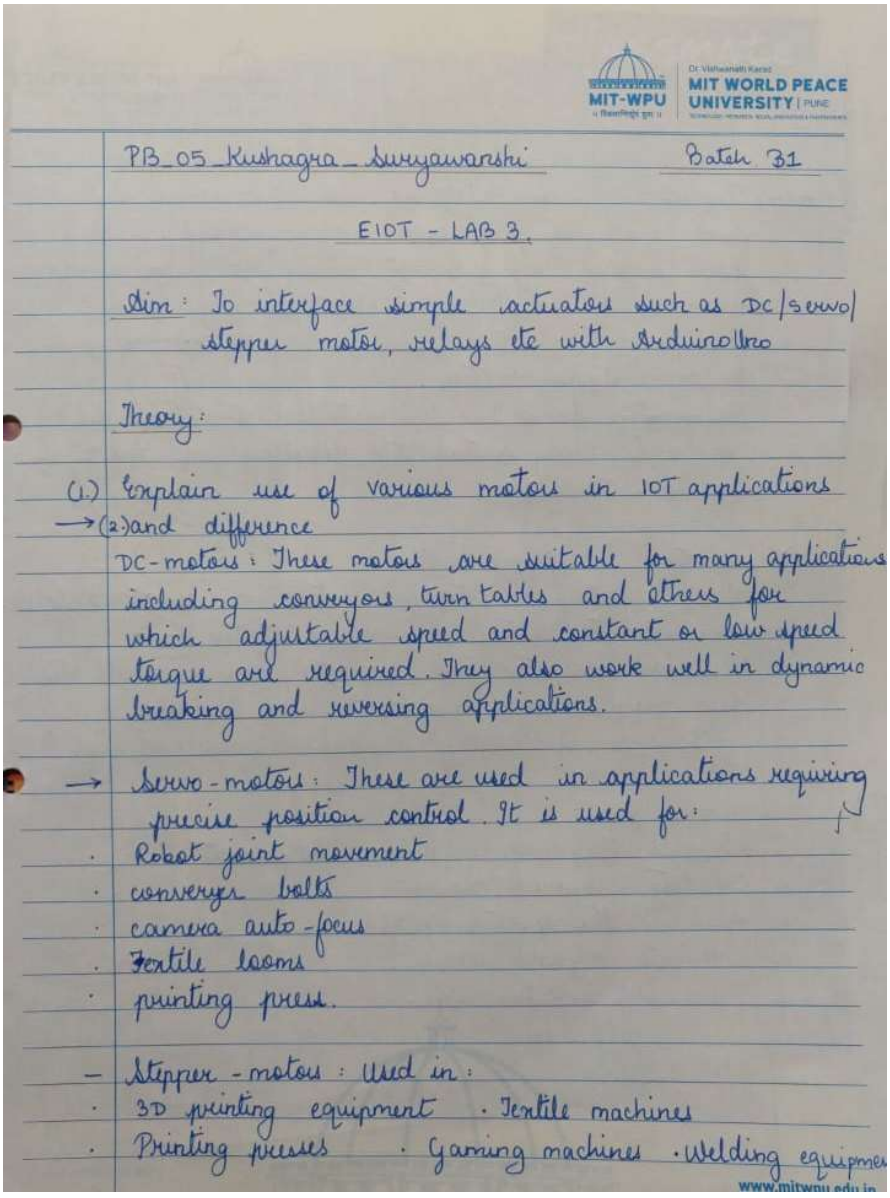
PB_05_Kushagra Suryawanshi Sub: EIOT Batch: B1 Date: 25/08/2021

Lab 03 Motors interfacing

Aim: To Interface following sensors such as Temperature or Ultrasonic or Gas sensors with Raspberry-Pi/Beagle board/ TinkerCAD Arduino etc. and display readings on console.

Theory:



PB_05_Kushagra_Suryawanshi Batch B1

EIOT - LAB 3.

Aim: To interface simple actuators such as DC/servo/ stepper motor, relays etc with Arduino/rpi

Theory:

(1.) Explain use of various motors in IOT applications
→(2)and difference

DC-motors: These motors are suitable for many applications including conveyors, turn tables and others for which adjustable speed and constant or low speed torque are required. They also work well in dynamic breaking and reversing applications.

→ Servo-motors: These are used in applications requiring precise position control. It is used for:
- Robot joint movement
- conveyer belts
- camera auto-focus
- Textile looms
- printing press.

