PC BASED DC MOTOR SPEED AND DIRECTION CONTROL

AIM:

Design and Development of PC based dc motor speed and direction control.

PURPOSE:

Motors are used in many applications. Even in Electric cars electric motors are widely used. DC motors are low power consumption motors and worked on batteries. Many applications like actuators, sliding windows, automatic doors, curtain controls…etc are worked on DC motors. We can easily control speed of DC motor using PWM technique. Here we want to design and develop PC based DC motor speed and direction control using Arduino.

DESCRIPTION:

Arduino and PC connected each other through USB-TTL cable. It can take data from PC and transmit to Arduino. DC motor controlled by L293D H- Bridge. L293D connected to Arduino digital pins.

WORKING:

PC has C# application that has graphical buttons. For clock wise direction there are four buttons and for anti-clock wise direction there are four more buttons. There are extra button for stop the motor.

We can control DC motor speed and direction from C# application. This information will display on 16x2 LCD display. When we press button in application then it send code to Arduino. Code consists of speed and direction values. Based on speed value PWM will vary and based on direction value DC motor polarities will change.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontrollers	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
Communication Device	:	USB-TTL
H-Bridge Motor Driver	:	L293D
Motor	:	12V DC
Power Source	:	12VDC adaptor

SOFTWARE:

Arduino IDE

Proteus based circuit diagram

## APPLICATIONS:

- ➢ Actuator Applications
- ➢ Motor Control Applications

BLOCK DIAGRAM:

| Power Supply | → | Arduino Uno | → | 16X2 LCD |

Power Supply → Arduino Uno → 16X2 LCD

L293D ← Arduino Uno

L293D → DC Gear Motor

Arduino Uno ↔ USB TTL Converter To PC
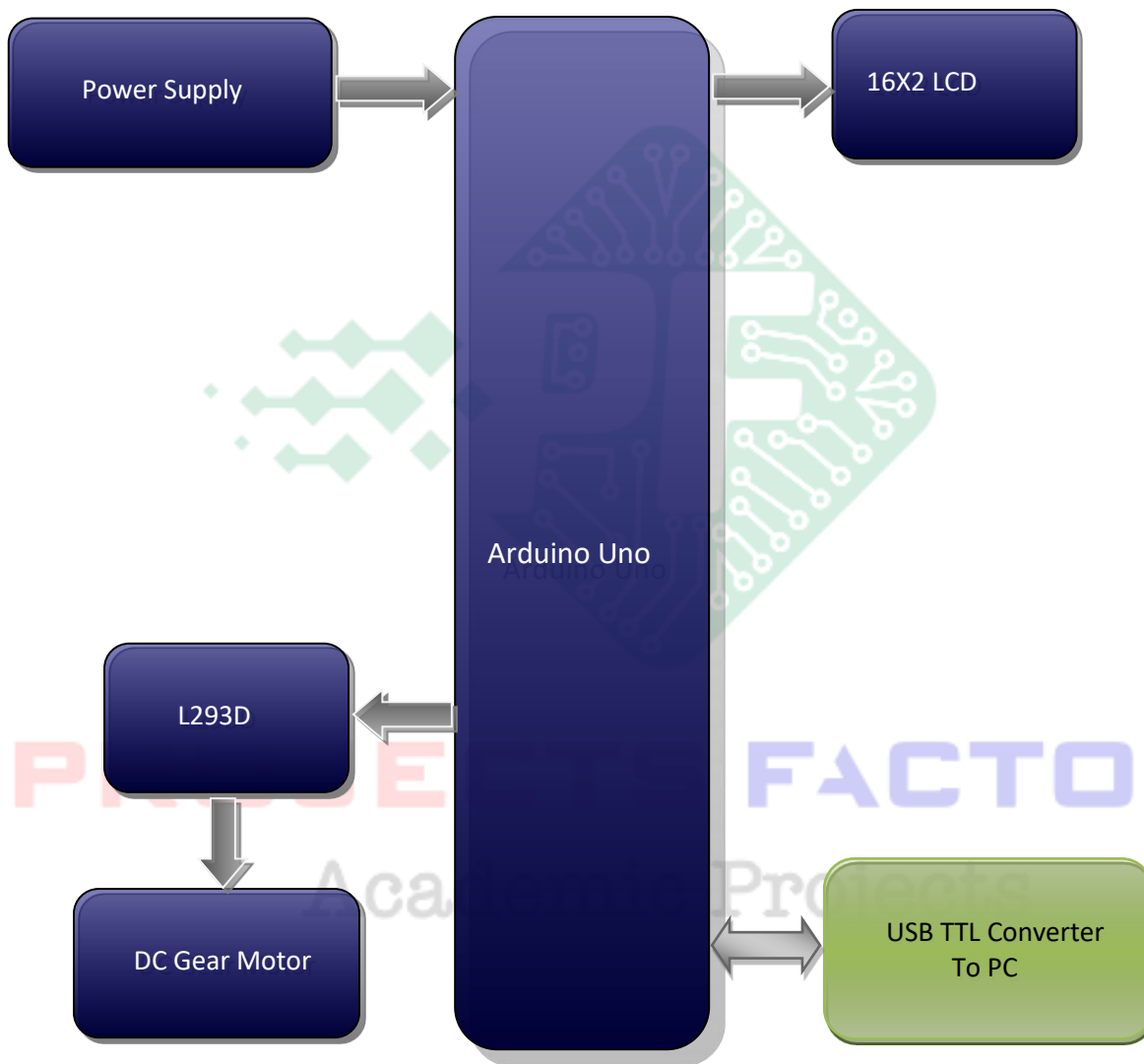
POWER SUPPLY BLOCKDIAGRAM:

| Step down Transformer | → | Bridge Rectifier | → | Filter | → | Regulator | → | Output |
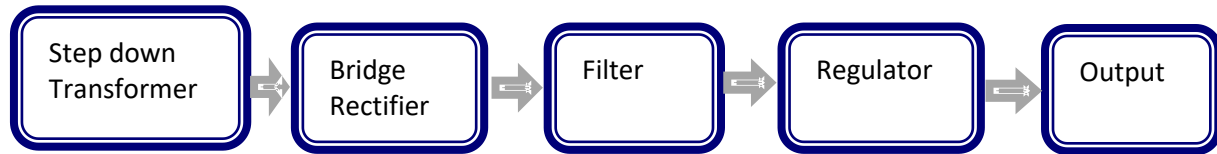
INTERFACES COVERD:

- We have covered Arduino and PC interface
- DC motor and L293d interface