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## Assignment No : 9

Aim :- Write an application Using Rasp-berry-pi / Beagleboard to control the operation of h/w simulated lift elevator lift Elevator Simulation Using Raspberry Pi board.

### Objectives :-

1. To understand the working principle of lift Elevator.
2. To interface the lift elevator module with Raspberry Pi model.
3. To program the Raspberry Pi model to control operation of lift elevator module.

### Software :-

1. Raspbian OS (IDLE)

### Hardware Modules :-

2. Raspberry Pi Board module
3. Push buttons (qty. 8)
4. Seven Segment Display (qty. 1)
5. leds (qty. 4)
6. Monitor.

### Theory :-

Lift Elevator Module has two Parts :-



1. Moving part inside the lift &
2. Stationary part outside the lift at each floor to call the lift.

### Safety precautions:

1. First, make all the connections as per steps given below.
2. Power Supply.

### Steps for assembling circuit:

1. Connect all the pins of lift Elevator module to pins of Raspberry Pi module as shown in figure.

### Procedure:

2. Write the program as per the algorithm given.
3. Save the program.
4. Run Code using Run Module.

### Algorithm:-

1. Import GPIO & time libraries.
2. Set GPIO mode as per Board.
3. Declare four Push button Pins of the stationary part.
4. Declare four LED pins at each floor for detection of door close & open.
5. Declare four Push button pins of the moving part.
6. Declare seven pins of seven segment Display.



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7. Set the Push button pins as input.
8. Set the Seven Segment display pins & LED pins as Display output.
9. Store the value of each digit of Seven Segment display in Variables.
10. In the while loop, If "BUTTON-ONE" is pressed then lift at Floor 1 & LED at Floor 1 get ON for 5 second then gets OFF (door close).
11. Person enters in the lift & presses the push button of any one Floor in moving lift.
12. The Seven Segment Display displays the Floor number of destination.

Observation :-

1. Observe the output on LEDs & Seven Segment Display.  
#interfacing lift Elevator module with Raspberry-Pi-3

```
import RPi.GPIO as GPIO
```

```
import time
```

```
FloorButton0 = 37
```

```
FloorButton1 = 35
```

```
FloorButton2 = 33
```

```
FloorButton3 = 19
```

```
LiftButton0 = 15
```

```
LiftButton1 = 11
```

```
LiftButton2 = 38
```



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LiftButton3 = 36 # GPIO Setup for  
Floorled0 = 16 the LED's.

Floorled1 = 13

Floorled2 = 7

Floorled3 = 40

segAPin = 18 # GPIO Setup for the

segBPin = 22 Seven Segment

segCPin = 24 Display

segDPin = 26

segEPin = 29

segFPin = 32

segGPin = 31

GPIO.setmode(GPIO.BOARD)

GPIO.setwarnings(False)

GPIO.setup(FloorButton0, GPIO.IN)

GPIO.setup(FloorButton1, GPIO.IN)

GPIO.setup(FloorButton2, GPIO.IN)

GPIO.setup(FloorButton3, GPIO.IN)

GPIO.setup(LiftButton0, GPIO.IN)

GPIO.setup(LiftButton1, GPIO.IN)

GPIO.setup(LiftButton2, GPIO.IN)

GPIO.setup(LiftButton3, GPIO.IN)

GPIO.setup(Floorled0, GPIO.OUT) # Floor1

GPIO.setup(Floorled1, GPIO.OUT) # Floor2

GPIO.setup(Floorled2, GPIO.OUT) # Floor3

GPIO.setup(Floorled3, GPIO.OUT) # Floor4

GPIO.setup(segAPin, GPIO.OUT)

digitelr = [0, 0, 0, 0, 0, 0, 0]

digit0 = [1, 1, 1, 1, 1, 1, 0]

digit1 = [0, 1, 1, 0, 0, 0, 0]



```
digit2 = [1, 1, 0, 1, 1, 0, 1]
digit3 = [1, 1, 1, 1, 0, 0, 1]
gpin = [18, 22, 24, 26, 29, 32, 31]
def digdisp(digit):
    for x in range(0, 7):
        GPIO.output(gpin[x], digit_clr[x])
    for x in range(0, 7):
        GPIO.output(gpin[x], digit[x])
    while True:
        if (GPIO.input(FloorButton0) == True):
            GPIO.output(FloorLed0, 1)
            print "0"
            digdisp(digit0)
            time.sleep(1)
            GPIO.output(FloorLed0, 0)
            time.sleep(3)
            while True:
                if (GPIO.input(LiftButton1) == True):
                    print 'Floor ONE'
                    digdisp(digit0)
                    time.sleep(1)
                    digdisp(digit1)
                    time.sleep(2)
                    break
                elif (GPIO.input(FloorButton1) == True):
                    GPIO.output(FloorLed1, 1)
                    print "1"
                    while True:
                        if (GPIO.input(LiftButton0) == True):
                            print 'Floor ZERO'
```



```

digdisp(digit0)
time.sleep(2)
break
elif(GPIO.input(LiftButton2)==True):
    print 'Floor TWO'
    digdisp(digit2)
    time.sleep(2)
    break
elif(GPIO.input(LiftButton3)==True):
    print 'Floor Three'
    digdisp(digit2)
    time.sleep(2)
    break
digdisp(digit0)
time.sleep(1)
digdisp(digit1)
time.sleep(1)
digdisp(digit2)
time.sleep(2)
time.sleep(5)
GPIO.output(FloorLed2,0)
while True:
    if(GPIO.input(LifeButton0)==True):
        print 'Floor ZERO'
        digdisp(digit1)
        time.sleep(1)
        break
    elif(GPIO.input(LiftButton1)==True):
        print 'Floor ONE'
        digdisp(digit1)
        time.sleep(2)
        break

```



```

elif(GPIO.input(FloorButton3) == True):
    GPIO.output(FloorLed3, 1)
    print "3"
    digdisp(digit0)           time.sleep(1)
    digdisp(digit1)           time.sleep(2)
    digdisp(digit2)           time.sleep(1)
    digdisp(digit3)           time.sleep(6)
    GPIO.output(FloorLed3, 0)
    while True:
        if(GPIO.input(LiftButton0) == True):
            print 'Floor ZERO'
            digdisp(digit2)
            time.sleep(1)
            digdisp(digit1)
            time.sleep(1)
            digdisp(digit0)
            time.sleep(2)
            break
        elif(GPIO.input(LiftButton1) == True):
            print 'Floor ONE'
            digdisp(digit2)
            time.sleep(1)
            digdisp(digit1)
            time.sleep(2)
            break
        elif(GPIO.input(LiftButton2) == True):
            print 'Floor TWO'
            digdisp(digit2)
            time.sleep(2)
            break
        else:
            ## ## ## time.sleep(3)

```



```

digdisp(digit0)
GPIO.output(Floorled0, 0)
GPIO.output(Floorled1, 0)
GPIO.output(Floorled2, 0)
GPIO.output(Floorled3, 0)
else: ##### time.sleep(3)
digdisp(digit0)
GPIO.output(Floorled1, 0)
GPIO.output(Floorled2, 0)
GPIO.output(Floorled3, 0)
GPIO.output(Floorled0, 0)

```

### Conclusion :-

Thus, we have implemented an application using Raspberry-Pi 1 Beagaboard to control the operation of hardware simulated lift elevator lift elevator simulation using Raspberry Pi board.