

Lab Challenge 3 – PART I

Due Aug, 04 2024

Multi-Sensor Autonomous Control

In this challenge lab you will design and implement software to autonomously move the robot through a set of pre-defined challenges.

LEARNING OUTCOMES

Upon successful completion of this challenge lab, you will have demonstrated the ability to:

- Demonstrate an understanding of robot sensors
- Implement the autonomous sensor control (detection and reaction)
- Use multiple sensor devices simultaneously in a single autonomous application

SPECIFICATIONS

Your task is to write an autonomous software application using RobotC that will successfully perform the objectives below:

In the following virtual environment, there are three fix points (Start, Station1 and Station 2).

Assume that these are known positions in the corner of the map.

There are two blocks (a and b) which are randomly placed on the map. The robot does **NOT** have any prior information on where these blocks are located.

The mission initiates from START and the robot shall detect the closer part and moves toward the block.

Then it should stop close to the first object

Then Turn toward Station 1

Stop at station 1

Then turn toward part 2

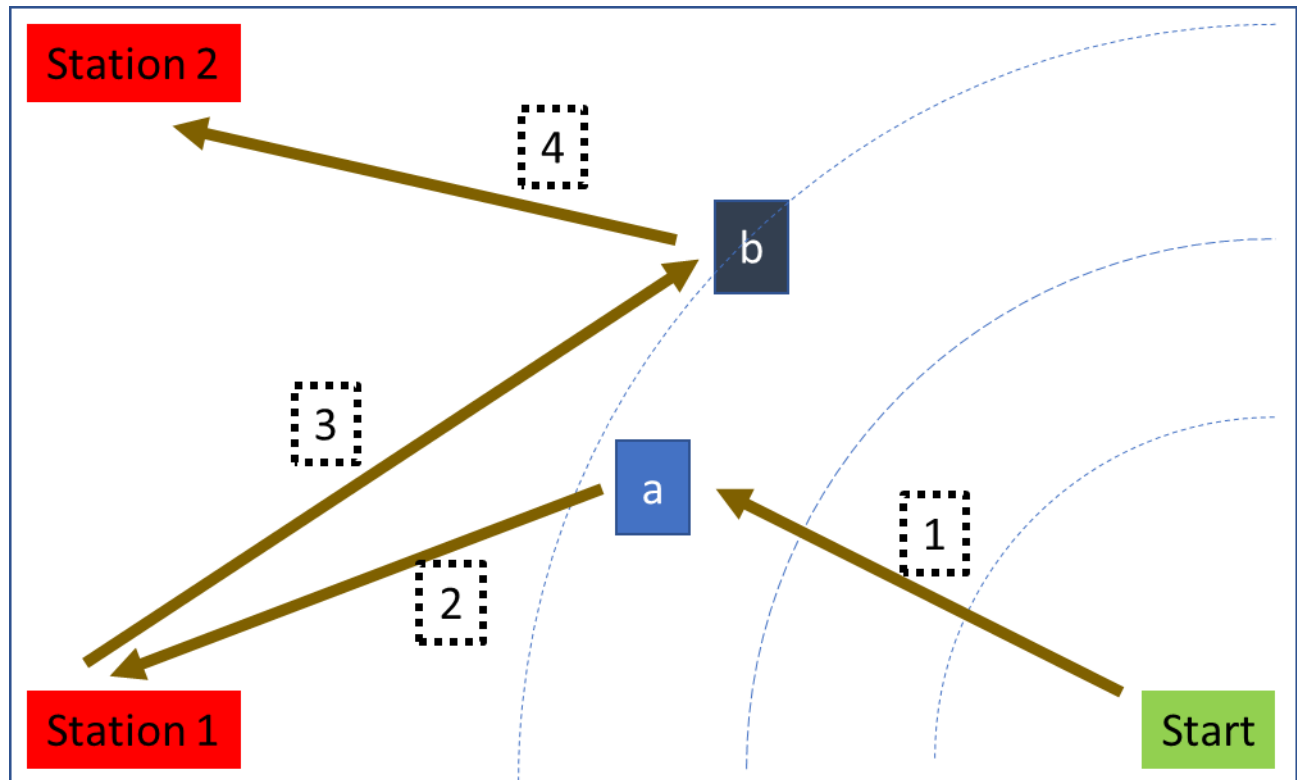
Then moves to part 2

Then moves toward the station 2.

Stop.

You can use any object in the virtual environment for block(a) and block (b)

The program shall be able to perform the same task for any random positions of block (a) and block(b).



You are not allowed to interact and/or touch the robot once the program has started. Doing so will result in loss of half the marks. Your robot must be programmed to complete all tasks in one operation.

The lab will be considered completed once the robot has completed the above list of tasks.