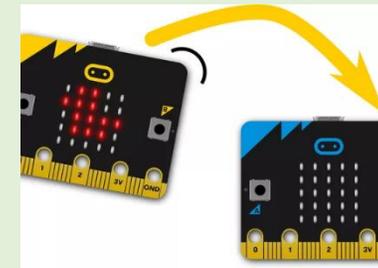


Steering Test #1 (Remote Control)

Objectives:

Create code for a second micro:bit to act as a remote control.

1. Open the MakeCode Editor. Click “import” o the projects page.
2. Upload the link or the URL of the STEM SEALs Template 2.
3. Rename the project: Remote Control 1
4. Follow the **what** and **how** directions.

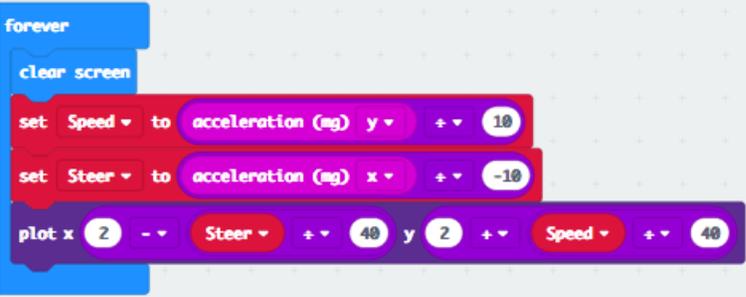
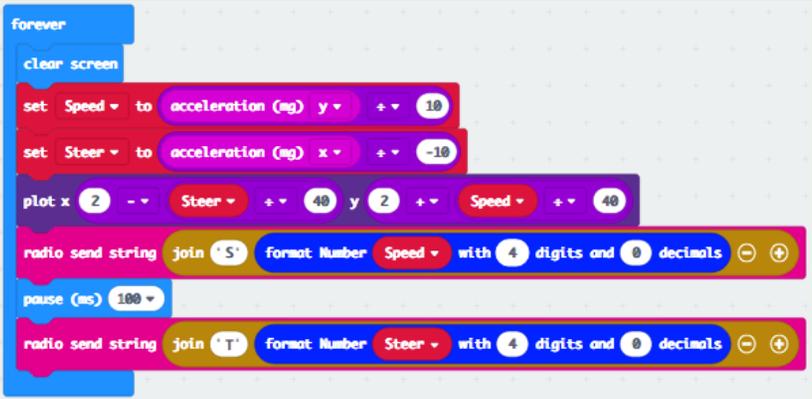


Did You Know?

The remote control will use the accelerometer (acceleration) feature of the micro:bit to interpret which way the user wants the rover to move. The acceleration value (milli g-force) can be measured in three dimensions with the micro:bit in all directions (x, y, z). The remote control will utilize two of these dimensions (x – left and right direction) and (y – forward and backward direction). z is used to measure acceleration in the up and down direction.

Information and video on Acceleration: <https://makecode.microbit.org/reference/input/acceleration>

What am I doing?	How will I do it?
<p>Set up a remote control for the rover using another micro:bit.</p> <ul style="list-style-type: none"> • Use a second micro:bit or pair with a partner and they can program their micro:bit to control your rover. • Start a new program for this using the STEM SEALs Template 2 found on the STEM SEALs resources. Click to edit and rename “Remote Control 1”. • The “speed” and “steer” will be set to zero (0) on start. 	<p>Use the on Start block:</p> <ol style="list-style-type: none"> 1. Play a few tones at the beginning 2. Plot the center LED (x2 y2) 3. Add a radio set group block 4. Use the same number as you used in the rover being controlled. 5. Create a variable “speed” 6. Set “speed” to 0 7. Create a variable “steer” 8. Set “steer” to 0 

<p>Create code for the Forever Loop of the Remote Control 1.</p> <ul style="list-style-type: none"> The Forever Loop will use the accelerometer feature of the micro:bit to control the function or movement of the rover. Speed will be set to a tenth for the y acceleration. Steer will be set to a negative tenth of the x acceleration. 	<p>On the Forever block:</p> <ol style="list-style-type: none"> Add an on clear block. Set "Speed" to acceleration (mg) y divided (\div) by 10 Set "Steer" to acceleration (mg) X divided (\div) by -10 Plot x 2 minus (-) "Steer" divided by (\div) 40 and y 2 plus (+) "Speed" divided by (\div) 40 
<p>Down load the code to the Remote Control 1 micro:bit and test.</p>	<ul style="list-style-type: none"> When tilting the micro:bit forward and backward, the LED indicator should move forward and backward. this will control the speed of the rover. When tilting the micro:bit left and right, the LED indicator should move left and right. This will control the turning (steering) of the rover.
<p>Create code on the Remote Control to send the commands to the rover.</p> <ul style="list-style-type: none"> Continue the code on the remote control forever loop. The first radio send block will set the "Sxxx" with xxx being the speed value formatted to four digits. The second radio send block will set the "Txxx": with xxx being the steer value. 	<p>(continue on the Forever block)</p> <ol style="list-style-type: none"> Add a radio send string block <ol style="list-style-type: none"> join "S" format number "Speed" with 4 digits and 0 decimals STEM SEALs > more > format number Add a pause 100 ms Add a radio send string block <ol style="list-style-type: none"> join "T" format number "Steer" with 4 digits and 0 decimals STEM SEALs > more > format number 
<p>Download the code to the Remote Control 1 micro:bit and test with the rover.</p>	<ol style="list-style-type: none"> Be sure to connect a power source to the remote control micro:bit (battery pack). Turn the rover on. Tilt the Remote Control forward and backwards. What does this do to the rover? Tilt the Remote Control to the left and right. What does this do to the rover? What directions can the rover move when it is controlled by the remote? How does the remote make the rover more functional? Practice controlling the rover with precision.