## Installation of ti_runtime and TI-Nspire CX II micro:bit module

1. Determine if your micro:bit card is a V1 or V2. The V2 card has scallops on the board's gold edge, while the V1 is straight. Use the file versions that match your card. A V1 card will use the 1.x.x ti_runtime and modules, while the V2 card will use the 3.x.x ti-runtime and module. Both versions are in the download .zip file. Download and unzip the file in a convenient location such as your desktop.

V1   V2

2. Use a USB cable to connect the micro:bit to a computer. The micro:bit will appear as a drive on your computer. Drag and drop the required version ti_runtime.hex file to the micro:bit. Alternatively, right-click on the file and use the 'Send to' command to copy from the .zip folder to the card. This file provides functionality between the TI-Nspire CX II and the micro:bit card. The ti_runtime installation is a one-time process. If the micro:bit is connected back to the PC and programmed in a language other than Python, such as MakeCode, the ti_runtime.hex will need to be installed again. See additional information at the end of the document.

3. When the ti_runtime.hex has been successfully transferred, the Texas logo will appear on the 5x5 LED display.
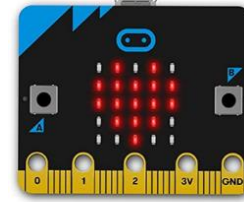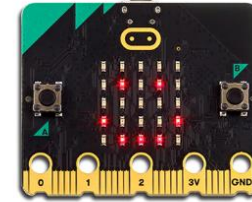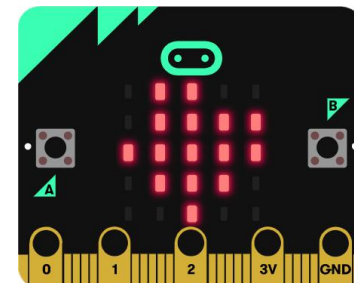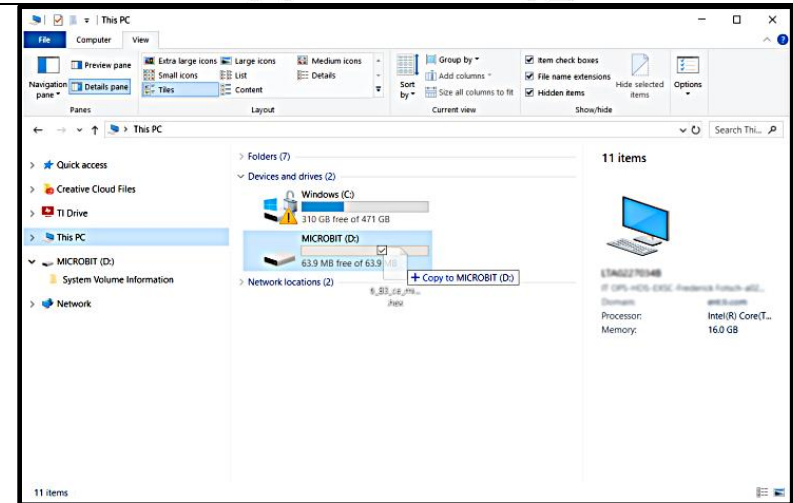
4. Use TI-Nspire CX II Connect web-based application to update your TI-Nspire CX II operating system.
5. After your OS has been updated, transfer the microbit.tns module from your computer to the calculator.
   a. From the web browser page, select connect to calculator.
   b. Select your calculator in the pop-up window.
   c. Select FILE TRANSFER -> START SENDING.
   d. Select TO CALCULATOR.
   e. Select FROM COMPUTER.
   f. Navigate to and open the download folder where the microbit.tns is located.

