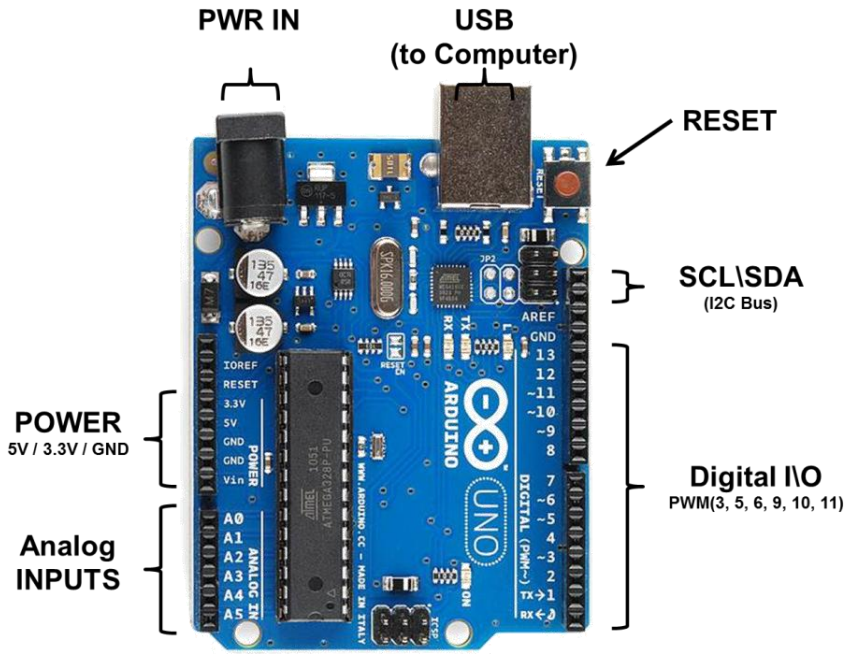
PRACTICAL –3

Aim: - Arduino architecture and basic programming.

Theory:

Arduino is an open-source physical computing platform designed to make experimenting with electronics and programming more fun and intuitive. Arduino has its own unique, simplified programming language and a lots of premade examples and tutorials exists. With Arduino you can easily explore lots of small-scale sensors and actuators like motors, temperature sensors, etc.

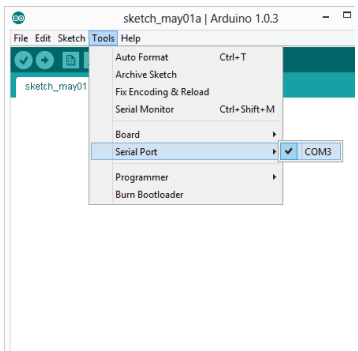


Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	32 KB (ATmega328P) of which 0.5 KB used by bootloader
SRAM	2 KB (ATmega328P)
EEPROM	1 KB (ATmega328P)
Clock Speed	16 MHz
Length	68.6 mm
Width	53.4 mm
Weight	25 g

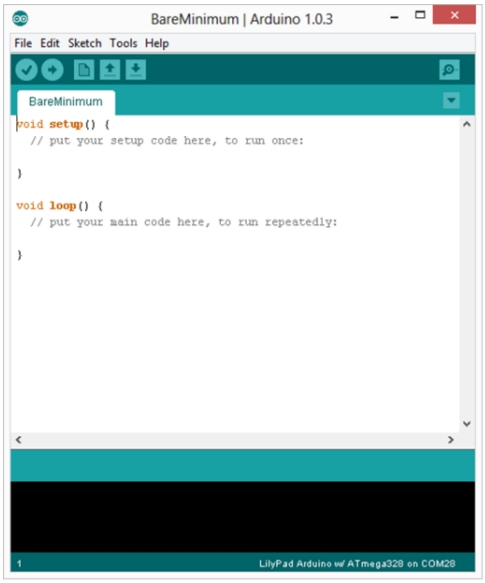
Arduino Programming Environment (IDE)

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino hardware to upload programs and communicate with them.

