# Lesson 17 KEYPAD Matrix Module

Introduction

Keypads are arranged in rows and columns, with a push switch on the intersection of each row or column. To find out which key is pressed, you first connect all the row and column connections to Raspberry Pi GPIO pins. So, for a 4 × 3 keypad, you will need four + three pins. By scanning each column in turn (setting it to output high) and reading the value of each of the row inputs, you can determine which (if any) key is pressed.

Hardware Required

- – Raspberry Pi
- – 4 X 4 Keypad
- – Jumper wires

Hardware Setup
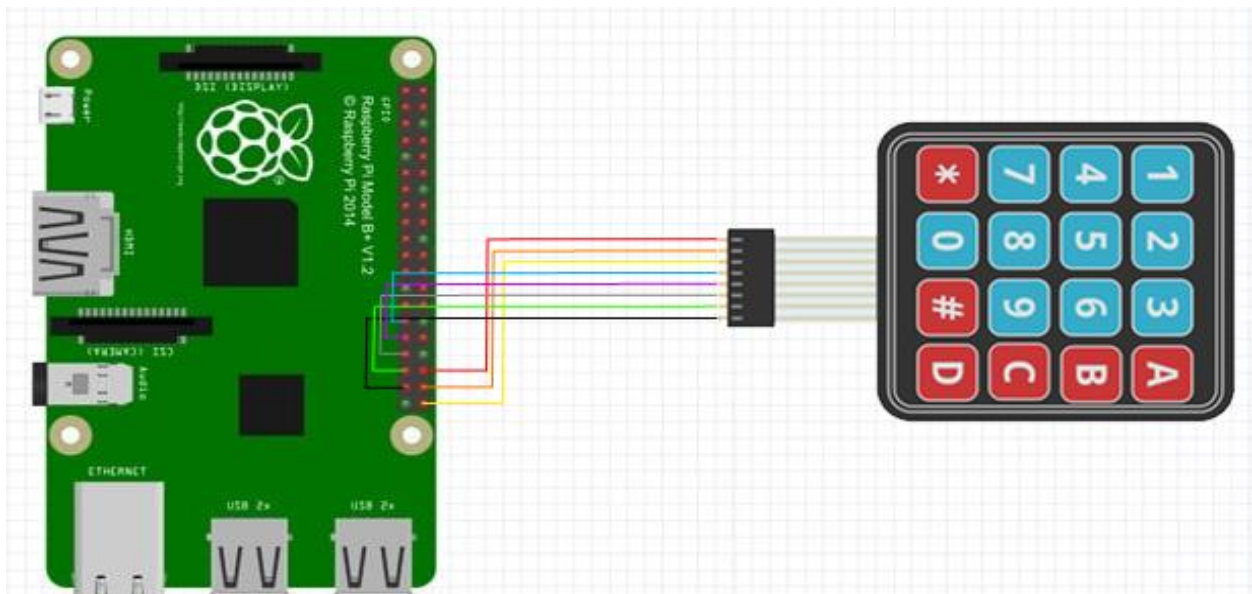
Python Coding

```
import RPi.GPIO as GPIO import time

GPIO.setmode(GPIO.BCM)

rows = [21,22,23,24]
```

```python
Cols= [26,27,28,29]

keys = [    ['1', '2', '3' 'A'],

            ['4', '5', '6' 'B'],

            ['7', '8', '9','C'],

            ['*', '0', '#','D']

        ]


for row_pin in rows:

  GPIO.setup(row_pin, GPIO.IN, pull_up_down=GPIO.PUD_DOWN)


for col_pin in cols:

  GPIO.setup(col_pin, GPIO.OUT)


def get_key():

    key = 0

        for col_num, col_pin in enumerate(cols):

  GPIO.output(col_pin, 1)

 for row_num, row_pin in enumerate(rows):

     if GPIO.input(row_pin):

    key = keys[row_num][col_num]        GPIO.output(col_pin, 0)

    return key

while True:

  key = get_key()

   if key :

  print(key)

  time.sleep(0.3)
```

```
  You must run the program with superuser privileges, as it accesses the GPIO. You can

see the trace from the program pressing each key in turn.
```

Output

After connecting and running the given python code you will ask to press any key from keypad
when you will press it you can see the pressed value in your Python shell or Output terminal.

Application

– Home Security
– Smart Locker
– Remote controlled Robot