– Stepper-motors: Used in:
- 3D printing equipment
- Textile machines
- Printing presses
- Gaming machines
- Welding equipme

www.mitwpu.edu.in

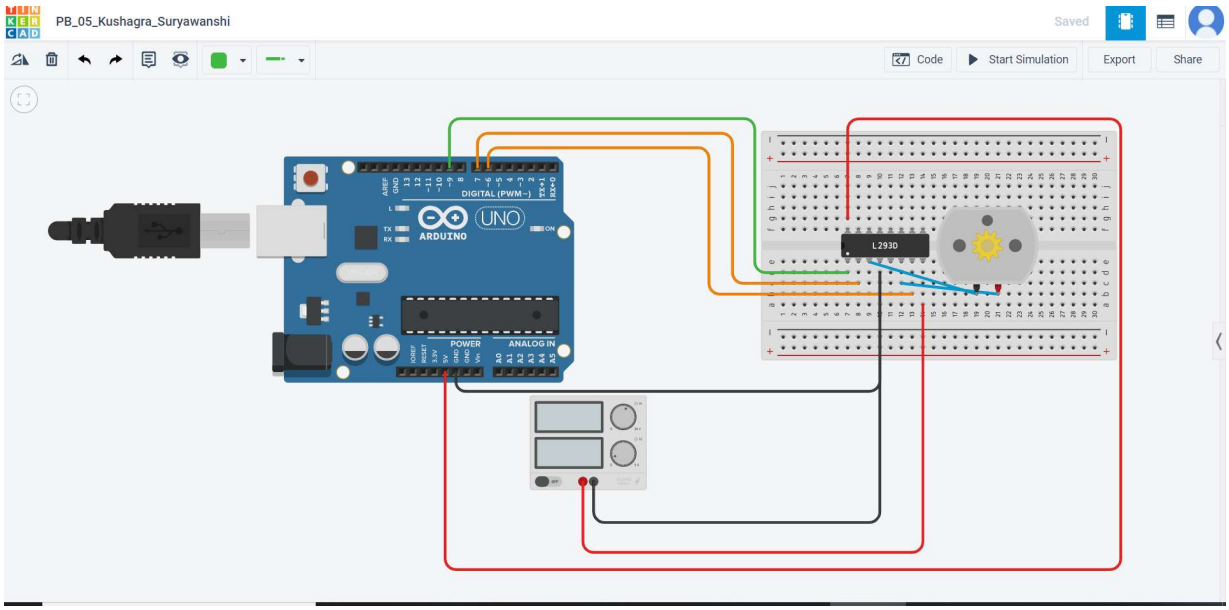
(3) Driver : LN298.

+(4) The L298 is an integrated monolithic circuit in a 15-load multiwatt and power SO20 packages. It is a high-voltage, high current dual full bridge driver designed to accept standard TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors.
This motor driver has a controller that uses an H-Bridge to easily control the direction and speed of up to 2 DC motors.

(5) Selecting a stepper motor:
While selecting a stepper motor, you should consider:
- How will the motor be coupled to the load?
- How fast does the load need to move or accelerate?
- How much torque is required to move the load?
- What degree of accuracy is required when positioning the load

Normal steps:
1. Determine the drive mechanism component
2. Calculate required resolution.
3. Determine the operating pattern.
4. Calculate required torque.
5. Select and check the motor.

DC Motor



Code:

```
// C++ code
// PB_05_Kushagra Suryawanshi
//
int dir1 =6;
int dir2 = 7;
int SpeedPin=9;
int mspeed=200;


void setup()
{
  pinMode(SpeedPin, OUTPUT);
  pinMode(dir1, OUTPUT);
  pinMode(dir2, OUTPUT);
  Serial.begin(9600);
```

```
}

void loop()
{
  digitalWrite(dir2, HIGH);
  digitalWrite(dir1, LOW);
  analogWrite(SpeedPin,mspeed);
}
```

Conclusion: Thus, we learnt about motor interfacing and how to interface DC motor with Arduino uno board.

Simulation Link:

DC Motor: https://www.tinkercad.com/things/3Fiqrps7zoq-pb05kushagrasuryawanshi/editel?sharecode=Qlbt2pFUs0IujDze44m_Mu6DOxqTVyxMBzQuVOSqtrs