

REC for Cortex

1.16 Activity: Tank Control

Name: _____ Class/Period: _____ Date: _____

Overview:

In this activity, you will mount the Vex controller and battery onto the BaseBot.

Duration:

30 Minutes

Materials:

Qty	Description
1	BaseBot from activity 1.14
1	Playing field
1	Stopwatch
2	Two obstacles of your choice

Procedures:

1.16.1: Configuring Tank Control

- 1 Be sure the BaseBot motors are configured for Tank control:
 - Left motor of the BaseBot is plugged into motor port #1.
 - Right motor is plugged into motor port #10.



- 2 Turn on the joystick.
- 3 Turn on the controller.
- 4 Move the left joystick and verify the left side of the robot moves.
- 5 Move the right joystick and verify the right side of the robot moves.

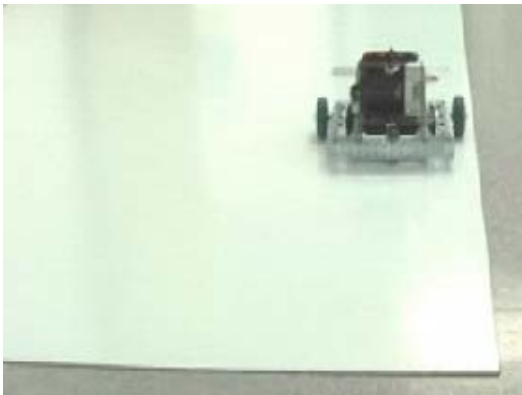
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If your robot does not behave as you expect, double-check your connections and settings. If you cannot find the problem, consult your teacher.

1.16.2: Driving the Robot in a Straight Line

- 1 Move the left and right joysticks up at the same time. This should cause the robot to drive forward.
 - Does your robot go straight?
- 2 Using the edge of the playing field as reference, drive the robot in a straight line.



- Can you get your robot to move forwards and backwards in a straight line?
- If not, what do you think the problem might be?

If your robot does not drive straight, try the following suggestions:

- Manually rotate each side of the robot's drive train and try to feel if one side has more drag than the other.
- Make sure you are within range of the receiver.

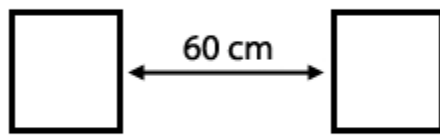
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1.16.3: Mastering Tank Control

Once you can drive the robot straight, the next step is to control the robot through a turn.

- 1 Set up two obstacles on the floor roughly 60 cm apart as shown in the figure below. These obstacles can be anything such as books or coins that can serve as a reference as you drive the robot.



- 2 Drive the robot in a clockwise direction around the obstacles.
- 3 Once you start to become comfortable with your robot control, switch directions and go counterclockwise around the obstacles.
 - Is it easier or harder for you?
- 4 Drive the robot in a figure-8 pattern around the obstacles, while your partner times each lap around the course.
- 5 Record the time in your engineering notebook. Use your time as a benchmark to track the improvement of your driving skills.
- 6 Take turns with your partner and make sure everyone in your group gets an opportunity to be timed.

Did your times improve or get worse after each run?

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1.16.4: Engineering Notebook

Make an entry in your engineering notebook that includes:

- A sketch of the course you navigated with your robot.
- Notes on your progress after each of your timed figure-8 laps

Questions:

Write the answers to the following questions on your question sheet. Add the completed question sheet to your robotics binder.

Question 1 After some practice driving tank style, did your time improve or get worse? Why?

Question 2 What was the hardest maneuver for you to make with the BaseBot?