SCRATCH 2

ROBOT REVOLUTION

Use the task cards in your journal to practice a skill, then write or modify your own program to accomplish each of the following challenges.

MORSE CODE CHALLENGE:

Write a program that allows you to send coded messages to your partner using Morse Code. Partner A writes out a message and encodes it. Partner A then sends the coded message to Partner B. Partner B listens and records the message then decodes it.

(Hint: It would be a good idea to make two different tones… one short and one long)

RANGE FINDER CHALLENGE:

Write a program that turns your robot into a musical instrument. The farther you hand is from the ultrasonic sensor, the lower the notes played. The closer your hand is to the ultrasonic sensor, the higher the notes played. You should also show a sprite moving up and down the screen to show the pitch.


SOUND METER CHALLENGE:

Write a program that makes a happy face sprite move around the screen based on how loud it is in the room.

SQUARE DANCE CHALLENGE:

Build a CastorBot robot. Practice all of the driving maneuvers shown in your journal including the Square Dance. Then work with one or two other groups to simultaneously travel in concentric shapes (one inside the other) so that they start and end at their original starting points at the same time. You may drive in squares, circles, triangles, etc.

(Hint: The inside robot will need to go slower than the outside one)
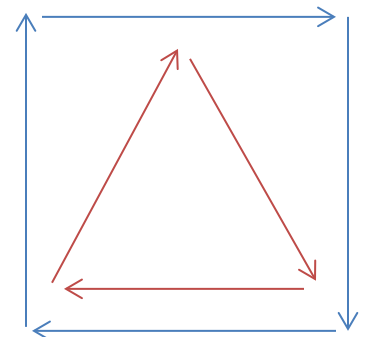
CRASH TEST CHALLENGE:

Add the BumperCar attachment to your CastorBot. Program your robot to drive forward with "OPEN EYES" on the display until it runs into something. It should then stop, "CLOSE EYES", say "OUCH", back up, turn in a different direction (a random amount), then repeat.

(Hint: You can create your own sound with the microphone)

SHY PUPPY CHALLENGE:

Reattach the Ultrasonic Sensor to your robot. Have your robot search for the closest object to it. To do this, spin in a complete circle checking the distances seen. Then turn back to the object that is closest and stop.

(Hint: You might create variables to hold the distance and location information)

FOLLOW THE LINE CHALLENGE:

Make your robot follow the path from the start to finish. When you reach the end of the course, stop the robot and display your time on the screen.

NOW CHOOSE ANY OF THE FOLLOWING CHALLENGES TO TRY
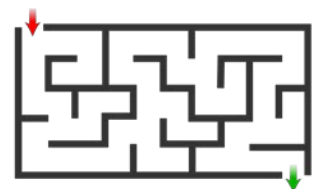
BUILD AN ETCH·A·SKETCH:

Write a program that uses two motors (one for up and down movement and one for left-right) to control a pen to draw pictures on the screen. You can chose to draw on the NXT screen or remote-link to a SCRATCH screen.

MAZE FOLLOWER:

Have your robot travel through a maze without crossing over any walls.

SUMO CONTEST:

Build a robot to compete in a sumo wrestling contest. Your robot should stay in the circle and wander around. If it reaches the edge, it should retreat. If it sees an enemy, it should attack to push it out of the ring.

You will need at least one other team to compete against.

CREATE YOUR OWN ACTIVITY:

Come up with your own idea for a game or interaction using the NXT robot.