   g. You will see a confirmation window containing the file's name when the file has successfully transferred.
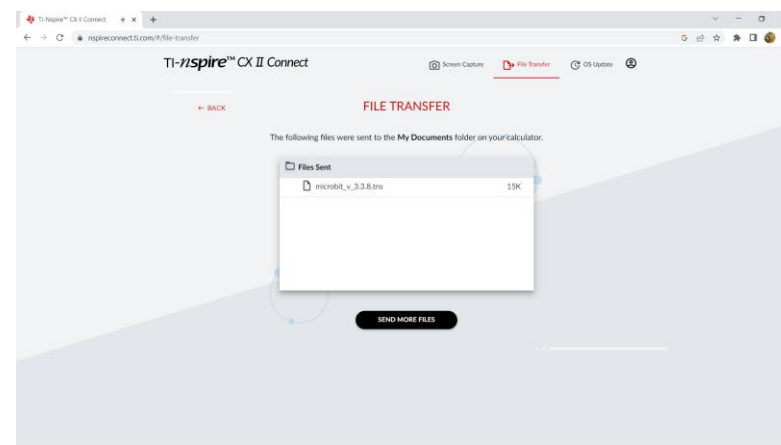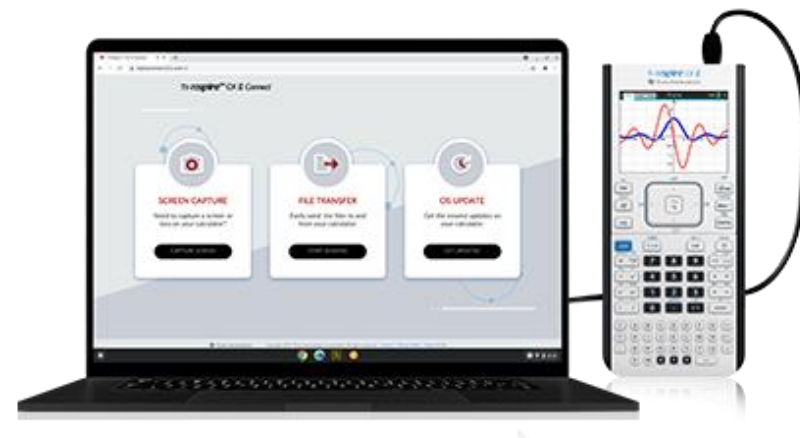
6. Install the microbit module on the TI-Nspire CX II calculator.
   a. Open the microbit module .tns file on your calculator.
   b. Navigate to the Python shell on page 1.2.
   c. Select the [menu] key and select "8. Install as Python module."
   d. After installing the module, the .tns file is deleted from the directory.

