



Unit 7: The TI-RGB Array

Skill Builder 3: Sequencing

In this lesson, you will learn to control two LEDs at once in a loop to create a 'marquee' effect.

Objectives:

- Use a **for** loop to light up a single varying LED.
- Use a mathematics expression to control another LED at the same time.

The overhead sign outside of some movie theatres has a border of lights flashing in sequence like ants marching. You can create a similar effect on the TI-RGB Array by turning on and off lights *in sequence*.



Your program in this lesson will light up two LEDs at a time, one on the top row going from right-to-left (0 to 7) and one on the bottom row going from left-to right (15 to 8). What is the relationship between the top row sequence and the bottom row sequence?



1. Begin a new Python Hub Project and import the TI-RGB Array module.

Make a variable using the `var=rgb_array()` constructor. We use the variable `r` again, but you are free to choose your own variable.

Add the statement

while not escape():



found at `[math] ti_system...`

```

EDITOR: RGBC
PROGRAM LINE 0007
# Hub Project
from ti_system import *
from time import *
from rgb_arr import *
r=rgb_array()
while not escape():
  ..

```

2. Use a **for** loop to light up the top row in sequence from right to left (0 to 7).

◆◆ **for t in range (8):**

◆◆◆◆ **r.set(t, 255,255,0)** (This is yellow.)

Use the variable `t` because this controls the top row.

Remember that `range(8)` processes the numbers from 0 to 7.

Test your program now.

```

EDITOR: RGBC
PROGRAM LINE 0008
# Hub Project
from ti_system import *
from time import *
from rgb_arr import *
r=rgb_array()
while not escape():
  --for t in range(8):
    ....r.set(t,255,255,0)_

```



10 Minutes of Code – Python

TI-84 PLUS CE PYTHON WITH THE TI-INNOVATOR™ AND RGB ARRAY

UNIT 7: SKILL BUILDER 3

STUDENT ACTIVITY

- All 8 LEDs light up very quickly and, at the end of the program, all the top row LEDs are on.

Next deal with the **bottom** row. The bottom row must go from 15 to 8. What is the relationship between bottom (**b**) and top (**t**)?

```
◆◆◆◆ b = ???
◆◆◆◆ r.set(b, 255, 255, 0)
```

- Did you write **b = 15 – t** ?
<Run> the program now. All 16 LEDs light up very quickly. Add two statements: a **sleep()** statement to slow things down and a statement to turn **all** LEDs off at the bottom of the loop block.

```
◆◆◆◆ sleep(.25)
◆◆◆◆ r.all_off()
```

- Try your program again. Adjust the **sleep()** value and perhaps add another **sleep()** after **r.all_off()**.

```
EDITOR: RGBC
PROGRAM LINE 0011
# Hub Project
from ti_system import *
from time import *
from rgb_arr import *
r=rgb_array()
while not escape():
  for t in range(8):
    r.set(t,255,255,0)
    b=???
    r.set(b,255,255,0)
  -
Fns... | a A # | Tools | Run | Files
```

```
EDITOR: RGBC
PROGRAM LINE 0009
from ti_system import *
from time import *
from rgb_arr import *
r=rgb_array()
while not escape():
  for t in range(8):
    r.set(t,255,255,0)
    b=15-t
    r.set(b,255,255,0)
    sleep(.25)
  r.all_off()
Fns... | a A # | Tools | Run | Files
```

