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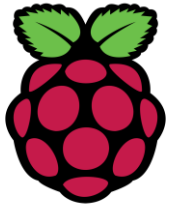
Al Hussein
Technical University
جامعة الحسين التقنية

Remote Lab For Engineering Project
Erasmus+ Program

Raspberry Pi -Take Home Lab

Lab Experiment # 2

Raspberry Pi- Digital Output



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Digital Output

Digital outputs (DO) are signals sent by a system to control external devices or components. These signals are also binary, controlling the ON (1) or OFF (0) state of connected devices.

Examples:

Turning LEDs on or off.

Activating relays or motors.

Sending control signals to another microcontroller or device.

Output Behavior:

The output pin sets a voltage level (high or low) to control the external circuit.

S.No.	Item	Quantity
1	Raspberry Pi	1
2	Pi Wedge B+	1
2	Breadboard	1
3	LED	1
4	Resistor 1k	1
5	Jumper	2

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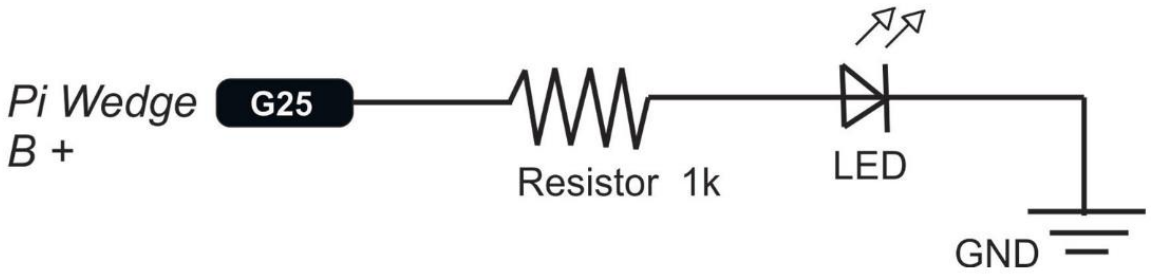
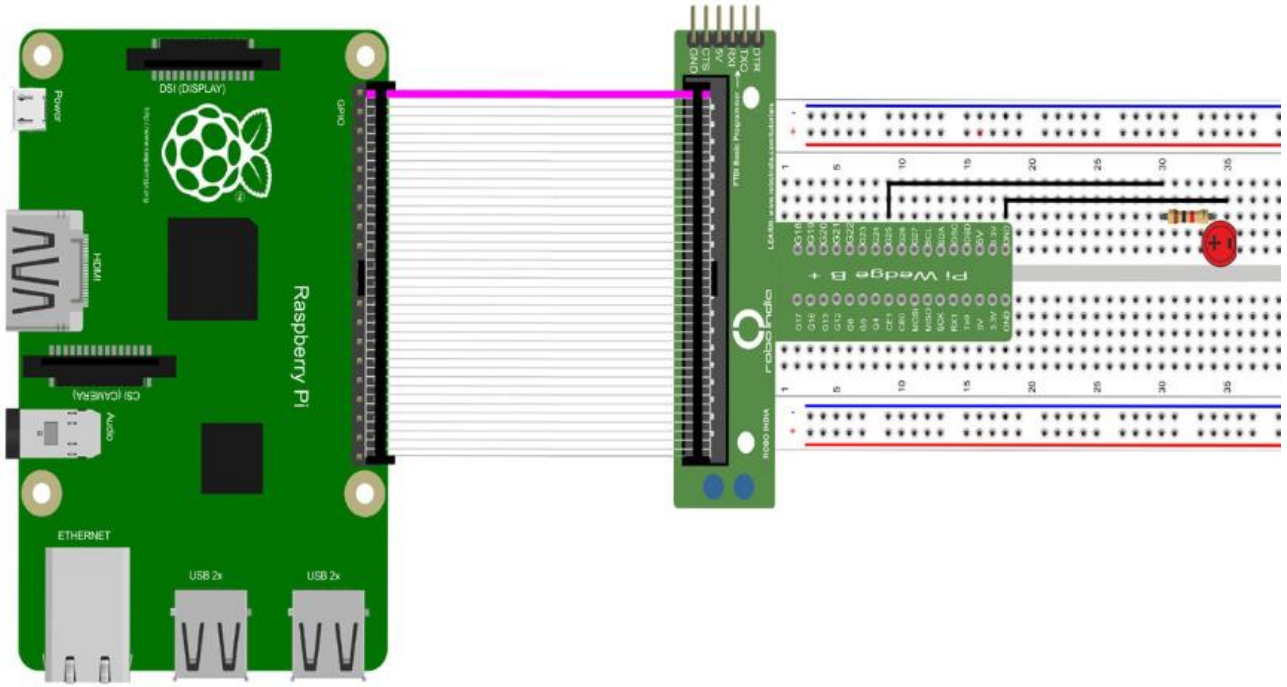
First Implementation- LED Blinking

