





# AP CSP Python with CodeX From Code to Flowcharts Activity Guide

Name:

**Review : Flowchart Symbols** Give a brief summary of what each flowchart shape is used for.

	Start or stop Use an oval to mark the beginning and end of the program.
	Action or process Use a rectangle to process an action. It could be used to assign a value to a variable, or increment a counter, or get a random number.
	Input or output Use a parallelogram to show input or output. <b>Input</b> could be the button pressed. <b>Output</b> could be text on the console panel, sound played, LEDs lit, or movement.
	Decision Use a diamond to make decisions. This shape will have two or more lines that come from it – one for each outcome. This step might ask a question or provide options. The result could be true or false, yes or no, or choices (which button is pressed).

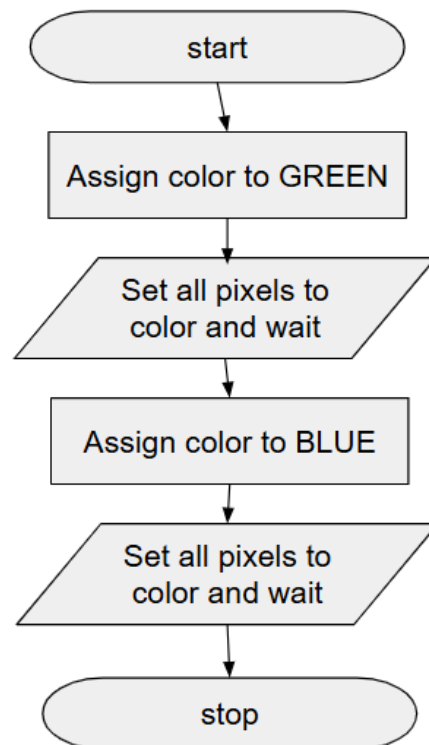
**Activity : From Code to Flowcharts** Create a flowchart for each Python program.

## Python Code #1.

```

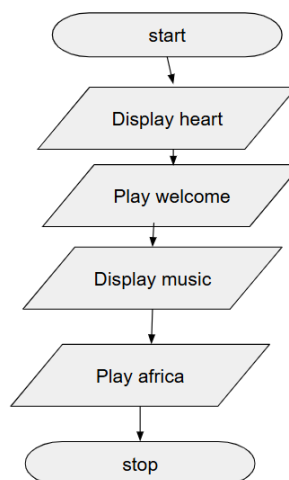
1  '''
2  Python Code #1
3  Create a flowchart for this code.
4  You don't need to include the imports.
5  '''
6  from codex import *
7  from time import sleep
8
9  color = GREEN
10
11 pixels.set(0, color)
12 pixels.set(1, color)
13 pixels.set(2, color)
14 pixels.set(3, color)
15 sleep(2)
16
17 color = BLUE
18
19 pixels.set(0, color)
20 pixels.set(1, color)
21 pixels.set(2, color)
22 pixels.set(3, color)
23 sleep(2)

```



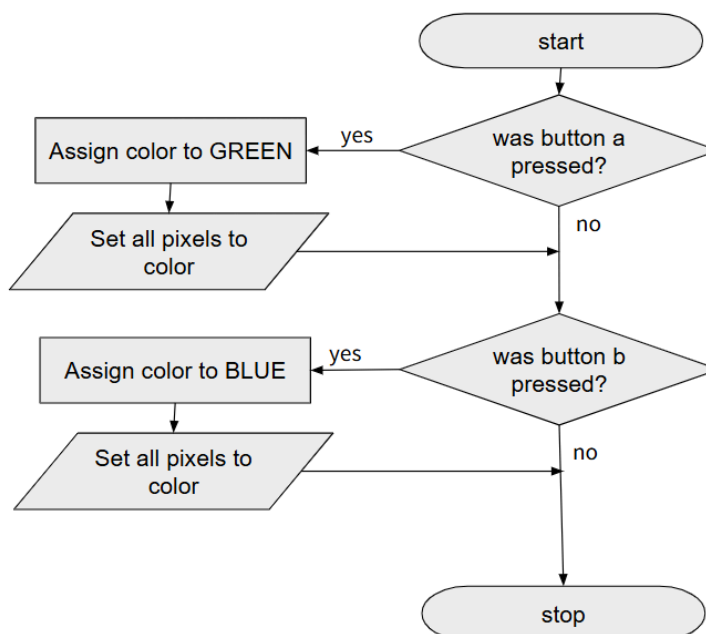
## Python Code #2

```
1 '''
2 Python Code #2
3 Create a flowchart for the code.
4 '''
5 from codex import *
6
7 display.show(pics.HEART)
8 audio.mp3('sounds/welcome')
9
10 display.show(pics.MUSIC)
11 audio.mp3('sounds/africa')
```



