

## Team Assignment #4 Navigating the BOE-BOT

### Reading Assignment:

- 1) Refer to the following sections in Robotics Version 2.2 (follow link on Paul Gordy's web page or online at [www.parallax.com](http://www.parallax.com))
  - Chapter 3 – Assemble and Test Your BOE-BOT
  - Chapter 4- BOE-BOT Navigation
- 2) Refer to various sections of BASIC Stamp Syntax and Reference Manual, Version 2.1 for information of PBASIC commands (follow link on Paul Gordy's web page or online at [www.parallax.com](http://www.parallax.com))
- 3) BOE-BOT Lecture #3 – Navigating the BOE-BOT

### Team Assignment:

- 1) Navigating the BOE-BOT in a straight line

Write and test a program to run the BOE-BOT in a straight line as shown in the diagram below.

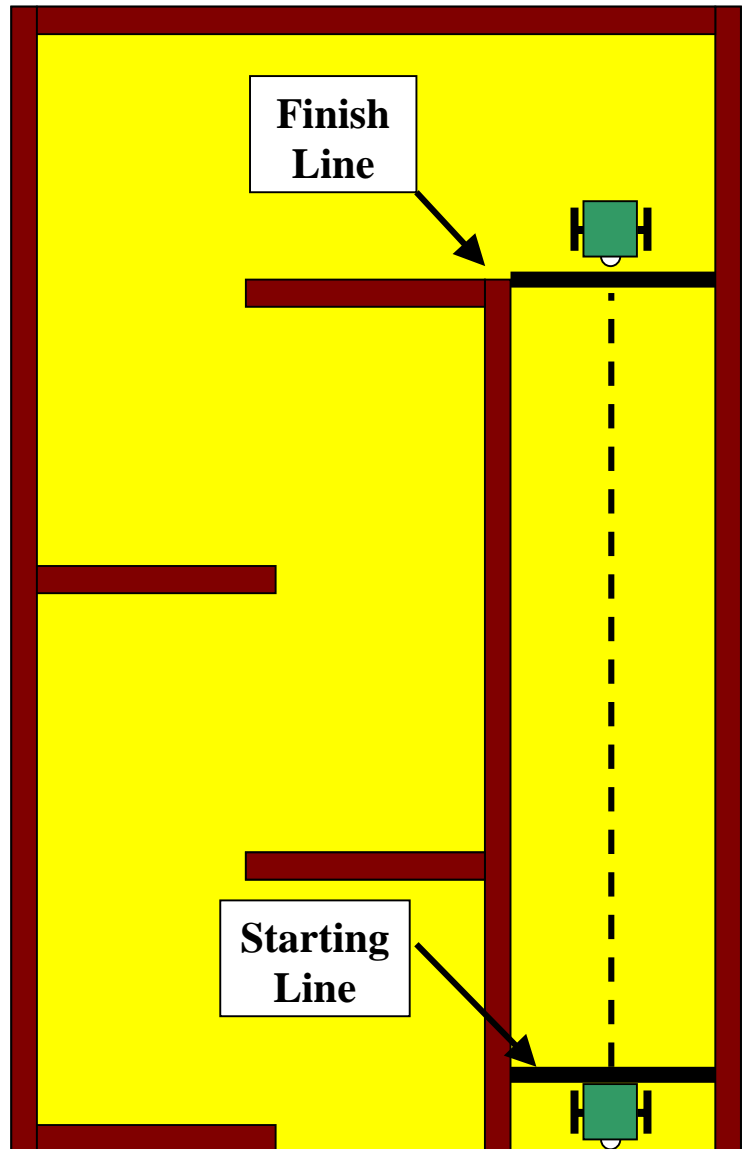
The BOE-BOT should:

- A) Start behind the starting line.
- B) Stop after the finish line, but before hitting the wall at the end of the track (Note: Station students around the track a pick it up if it looks like it will run into a wall. Treat the BOE-BOT gently.)
- C) Stay in the middle of the lane.
- D) Demonstrate proper operation to your instructor.
- E) Determine the exact distance traveled by the BOE-BOT and record the value of N used and calculate the distance traveled per count.

Your program might look something like the following example:

```
Counter VAR WORD
FOR Counter = 1 TO N
  PULSOUT 12, DURATION1
  PULSOUT 13, DURATION2
  PAUSE 20
NEXT
```

Your task is to experimentally determine the values of DURATION1, DURATION2, and COUNT. Use data gathered from the last team assignment to make good initial estimates for



