side
Application components

Three types of components:

1. **Client**: submits service request to master and waits until master responds

2. **Worker**: initially acts as client and sends a join request to master. Then it changes role and become server. As server, it can receive processing requests from master
   - Matrix-vector product: the worker multiplies a block of rows of the matrix for the vector
   - Password cracking: the worker tests the password against every possible combination over a limited range of the space

3. **Server**: it is the service orchestrator. It manages and supervises a collection of workers. When it receives a service request from client, it splits the work into smaller tasks over limited ranges and sends the processing request to the workers. It sends the reply to the client.
   - Matrix-vector product: the master waits until all the workers complete their product
   - Password cracking: the master waits until either a worker finds the password or the complete range has been checked by all the workers without finding the password