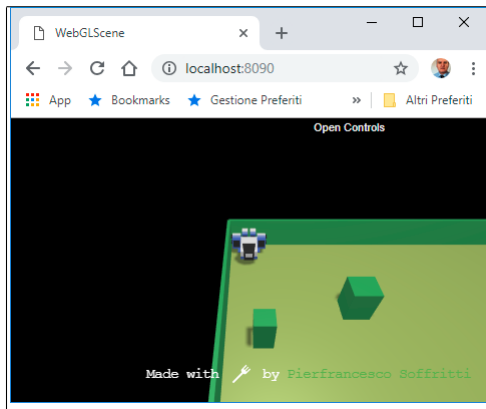

1 Final task LABORATORIO DI SISTEMI SOFTWARE 2018

A `ddr` robot (`discovery`) must be used to check for the existence of a bomb in the hall of a airport. The hall has been evacuated, but on its (flat) floor remains the luggage left by the travellers. The robot `discovery` can be remotely controlled via a smart device by an human operator working in a protected area. The robot must start its work under the following conditions:

- the operator has sent a `EXPLORE` command (`R-startExplore`) by using a GUI interface (`console`) running on the smart device;
- the value of the temperature in the hall is not higher than a prefixed value (`R-TempOk`): (e.g. 25 degrees Celsius).



The software system running on the robot and on the operator device must provide the following functionalities:

1. the robot must explore (in 'autonomous way') the hall (`R-explore`) with the goal to reach each bag on the hall-floor;
2. during the exploration phase the operator can stop (`R-stopExplore`) the robot and send to it a command to return to its initial position (`R-backHome`) or to continue the exploration phase (`R-continueExplore`);
3. while exploring, `discovery` must blink a Led put on it (`R-blinkLed`) and update the operator console with information on the robot/discovery state (`R-consoleUpdate`);
4. when `discovery` is in proximity of a bag, it must:
 - stop (`R-stopAtBag`);
 - take a picture (`R-takePhoto`) of the bag;
 - send the photo to the operator device (`R-sendPhoto`);
5. when the operator device receives a photo, it executes a tool able to understand if the bag could be a bomb. In case of 'bomb-detected', the operator device:
 - alerts the operator (`R-alert`);
 - stores the photo (`R-storePhoto`) on some permanent storage device, together with contextual information (e.g. time, robot-position, etc.);
 - sends to the robot the command to return to its initial position (`R-backHomeSinceBomb`);Otherwise, the operator device sends to the robot the command to continue the exploration (`R-continueExploreAfterPhoto`);
6. the operator alerted for a possible bomb:
 - waits until the robot is returned to its initial position (`R-waitForHome`);
 - when `discovery` is at home, tells to another robot (equipped with proper tools) to reach the discovered bag (`R-reachBag`) in order to put the bag in safe container and transport it to the initial position (`R-bagAtHome`).