

Laboratory Report Cover Sheet

SRM Institute of Science and Technology
College of Engineering and Technology
Department of Electronics and Communication Engineering

18ECO109J Embedded System Design using

Raspberry Pi

Sixth Semester, 2022-23 (Even semester)

Name :

Register Number

:

Day Order :

Venue :

Title of the Experiment :

Date of conduction

:

Date of Submission

:

Particulars	Max. Marks	Marks Obtained
Pre-lab / Algorithm	10	
Lab Performance	20	
Post-lab	10	
Total	40	

REPORT VERIFICATION

Date

:

Faculty Name :

Signature :

LAB – 6 Switching a High-Power DC Device

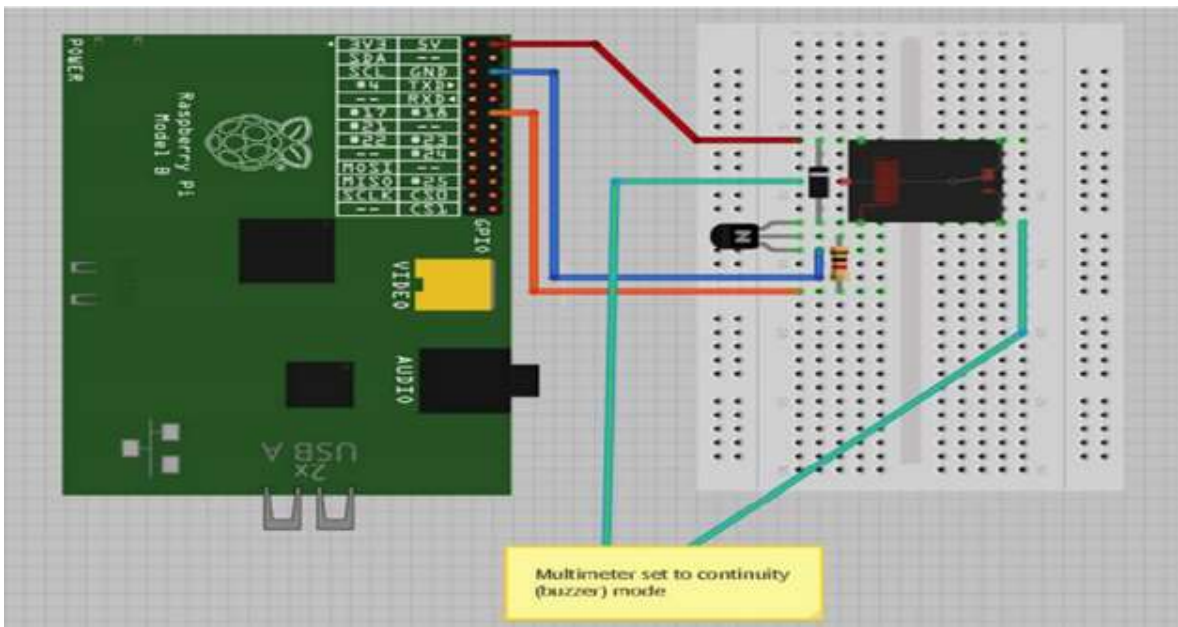
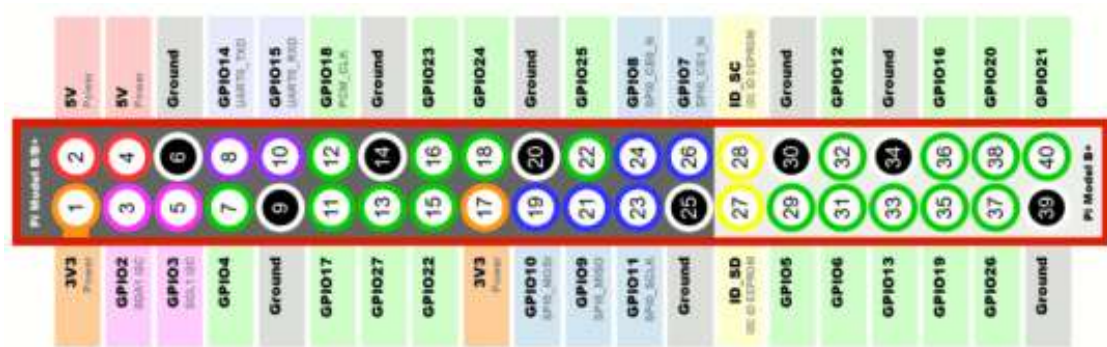
Aim:

To write a program to switch a high-power DC device using relay or transistor.

Task:

1. Write a Python program to switch a high-power DC device using relay.

Pin & Circuit Diagram:




Algorithm:

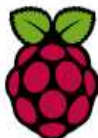
1. GPIO.setmode() is used to configure the pin to be used
2. If the user inputs the value “on” the light is turned on and if the input is “off” the light is turned off.
3. Hence, the program is executed successfully.
4. End

Program:

{ create.wi

```
mycode.py 
1 import RPi.GPIO as GPIO
2
3 # Set up GPIO pin for relay control
4 GPIO.setmode(GPIO.BCM)
5 GPIO.setup(18, GPIO.OUT)
6
7 # Prompt user for input
8 while True:
9     user_input = input("Enter 'on' to turn on the relay or 'off' to turn it off")
10
11     if user_input.lower() == "on":
12         # Turn on relay
13         GPIO.output(18, GPIO.HIGH)
14     elif user_input.lower() == "off":
15         # Turn off relay
16         GPIO.output(18, GPIO.LOW)
17     else:
18         # Invalid input
19         print("Invalid input. Please try again.")
20
21 # Clean up GPIO pins
22 GPIO.cleanup()
```

Output:



RPi GPIO connectors:

2 5v Power	4 5v Power	6 Ground	8 BCM 14	10 BCM 15	12 BCM 18	14 Ground	16 BCM 23	18 BCM 24	20 Ground	22 BCM 25	24 BCM 8	26 BCM 7	28 BCM 1	30 Ground	32 BCM 12	34 Ground	36 BCM 16	38 BCM 20	40 BCM 21
1 3v3 Power	3 BCM 2	5 BCM 3	7 BCM 4	9 Ground	11 BCM 17	13 BCM 27	15 BCM 22	17 3v3 Power	19 BCM 10	21 BCM 9	23 BCM 11	25 Ground	27 BCM 0	29 BCM 5	31 BCM 6	33 BCM 13	35 BCM 19	37 BCM 26	39 Ground

Enter 'on' to turn on the relay or 'off' to turn it off: on

Enter 'on' to turn on the relay or 'off' to turn it off: off

Enter 'on' to turn on the relay or 'off' to turn it off: on

Enter 'on' to turn on the relay or 'off' to turn it off:

OK

Post Lab Questions:

1. What are the limitations of relay?

Sol.) Relays are bulkier for switching small currents and cannot switch rapidly.

2. Explain how to switch a 110 V or 240 V AC devices using Raspberry Pi.

Sol.) 110V or 240 V can be switched by using relays with Raspberry Pi.

Result: