Week 2 – Odometer Document

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# Odometer Class

The odometer class will display the current X and Y coordinates as well as the heading angle on the LCD screen based on the initial heading of the Front US.

## Hardware involved

### Motors

The left and right wheel motors will be used to drive and rotate the robot so that it can reach to the destination.

### Ultrasonic Sensor

Two Ultrasonic Sensors will be used: the FrontUS and SideUS; however, the odometer data will be based on the FrontUS.

### Light Sensor

One Light Sensors will be placed at the back on the robot to detect the gridlines with the assist of java codes.

### Major Methods

void run() – calculate the X and Y coordinates, and the theta based on the angle turned on the wheels and the total displacement of the wheels  
void getPosition(double[] position, boolean[] update) – get the X and Y coordinates, and the theta so that they will be displayed on the LCD screen

# Odometer Correction:

The Odometer Correction mode allows the user to minimize the error on the odometer reading. The light sensor behind the robot will detect the gridline and update/correct the odometer reading. Basically the light sensor will catch a value, and then we will compare it to a constant (for our case it is set at 40) defined in the code. If the value obtained via the light sensor is smaller than the defined constant, the odometer will correct and update the data onto the LCD display.

# Glossary of Terms

leftMotor – Motor connected to the left wheel

rightMotor –Motor connected to the right wheel

FrontUS – Front Ultrasonic Sensor

SideUS – Side Ultrasonic Sensor