

MISSION #2

Position Relative Control

Due: Week#5

In the next two weeks we will try to transform you into experienced mobile robot programmers by writing position relative control programs and well-behaved functional programs that you will be using throughout the semester.

For each assignment, please create a button on your program so that the one who evaluates your work will click in order to start the running. In addition, you should provide the way to exit the execution as well.

Assignment 1.0 : The Position Command (Turning)

Task: Write a robot program called **TurnTo(int <tenths-of-degrees>)**

Description: When executed, the robot will turn <tenths-of-degrees> relative to its current orientation. Degrees are measured counterclockwise from the current orientation. Furthermore, the robot should turn the shortest way, for example, if given *TurnTo(2700)* the robot should turn clockwise 90 degrees.

Assignment 1.1 : The Position Command (Moving)

Task: Write a robot program called **GoTo(int <tenths-of-centimeters>)**

Description: When executed, the robot should move <tenths-of-centimeters> forward if <tenths-of-centimeters> is positive, otherwise backward.

Remark: You need to attain at least 90% accuracy using these functions. You probably want much, much better accuracy than this for the sake of the rest of your semester's work.

If it is possible, we may try to add encoders with the robot. This means you may probably want to use the encoders to increase the accuracy of the function. For accuracy and increased speed, you need to consider feedback controls. Remember that the encoders have a time lag so the robot will always be slightly ahead of where its encoders say it is.