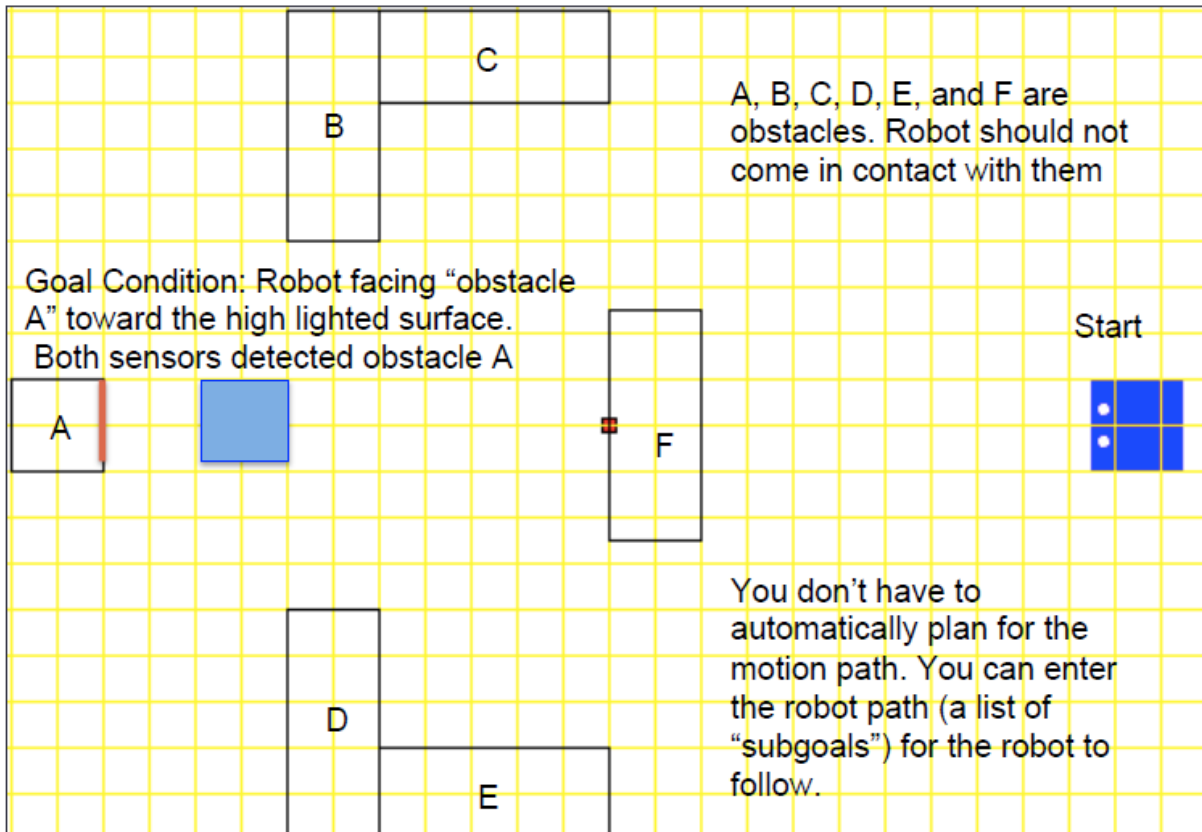


### Assignment#3-2: Localization and Navigation

Due: 11/03/2015

**Goal:** Autonomously have your robot move from the start location to the end goal. You must localize yourself at least twice, and cannot touch any obstacles.

The exact map is given below.



#### Requirements:

- Starting Conditions
  - The robot will start in the location and orientation shown on the map (with the map origin being the red square on obstacle F)
- Motion Planning
  - You do **NOT** need to automatically generate your robot's path. You can pre-determine your robot's motion, and when to localize.
- Motion Control
  - While you can pre-define your path, you **CANNOT** do the whole thing purely with dead-reckoning by fine tuning your motion until you reach the end. You **MUST** localize at least **TWICE** before reaching the end. It is up to you to decide which obstacles to localize against, and at what point in your path plan.
  - Your robot **CANNOT** be controlled by the joystick. Once you start it, it must complete everything autonomously **without user input**.
  - Your robot cannot touch any obstacles.
  - You can hard code your plan if you'd like (i.e. turn for x seconds then move forward for y seconds, etc), but we suggest you abstract the motion into re-usable functions (e.g. `move_to_point(x,y)`),

- localize( ), etc.) so you can plan your path as simple x,y coordinates and when to localize and change that as need be.
- Ending Condition
    - The proper end condition is that your robot is facing the highlighted surface on obstacle A, **AND** that both the sensors detect the obstacle in front of it (so the robot is not on an offset angle).

**Setup:**

You now should have all the resources to be able to do this. We are not providing any new skeleton code, as you can modify the GUI toolkit that we provided.

**Submission:**

Simply zip all your files and name your zip following the previous naming convention:

sunetid\_hw#\_part#.zip