



Unit 7: The TI-RGB Array

Skill Builder 2: A Rainbow of Color

In this lesson, you will light up the LEDs in random colors.

Objectives:

- Import another module
- Use **randint()** to generate random LEDs in random colors
- Use **esc** to end the program

1. Begin a new Python Hub Project. Add the **TI-RGB Array** module

[math] ti_hub... Output devices... TI-RGB Array

Make a variable using the constructor **=rgb_arr()** by selecting it from:

[math] TI-RGB Array...

We use the variable **r**.

Add the **while not escape()** loop from

[math] ti_system...

so that your program will loop until you press the **[clear]** key.

```

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

```

2. Write four statements using **randint()** to assign values to variables representing the LED number (0...15) and the colors red, green, and blue.

randint() is found in the **random** module which is *not* included in the import section at the top of your program. You will have to add the module yourself. Find that **import** statement on [math] random...

led = randint(min,max)

Try it yourself before looking at the next step.

3. Have the TI-RGB Array light up the random LED in the random color using:

r.set(led, red, g, b)

Try your program now. If the lights are flashing too fast, add a **sleep()** statement after the **r.set()** statement.

```

EDITOR: RGBB
PROGRAM LINE 0013
from time import *
from rgb_arr import *
from random import *

r=rgb_arr()
while not escape():
  **led=randint(0,15)
  **red=randint(0,255)
  **g=randint(0,255)
  **b=randint(0,255)
  **r.set(led,red,g,b)

```

Teacher Tip: The variable **r** cannot be used for two different purposes. **r** is the variable for the RGB Array object so the random red value is stored in the variable **red**.



4. At the end of your program, turn all the LEDs off:

```
r.all_off()
```

Notice that this statement is un-indented.



```
EDITOR: RGBB
PROGRAM LINE 0014
from rgb_arr import *
from random import *

r=rgb_array()
while not escape():
    *led=randint(0,15)
    *red=randint(0,255)
    *g=randint(0,255)
    *b=randint(0,255)
    *r.set(led,red,g,b)
r.all_off()
```

Teacher Tip: For an interesting variation, add a fifth random value that determines whether to light up the random LED or just turn it off.

```
onoff = randint(0,1)
if onoff ==1:
    r.set(...)
else:
    r.all_off()
```

This creates blinking colored lights.