❖ Try to build the shown circuit

Circuit Layout



Circuit Diagram



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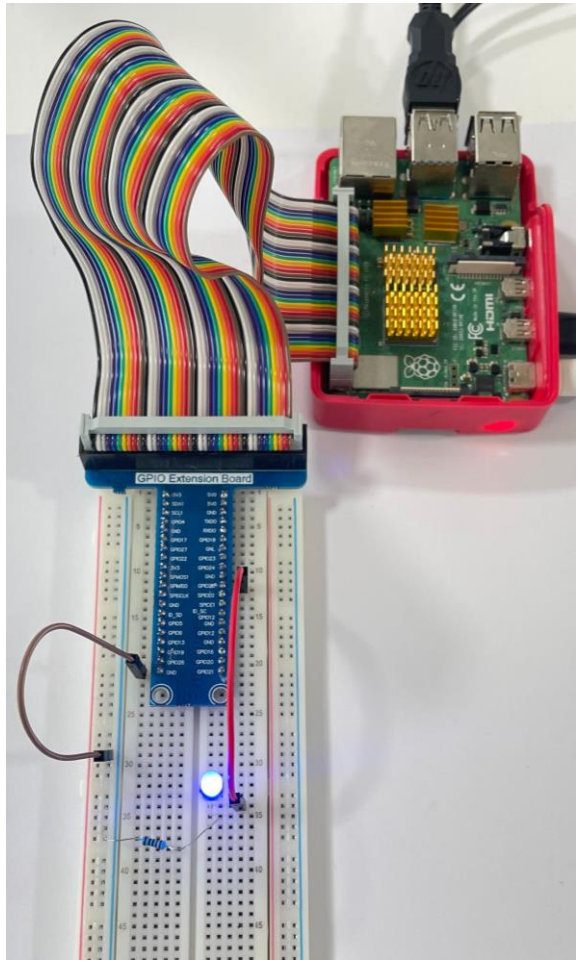
Code




```
import RPi.GPIO  as  GPIO
import  time
LedPin = 22          # pin11
def setup():
 GPIO.setmode(GPIO.BOARD)        # Set the board mode  to numbers pins by physical
location
 GPIO.setup(LedPin, GPIO.OUT)    # Set pin mode as output
GPIO.output(LedPin, GPIO.HIGH) # Set pin to high(+3.3V) to off the led
 GPIO.setup(13,GPIO.OUT)
def loop():
  while True:
         GPIO.output(LedPin, GPIO.LOW)    # led on
         time.sleep(1.0)                                    # wait 1 sec
         GPIO.output(LedPin, GPIO.HIGH)  # led off
         time.sleep(1.0)                                    # wait 1 sec
def destroy():
        GPIO.output(LedPin, GPIO.HIGH)      # led off
        GPIO.cleanup()                                      # Release resource
 if __name__ == '__main__':                    # Program start from here
        setup()
        try:
                loop()
        except KeyboardInterrupt:             # When 'Ctrl+C' is pressed, the
destroy() will be  executed.
               destroy()
```

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Practice 1 – Two LEDs Blinking

Turn on one LED for one second (the other OFF)
then reverse the sequence in a repeating loop

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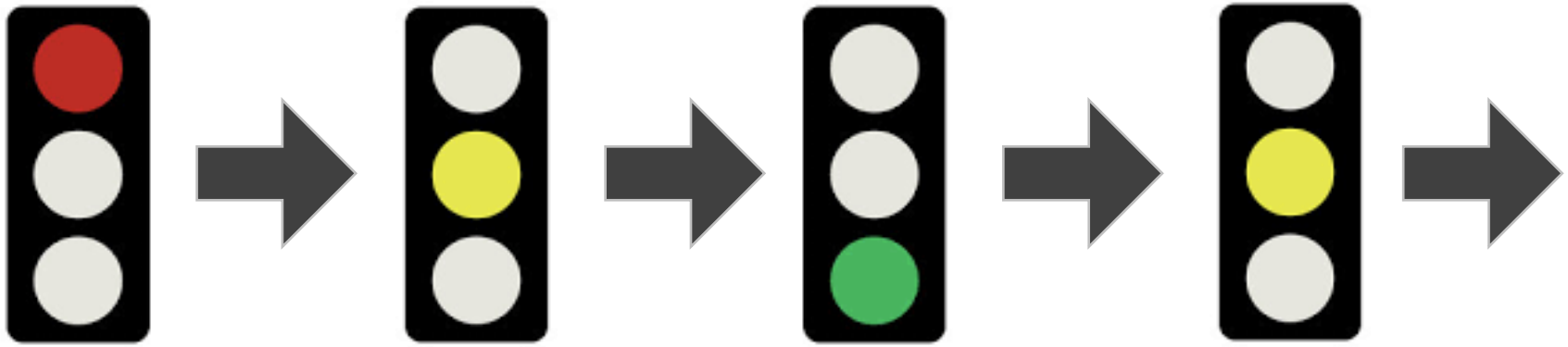
Practice 2 – Traffic Light

Connect 3 LED's (red, yellow and green) to work as a traffic light



Delay 3s **Delay 1s** **Delay 3s** **Delay 2s** red again