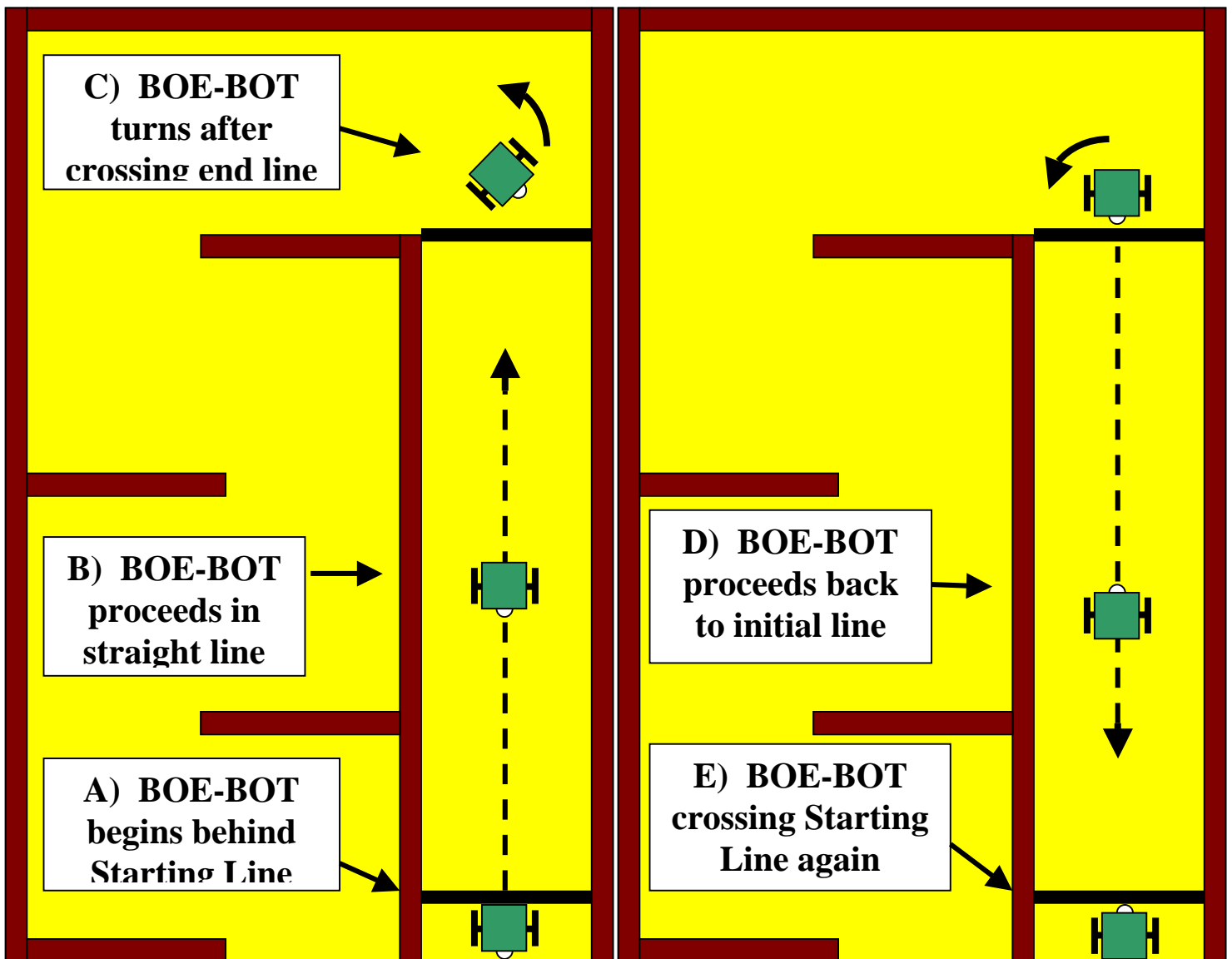
**BOE-BOE Test Track – Step 1**

2) Navigating the BOE-BOT in a straight line and returning to the start

Write and test a program to run the BOE-BOT in a straight line on the track, cross the finish line, and return to cross the starting line as shown in the diagram below.

The BOE-BOT should:

- A) Start behind the starting line.
- B) Proceed in a straight line until crossing the finish line.
- C) Turn the BOE-BOT around.
- D) Proceed in a straight line back toward the original starting line.
- E) Cross the starting line (no need to stop the BOE-BOT).
- F) Demonstrate proper operation to your instructor.



**BOE-BOT Test Track – Step 2**



4) **Report**

Organize your results into a report and submit a single typed report for the group to the instructor by the assigned due date. The report should consist of:

- A) A **title page** as shown below.
- B) Printouts for each of the programs for steps 1, 2, and 3 (be sure to include plenty of in your programs explaining the instructions). Include comments **in all programs** specifying the course number, team assignment number, BOE-BOT number, your team number, each team member's name (only if present), the program number (Program 2A), and the filename (pick an appropriate filename).
- C) **Analysis section**. Using the distance travelled and the final count (N) in program 1, determine:
  - The distance travelled per count
  - The number of counts required to travel 1', 5', 10', and 25'. Tabulate the results.

EGR 120  
Introduction to Engineering  
**Team Assignment #4**  
Date

Group #N (your group number)

Attendance & Participation Record:

(list all team members and all dates when teams worked together in class on this assignment and check boxes to mark attendance)

Team Member	Date 1	Date 2
John Doe	✓	✓
etc		

Demonstration of Programs

Program	Successfully Demonstrated	Time
1	✓	--
2	✓	--
3	✓	