   e. After installing the module, press the [menu] key and select
      More Modules → BBC micro:bit to view the Python methods categorized by function.
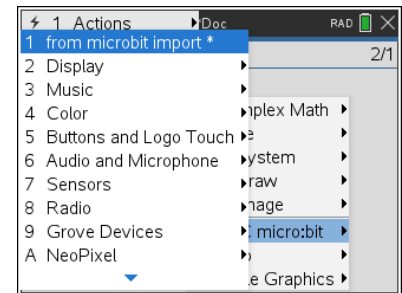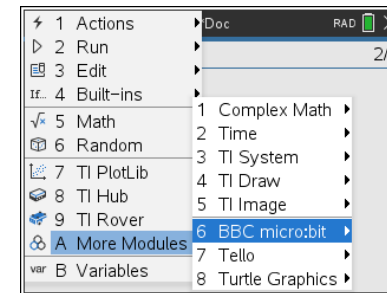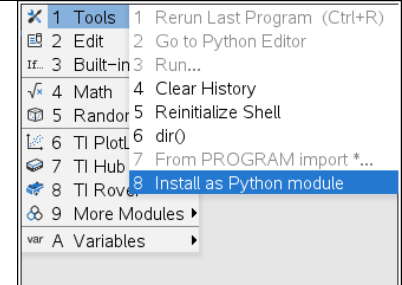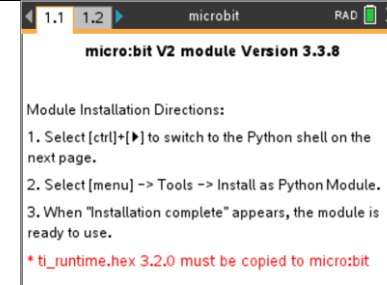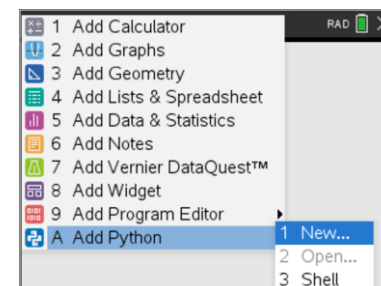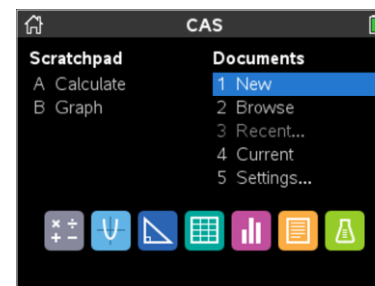
7. Turn on the TI-Nspire CX II calculator and connect the micro:bit card to the calculator with the calculator-to-micro:bit cable, and the Texas logo will display on the card.
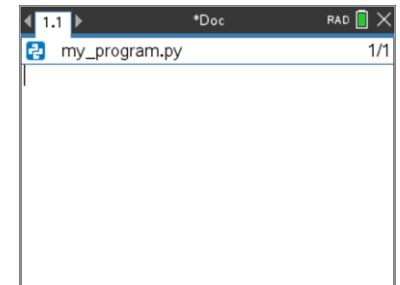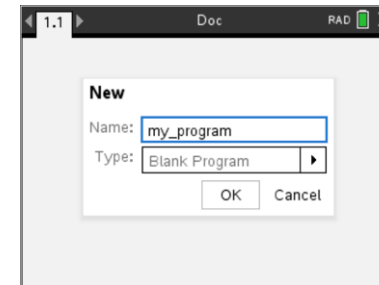
Creating Your First micro:bit Program

1. Create a new program in the Python editor:

    a. Press the calculator Home key

    b. Select [1] New
    c. Select [A] Add Python
    d. Select [1] New…

|	

2. Name the Program in the editor:
   a. Use the alpha keys to enter the name of the new Python program.
   b. The Python editor displays the name of the Program in the window.	

