Experiment No - 07.

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Title : Write a application using Raspbeery-Pi/Beagle board to. Control the operation of Stepper motor.

Theory :
Stepper motor.

In Stepper motor, as the name itself says, the rotations of shalf. in form. There are different types of. Stepper motor ; in here we will be using the most popular one that. is unipolar Stepper motor. Unlike DC. motor, we can rotate Stepper motor to. any particular angle by giving it. proper instrument.

To rotate this Four Stage. Stepper motor, we will deliver power pulses by using Stepper motor Driver Circuit. The Driver circuit takes logic trigger from PI. If we Control the logic trigger, we control the power pulses and hence.

hence the speed of steper motor.

There are 40 GPIO output pins in Raspberry pi 2. But out of 40, only 26 GPIO pins. Can be programmed. Some of these pins perform some Special functions. with Special GPIO putside, we have 17 GPIO remaining. Each of these 17 GPIO pin cannot exceed 50mA.

There are +5A And +3.3A power output pins on the boards for connectivity other modules and sesors.

Sample Program.

Python program

Steeper motor Interfacing with Raspbeerypi
import RPi, GPIO as GPIO.
from time import Sleep.
import Sys.

# assign GPIO pins for motor.
motor_Channel = (29, 31, 33, 35)
GPIO.Setwarnings(False)
GPIO.Setmode(GPIO.BOARD)
# For defining more than 1 GPIO channel as input/output Use: GPIO

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```
motor_direction = input ("select motor
        direction a = anticlockwise, c =
            clockwise : ")
    while True:
    try:
    if (motor_direction = input ("select motor
direction a = anticlockwise clockwise \n")
    print("motor runing clockwise \n").
     GPIO.output(motor_channel, (GPIO.
       HIGH, GPIO.LOW, GPIO.HIGH)).
     sleep (0.02)
    GPIO.output (motor_channel, (GPIO.
       LOW, GPIO.HIGH, GPIO.HIGH, GPIO.LOW)).
     Sleep (0.02)
      GPIO.Output (motor_channel, (GPIO.
            LOW, GPIO.HIGH, GPIO.HIGH, GPIO.
              LOW)).
     sleep (0.02)

     elif (motor_direction == 'a'):
      print("motor running. anti-clockwise.
              \n")
    GPIO.output (motor_channel, (GPIO.HIGH,
       GPIO.LOW, GPIO.LOW, GPIO.HIGH))
     sleep (0.02)
```

```
GPIO.Output(motor_channel, (GPIO.
    LOW,GPIO.LOW, GPIO.HIGH, GPIO.
        HIGH)),
  sleep(0.02)
GPIO.output(motor_channel,(GPIO.
    LOW, GPIO.HIGH, GPIO.HIGH, GPIO.
    LOW)).
Sleep(0.02)
GPIO.Output.(motor_channel, (GPIO.
    HIGH, GPIO.HIGH, GPIO.LOW, GPIO.
        LOW)).
  sleep(0.02)

  # press ctrl+c for keyboard interrupt.
  except KeyboardInterrupt:
  # query for setting motor direction or exit.
motor_direction = input ('select motor
  direction a = anticlockwise, c = clockwise.
  or q = exist : ').
  # check for exit
  If (motor_direction == 'q'):
print('motor Stopped')
    sys.exit(0)
```

Conclusion → Thus, we have implemented application of steeper motors using python with Raspberry Pi.