

## APPENDIX I

Here we have attached the codes for various functions used during the project.

### Code-1

The code that test the working of the Infrared sensor.

Code:-

```
import RPi.GPIO as GPIO
import time
GPIO.setwarnings(False)
GPIO.setmode(GPIO.BOARD)
GPIO.setup(3, GPIO.IN) #Right sensor
connection
GPIO.setup(16, GPIO.IN, pull_up_down=GPIO.PUD_UP) #Left sensor
connection
while True:
    i=GPIO.input(3) #Reading output of
    right IR sensor
    j=GPIO.input(16) #Reading output of
    left IR sensor
    if i==0: #Right IR sensor
        detects an object
        print "Obstacle detected on Left",i
        time.sleep(0.1)
    elif j==0: #Left IR sensor
        detects an object
        print "Obstacle detected on Right",j
        time.sleep(0.1)
```

## Code 2:

The code that test the working of the motor driver module (L293d).

Code:-

```
import RPi.GPIO as GPIO
import time
GPIO.setmode(GPIO.BOARD)
GPIO.setup(5,GPIO.OUT)    #Left motor input A
GPIO.setup(7,GPIO.OUT)    #Left motor input B
GPIO.setup(11,GPIO.OUT)   #Right motor input A
GPIO.setup(13,GPIO.OUT)   #Right motor input B
GPIO.setwarnings(False)

while True:
    print "Rotating both motors in clockwise direction"
    GPIO.output(5,1)
    GPIO.output(7,0)
    GPIO.output(11,1)
    GPIO.output(13,0)
    time.sleep(1)        #One second delay

    print "Rotating both motors in anticlockwise direction"
    GPIO.output(5,0)
    GPIO.output(7,1)
    GPIO.output(11,0)
    GPIO.output(13,1)
    time.sleep(1)
```

### Code 3.

The code of the moving Robot that Detect and avoid the collision.

Code:

```
import RPi.GPIO as GPIO
import time
GPIO.setwarnings(False)
GPIO.setmode(GPIO.BOARD)
GPIO.setup(3, GPIO.IN) #Right IR sensor module
GPIO.setup(12, GPIO.IN, pull_up_down=GPIO.PUD_DOWN) #Activation
button
GPIO.setup(16, GPIO.IN, pull_up_down=GPIO.PUD_UP) #Left IR sensor
module
GPIO.setup(5,GPIO.OUT) #Left motor control
GPIO.setup(7,GPIO.OUT) #Left motor control
GPIO.setup(11,GPIO.OUT) #Right motor control
GPIO.setup(13,GPIO.OUT) #Right motor control

#Motor stop/brake
GPIO.output(5,0)
GPIO.output(7,0)
GPIO.output(11,0)
GPIO.output(13,0)

flag=0
while True:
    j=GPIO.input(12)
    if j==1: #Robot is activated when button is pressed
        flag=1
        print "Robot Activated",j

    while flag==1:
        i=GPIO.input(3) #Listening for output from right IR
        sensor
        k=GPIO.input(16) #Listening for output from left IR
        sensor
        if i==0: #Obstacle detected on right IR sensor
            print "Obstacle detected on Right",i
            #Move in reverse direction
            GPIO.output(5,1) #Left motor turns anticlockwise
            GPIO.output(7,0)
            GPIO.output(11,1) #Right motor turns clockwise
            GPIO.output(13,0)
            time.sleep(1)

            #Turn robot left
            GPIO.output(5,0) #Left motor turns clockwise
            GPIO.output(7,1)
            GPIO.output(11,1) #Right motor turns clockwise
            GPIO.output(13,0)
            time.sleep(2)
        if k==0: #Obstacle detected on left IR sensor
            print "Obstacle detected on Left",k
```