LAB 3 – Sensors and Distance

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TASKS

1. Sign in to the lab and sign out a robot. Attendance goes towards CA.
2. Read the Webcourses lab 3 material
3. Rebuild the Robot from last week and add Bump and Ultrasonic Sensors
4. Build the layout in diagram below.

Lego Box

Book

Book

1. Modify last week’s program so that it decides on a random speed to use at the start of the program. It should take the same route in all cases from 1b to 5, but just use a different speed (from last week).
2. Research the following statements to help control rotations (both for EV3 + NXT).
   * 1. nMotorEncoder[motorC]
     2. nMotorEncoderTarget[motorC]

**motor**[motorB] = (**rand**() % (max-min)) + min; // set motorC to a random number in the range: [min, max]

1. Display the power/speed and battery life on the LCD display. Research how to do this.
2. Write a program to make the **bump sensor** detect a collision and reverse back for 1 second. To test your program you should start it from different locations and ensure that it always goes back to the roughly place.
3. Write a program to make the **ultrasonic sensor** detect a wall and reverse back for 1 second. To test your program you should start it from different locations and ensure that it always goes back to the roughly place.
4. Write a program that goes from Red zone to point 5 using bump and ultrasonic sensors.
5. Upload the code and the logbook to webcourses.
6. Tidy up and sign back in the robot.

GIT + GITHUB

1. Show your tutor a local git repository and a pull and commit you have made to it.