3. Import the microbit module on the first line of the Python program:
   a. Press [menu]
   b. Select [A] More Modules
   c. Select BBC Microbit
   d. Select [1] from microbit import *	
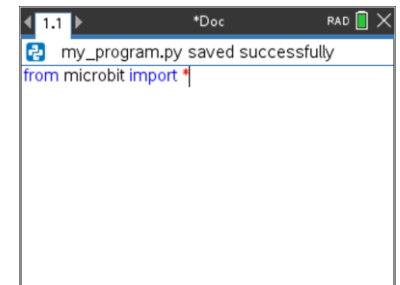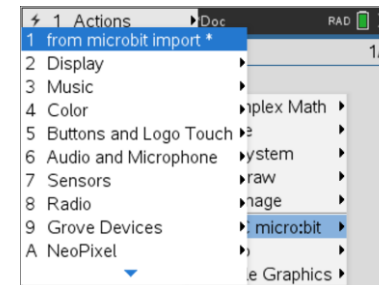
4. Create the code that will display a heart on the micro:bit's 5x5 LED display:
   a. Press [menu]
   b. Select [A] More Modules
   c. Select BBC Microbit
   d. Select [2] Display
   e. Select [1] show(image)
   f. The code will paste into the editor, and a prompt of images will pop up.
   g. Select HEART
   h. Press [ctrl] + [enter] to go to the following line in the editor. This key combination ensures the cursor is outside the parenthesis before going to the next line; it is useful in avoiding splitting a line of code.	
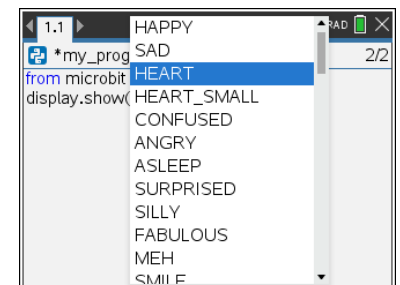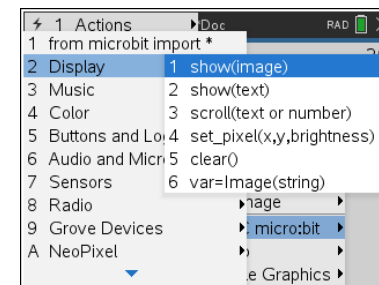
5. Print "I Heart Python!" in the Python run shell:
   a. Press [menu]
   b. Select [4] Built-ins
   c. Select I/O
   d. Select print(); the parameter must be a string with quotes.
   e. Open a quote [ctrl] + [X], and notice the blue quotes above the multiplication key.
   f. Enter the text
   g. Close the quote [ctrl] + [X]
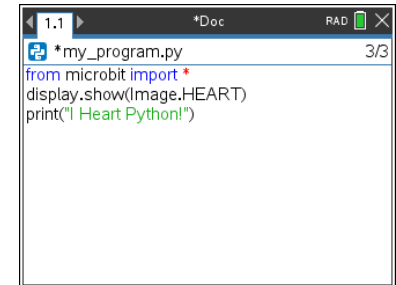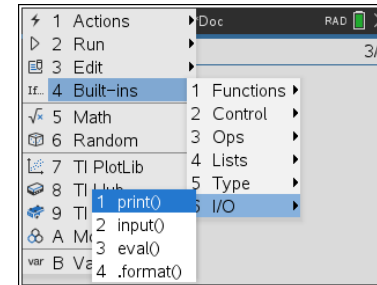
6. Run the Program:
   a. Press [menu]
   b. Select [2] Run
   c. Select [1] Run, alternatively in the editor, press [ctrl] + [R]

Congratulations! You have written your first micro:bit program on the TI-Nspire CX II calculator in Python. While you are here, try adding a line of code to your Program that plays a song. To edit your Program, press [ctrl] + click pad to the left to move back to page 1.1.
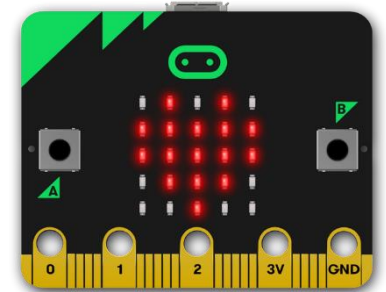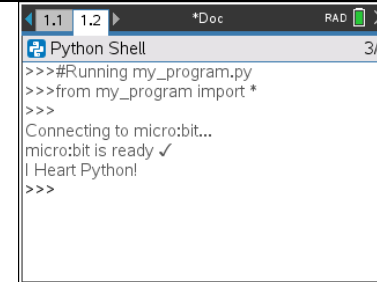
Troubleshooting

- If your calculator does not connect to the micro:bit card, disconnect the cable from the calculator and reconnect.
- When the card is first plugged in, be sure the Texas logo is displayed. If not, install the ti_runtime on the card.
- The BBC micro:bit menu will not appear if the microbit module was not installed.
- Ensure the first line of the Program is "from microbit import *"; this line must be at the top of all micro:bit programs.
- Ensure quotes are before and after "I Heart Python" and that the close parenthesis is not deleted or inadvertently moved to the following line.

Going Further

- Try 10 Minutes of Code: Python - Introduce students to the basics of Python coding with the micro:bit to help build a conceptual understanding of core coding concepts.
- Refer to the Microbit Module Python Reference document in the download folder for more information and how to use all of the module's methods.
- Visit the microbit.orgmake-it-code-it-website and try some of the many projects. Click the Python tab in the 'Code it' section.