Unit 7: The TI-RGB Array	Skill Builder 2: A Rainbow of Color

In this lesson, you will generate random colors on each of the LEDs on the TI-RGB Array.

Objectives:

- Use getKey to end a program
- Use randInt( ) to light a random LED in a random color

We will use the random number generator **randInt( )** to make random LEDs light up in random colors.

1. Start a new program - we called it **RAINBOW** - and add

    Send("CONNECT RGB")

    Using **prgm > HUB > Send("CONNECT-Output…** and select **RGB** from the next menu.

    Type the closing quote and parenthesis.

```
NORMAL FLOAT AUTO REAL RADIAN MP
EDIT MENU:[alpha][f5]
PROGRAM:RAINBOW
:Send("CONNECT RGB ")
```

2. Add a **While… End** loop using **prgm > While** and press **[enter]** a few times, then select **prgm > End** for the end of the loop structure.

```
NORMAL FLOAT AUTO REAL RADIAN MP
EDIT MENU:[alpha][f5]
PROGRAM:RAINBOW
:
:Send("CONNECT RGB ")
:While
:
:
:
:End
:
```

3. The loop will end when the **[clear]** key is pressed. The condition is:
    While **getKey ≠ 45**

    getKey is found on **prgm > I/O**
    ≠ is found on **[2ⁿᵈ] [math]** (the test menu)
    45 is the code for the **[clear]** key since it is on row 4, column 5 of the keypad.

```
NORMAL FLOAT AUTO REAL RADIAN MP
EDIT MENU:[alpha][f5]
PROGRAM:RAINBOW
:
:Send("CONNECT RGB ")
:While getKey≠45█
:
:
:
:End
:
```

4. In the loop body write four statements to assign random integers to four variables L, R, G, and B representing the LED number and the red, green, and blue values for that LED:

    randInt(0, 15)→L
    randInt(0, 255)→R
    randInt(0, 255)→G
    randInt(0, 255)→B

```
NORMAL FLOAT AUTO REAL RADIAN MP
EDIT MENU:[alpha][f5]
PROGRAM:RAINBOW
:
:Send("CONNECT RGB ")
:While getKey≠45
:randInt(0,15)→L
:randInt(0,255)→R
:randInt(0,255)→G
:randInt(0,255)→B
:
:End
```

5. Add the **Send(** statement to control one of the TI-RGB Array LEDs:

    Send("SET RGB eval(L) eval(R) eval(G) eval(B)")

and a **Wait** statement to slow the lights down:

    Wait .25

6. Run the program to see a wide variety of colors blinking.

Press **[clear]** to stop the program. Notice that the LEDs are still lit even though the program has ended. Fix this by turning them off just after the **End** of the **While** loop statement by adding the statement:

    End

    Send "SET RGB ALL 0 0 0"

rainbow of color