REAL TIME RADAR SIMULATION

AIM:

Design and Development of Real time Radar Simulation.

PURPOSE:

Mostly radars used in defense applications like Army, navy and air force. For rocket tracking also we can use radar to track rockets path. They worked based on echo signal from object. Based on TOF (Time of flight) radars calculate distance of obstacle. Based on range of obstacle we will select frequency and transceivers. Here also we will develop same kind of radar in small scale. We will use Arduino as controller and ultrasonic for finding distance of object. It can scan 180 degrees and shows radar simulation in PC. Proposed project title is Real time Radar simulation with Arduino.

DESCRIPTION:

USB-TTL cable connected with Arduino through UART communication. Servo motor connected to Arduino digital pin. Ultrasonic sensor (HC-SR04) connected with Arduino digital IO pins respectively.

WORKING:

After power ON system it will start scanning surroundings. Ultrasonic sensor placed on top of the servo motor and servo motor rotates 180 degrees. Also it sends rotating angle and distance of obstacle to PC. PC has software that was developed in processing tool with the help of java code. This software reads serial data which is send by Arduino. Based on angle and distance it will display on radar simulation GUI. GUI looks like real time radar and rotates 0-180 and 180-0 degrees.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontrollers	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
Communication Cable	:	USB-TTL
Radar sensor	:	Ultrasonic sensor HC-SR04
Servo Motor	:	SG90
Power Source	:	12VDC Adaptor

SOFTWARE:

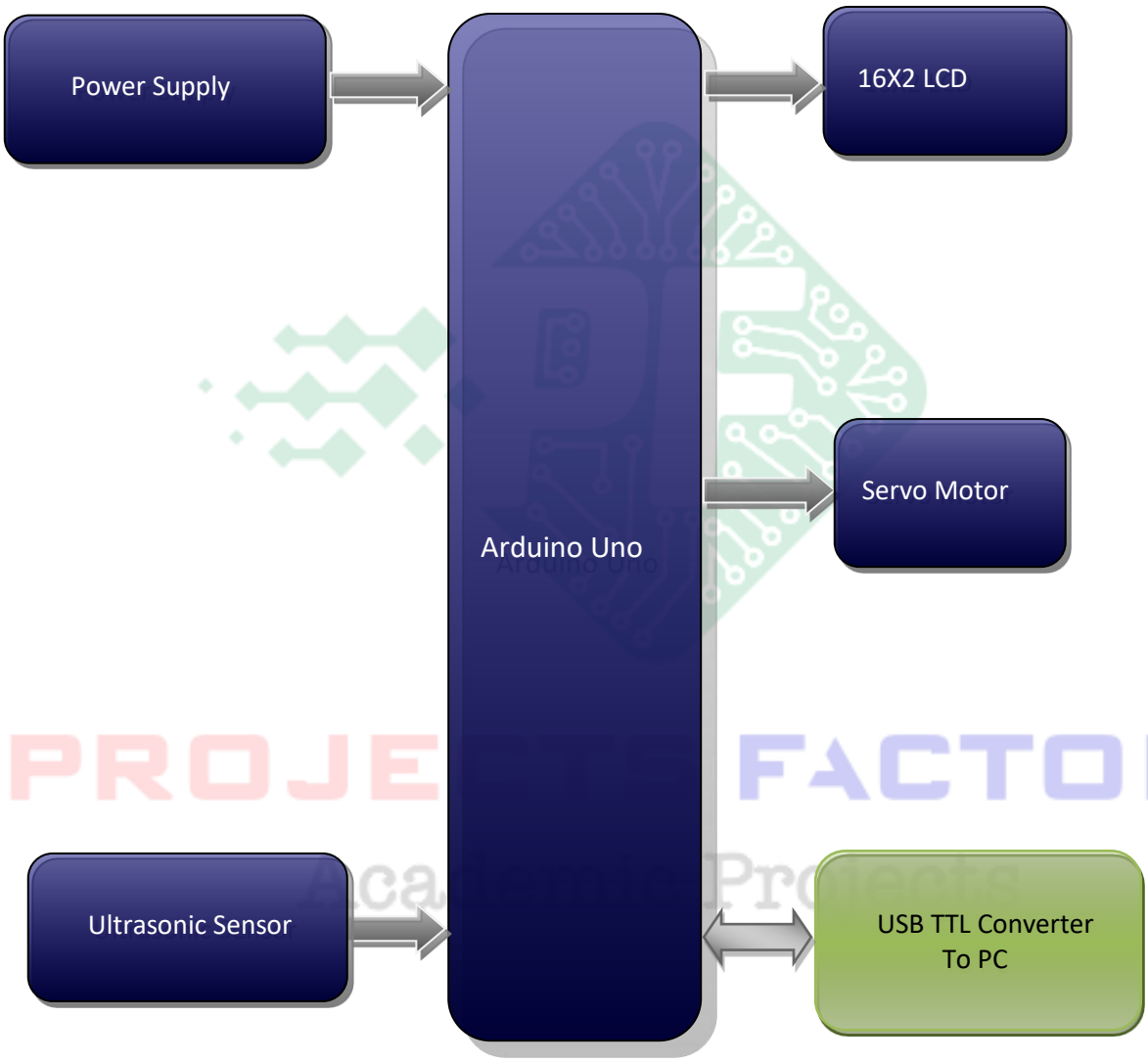
Arduino IDE

Proteus based circuit diagram

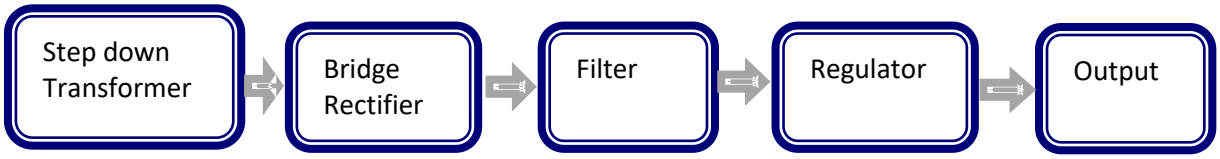
APPLICATIONS:

- Radar Application
- Defense Applications
- Security Applications

BLOCK DIAGRAM:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

- We have covered Arduino and PC interface
- Ultrasonic sensor and Servo motor interface