Unit 4: Make Rover Move!	Skill Builder 1: Your First Rover Program

In this first lesson for Unit 4, you will learn about working in the Program Editor to write a program that makes the TI-Innovator Rover move.

Objectives:

- Use the TI-Nspire CX Program Editor
- Access the Rover (RV) submenus
- Use the **Send** command to **CONNECT** the TI-Innovator Rover to the TI-Innovator™ Hub
- Make the TI-Innovator Rover move **FORWARD**, **BACKWARD**, **LEFT**, and **RIGHT**

Getting Started

- The Rover commands are found by pressing **menu > Hub > Rover (RV)**.

- Some portions of the final instruction, such as numeric values and optional parameters, are entered as normal keypad characters or selected from another Rover menu.

- Most Rover commands leave the cursor inside the quotation marks. This indicates that that there are more options to enter within the command. The TI-Nspire CX requires that quotation marks come in pairs.
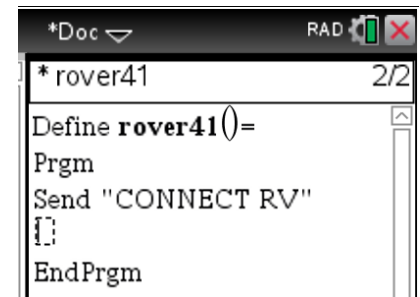
Your first Rover command tells the TI-Innovator Hub to connect to the Rover:
   **Send "CONNECT RV"**
RV is the name of the Rover device.

To create this statement:

1. Press the **menu** key, and select the **HUB** menu.

2. Then, select the **Rover (RV)** submenu.

3. Select the **Send "CONNECT RV"** command near the bottom of the submenu.

The next command is the **Text** statement found in the **menu > I/O** menu. This command pauses the program and waits for the user to press the **enter** key.

4. Press the **menu** key, and select the *I/O* menu.

5. Select **Text**.
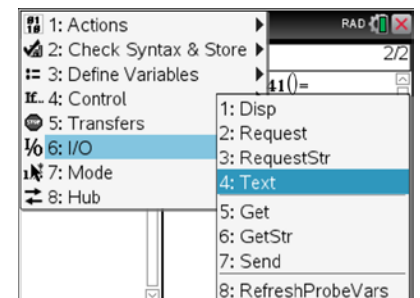
10 Minutes of Code

TI-NSPIRE™ CX WITH THE TI-INNOVATOR™ ROVER

6. Add an appropriate message after the Text command:
    Text "Press enter to start."

When running the program, if you hear a beep from the TI-Innovator Hub before (or while) you see "Press enter to start" it means that the **CONNECT RV** command was unsuccessful. Make sure the Rover is turned on.

Driving the Rover

7. Press **enter** at the end of the **Text** statement in order to add the next command which will cause the Rover to move forward.

8. Press **menu > Hub > Rover (RV)**, and then select the **Drive RV** menu as shown to the right.

9. Select **FORWARD** from the **Drive RV** menu.

Notice that the **FORWARD** command that is pasted into the program has the insertion cursor inside the quotation marks preceded by a space character. This is for adding optional parameters to the command.

10. We add the number **1** here:
    Send "RV FORWARD 1"

11. In the Program Editor, press *ctrl+R* to 'Run' the program. This command (in the 'Check Syntax & Store submenu) performs the 'Check Syntax & Store' operation and switches to a Calculator application and pastes the program name on the entry line. Supply any needed arguments to the program and press **enter** to run it. Be sure that there is about one foot of free space in front of the Rover.

The **Text** command displays a message and, when **enter** is pressed again, the Rover should move forward. But how far? Study the movement carefully and determine what **FORWARD 1** means.

The Calculator application displays '*Done*' when the program ends. Notice that the program actually ends before the Rover finishes moving. The handheld and the TI-Innovator Hub work at different rates.

10 Minutes of Code

TI-NSPIRE™ CX WITH THE TI-INNOVATOR™ ROVER

UNIT 4: SKILL BUILDER 1

STUDENT ACTIVITY
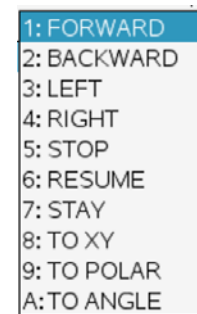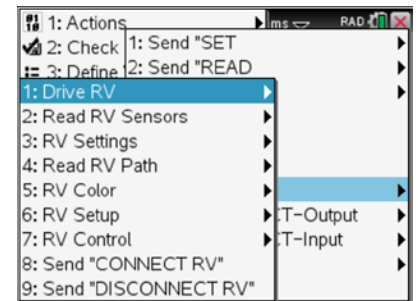
Driving Backwards

12. Edit the program, and add the statement **Send "RV BACKWARD 1"** below the **FORWARD** command by pressing **menu > Hub > Rover > Drive RV > BACKWARD**.

13. Add the number **1** to the string.

14. Run the program again (**ctrl+R**).

This time, the Rover should move forward a bit and then back to its original position. If it does, congratulations! You made the Rover move.

Turning

The next two commands in the **Drive RV** menu are **LEFT** and **RIGHT**.

15. Add these two commands to your program, and run the program again.
    Send "RV LEFT "
    Send "RV RIGHT "

What do these instructions do?

Making it Travel

Study the program to the right, and predict what the Rover will do and where it will end up when the program ends.

16. Enter these commands into your handheld, and run the program.

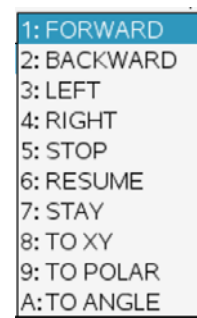Did your program do what you expected? Can you make a program *with only these commands* that causes the Rover to make a *rectangular* pattern?