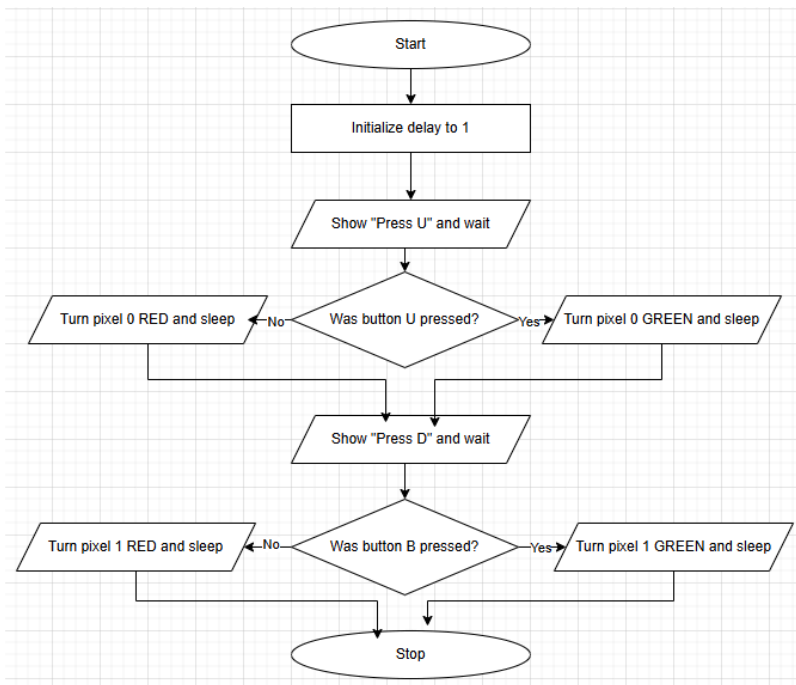
## Python Code #3

```
1 '''
2 Python Code #3
3 Create a flowchart for the code.
4 '''
5 from codex import *
6
7 if buttons.was_pressed(BTN_A):
8     color = GREEN
9     pixels.set(0, color)
10    pixels.set(1, color)
11    pixels.set(2, color)
12    pixels.set(3, color)
13
14 if buttons.was_pressed(BTN_B):
15     color = BLUE
16     pixels.set(0, color)
17     pixels.set(1, color)
18     pixels.set(2, color)
19     pixels.set(3, color)
20
```



## Python Code #4

```
1  '''
2  Python Code #4
3  '''
4  from codex import *
5  from time import sleep
6
7  delay = 1
8
9  display.show("Press U")
10 sleep(delay)
11
12 if buttons.was_pressed(BTN_U):
13     pixels.set(0, GREEN)
14     sleep(delay)
15 else:
16     pixels.set(0, RED)
17     sleep(delay)
18
19 display.show("Press D")
20 sleep(delay)
21
22 if buttons.was_pressed(BTN_D):
23     pixels.set(1, GREEN)
24     sleep(delay)
25 else:
26     pixels.set(1, RED)
27     sleep(delay)
```



**Challenge:** Create your own flowchart from the Python code.

```
1  '''
2  Python Code Challenge
3  '''
4  from codex import *
5  from time import sleep
6
7  delay = 1
8  count = 0
9
10 display.show("Press B")
11 sleep(delay)
12 if buttons.was_pressed(BTN_B):
13     pixels.set(0, GREEN)
14     sleep(delay)
15     count = count + 1
16 else:
17     pixels.set(0, RED)
18     sleep(delay)
19 display.show("Press A")
20 sleep(delay)
21 if buttons.was_pressed(BTN_A):
22     pixels.set(1, GREEN)
23     sleep(delay)
24     count = count + 1
25 else:
26     pixels.set(1, RED)
27     sleep(delay)
28 display.show(str(count))
```

