ZIGBEE BASED WEATHER MONITORING SYSTEM USING ARDUINO

AIM:

Design and Development of Zigbee based weather monitoring system using arduino.

PURPOSE:

Weather monitoring is important for many sectors like agriculture, construction, railway and air transportation. Sudden rains will cause more damage than regular rains. Sudden rains happen because of sudden change in temperature, humidity and atmospheric pressure. Here we are developing zigbee based designing of weather station.

DESCRIPTION:

This project includes Zigbee module (HC12), which is connected to Arduino through UART interface. DHT11 connected to Arduino digital pin. BMP180/280 connected to Arduino I2C port. MQ135 connected to Arduino digital pin. Rain sensor connected to Arduino digital pin. DHT11 reads atmospheric temperature and humidity. BMP180/280 reads atmospheric pressure. It will vary depends on surface altitude. MQ135 reads co2 presence in atmosphere, Its nothing but air quality.

WORKING:

In this project we have two Zigbee modules. One module connected at sensors side and other at PC. The above sensor reads all parameters continuously and displaying on 16X2 LCD display. Buzzer will be on when rain occur. Also sensors data transmitting to receiver and displayed on serial monitor.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
Zigbee Module	:	HC12 - 433MHZ or 2.4Ghz
Temperature Sensor	:	DHT11
Humidity Sensor	:	DHT11
Atmospheric Pressure	:	BMP180/280
Air Quality Sensor	:	MQ135
Rain sensor	:	Leaded type
Buzzer	:	5V DC
Power Source	:	12v 2 DC Adaptor

SOFTWARE:

Arduino IDE

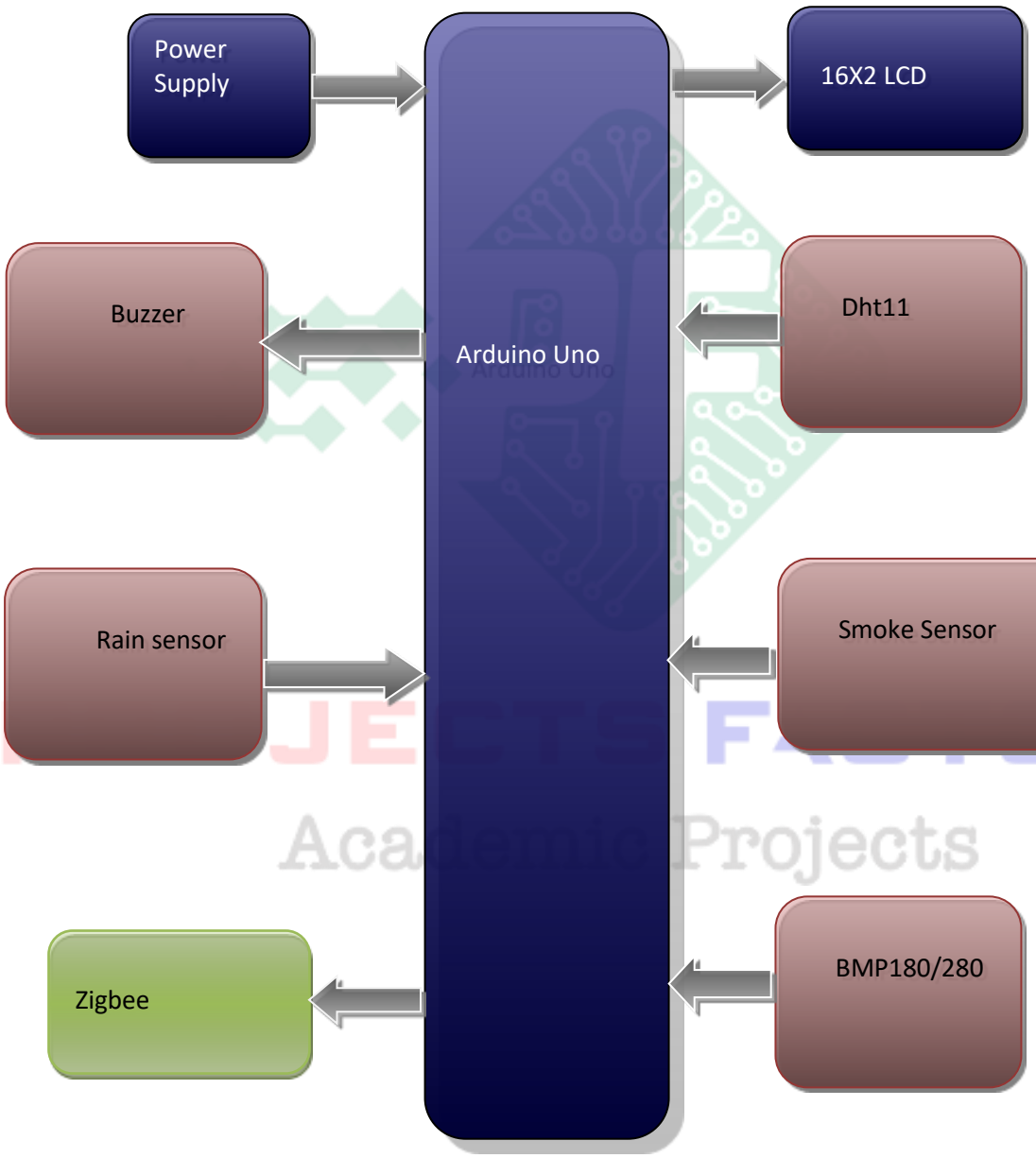
Proteus based circuit diagram

APPLICATIONS:

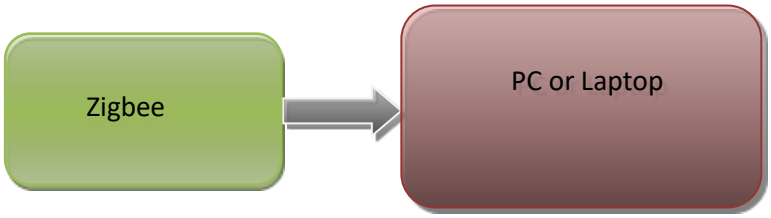
- Weather monitoring
- Atmosphere monitoring

BLOCK DIAGRAM:

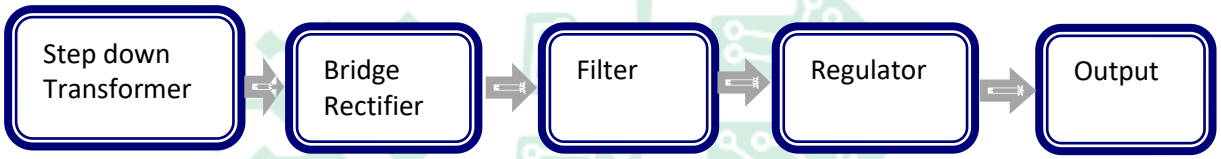
Transmitter:



Receiver:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

- We have covered Zigbee (433Mhz or 2.4Ghz – HC12) module interfacing
- DHT11, BM180/280, Rain sensor and MQ135 sensors interfacing