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Home Tasks

Import for all tasks

```
print("starting of neopixel flashing ")          # just checking printing output

from machine import Pin
from neopixel import NeoPixel
import time
import random
```

Task 1

```
btn =Pin(0, Pin.IN, Pin.PULL_UP)    # same pin for physical esp32 s3 built in Boot
buton

pin = Pin(33, Pin.OUT)              # set 48 for your physical esp32 s3

neo = NeoPixel(pin, 1)              # create NeoPixel driver  for 1 pixel

while True:
    while(btn.value()==1):          # flashing of neopixel stopped when button is in
pressed status
        neo[0] = (255, 0, 0)            # set the first pixel to red
        print("red")

        neo.write()                     # write data to all pixels
        time.sleep(.2)
        neo[0] = (0, 255, 0)            # set the first pixel to green
        print("red")

        neo.write()                     # write data to all pixels
        time.sleep(.2)
        neo[0] = (0, 0, 255)            # set the first pixel to blue
        print("blue")

        neo.write()                     # write data to all pixels
        time.sleep(.2)
```

Task Questions:

```
# Upload the same code to a physical ESP32 S3:

# Run the code.
# Take a snapshot of Thonny.
```

Record a short video of your physical device (change the pin from 33 to 48 for the physical device).
Investigate the Neopixel color behavior:

 # Why does the Neopixel always turn blue when the button is pressed?

 # Answer:

*   # Whenever we press the button=> btn.value() = 0 so condition for loop become false but at the time of press maybe we are in middle of loop execution so loop code execute till last line so at the end of loop blue light has been on in code so blue light appears when we keep pressed our button*

Task 2

How can it be made to stop on different colors in real-time (e.g., sometimes red, sometimes green, sometimes blue)?
Modify the code for button presses:

```
btn =Pin(0, Pin.IN, Pin.PULL_UP)    # same pin for physical esp32 s3 built in Boot buton

pin = Pin(33, Pin.OUT)              # set 48 for your physical esp32 s3

neo = NeoPixel(pin, 1)              # create NeoPixel driver  for 1 pixel

colorList=[(255,0,0),(0,255,0),(0,0,255)]

while True:
    while(btn.value()==1):          # flashing of neopixel stopped when button is in pressed status
        neo[0] = (255, 0, 0)            # set the first pixel to red
        print("red")
```

```
        neo.write()                     # write data to all pixels
        time.sleep(.2)
        neo[0] = (0, 255, 0)            # set the first pixel to green
        print("red")

        neo.write()                     # write data to all pixels
        time.sleep(.2)
        neo[0] = (0, 0, 255)            # set the first pixel to blue
        print("blue")

        neo.write()                     # write data to all pixels
        time.sleep(.2)
    neo[0]=random.choice(colorList)     #choosing random color when button is
pressed
    neo.write()
    time.sleep(0.2)
    while(btn.value()==0):              #ranodm color will be showed untill button
is pressed
        continue
```

Task 3

```
# Change the color after every 5 button presses.
# Examine the result: Does the color change exactly after 5 presses, or is there
abnormal behavior?
```

Q If there is abnormal behavior, what could be the reason?

#answer:

when we click on button it may count more than one count of press that is why it changes light in ambiguous pattern so i gave little delay to keep the button press distinguised and countable now its working fine

```
btn =Pin(0, Pin.IN, Pin.PULL_UP)    # same pin for physical esp32 s3 built in Boot
buton

pin = Pin(33, Pin.OUT)              # set 48 for your physical esp32 s3

neo = NeoPixel(pin, 1)              # create NeoPixel driver  for 1 pixel

colorList=[(255,0,0),(0,255,0),(0,0,255)]
count = 0
i=0
while True:
    print("entered in loop")
    print("pressed",count)
    print("i= ",i)
    if(btn.value()==1):
        neo[0] = colorList[i]           # set the first pixel to red
        print(colorList[i])
        neo.write()                     # write data to all pixels
```

```
        time.sleep(.2)
    if(btn.value()==0):
        count+=1
        time.sleep(.2)   # debounce time

    if(count==5):
        count=0
        i+=1
        i=i%3
```

Task 4

```
# Implement your own changes to the code.


# dsiplaying rgb colors gradually from 0 intensity to 255

btn = Pin(0,Pin.IN,Pin.PULL_UP)

pin =Pin(33,Pin.OUT)

neo=NeoPixel(pin,1)

while True:

    while(btn.value()==1):

        for i in range(256):
            neo[0]=(i,0,0)
            print("Red",i)
            neo.write()
        time.sleep(0.2)
        for i in range(256):
            neo[0]=(0,i,0)
            print("Green",i)
            neo.write()
        time.sleep(0.2)
        for i in range(256):
            neo[0]=(0,0,i)
            print("Blue",i)
            neo.write()
        time.sleep(0.2)
```