1. Install IDE in your system from https://www.arduino.cc/en/Main/Software
2. Connect Arduino UNO with system.
3. Select COM Port of Arduino



4. Write code



Two required functions / methods / routines:

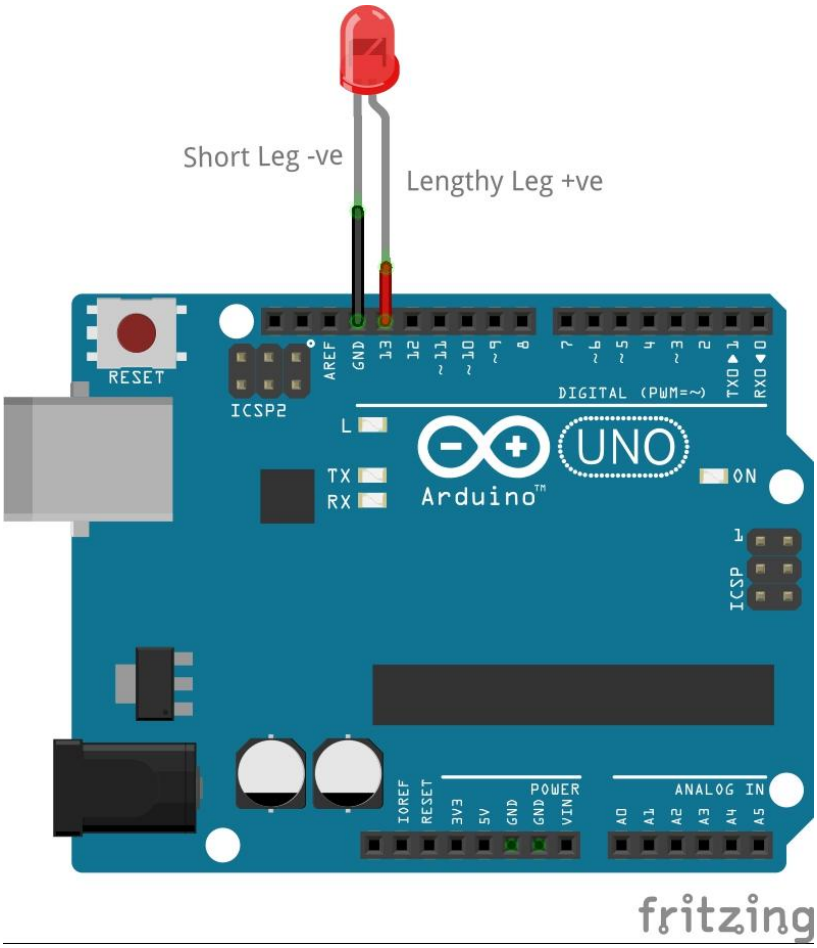
```
void setup()
{
      // runs once
}

void loop()
{
      // repeats
}
```

Experiment

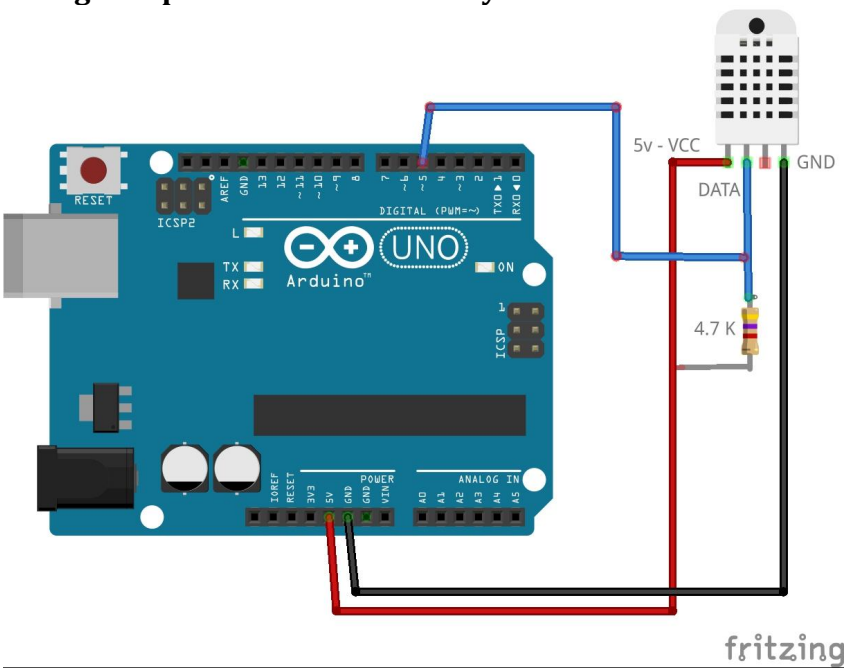
1. **Working with LED**
   a. LED ON
   b. LED Blinking
2. **Reading Temperature and Humanity**
   a. Display Temperature and Humanity in serial Monitor
   b. Display Temperature and Humanity in Mobile App(BlueTrem2)

Connection for Experiment

1. **Working with LED**



2. Reading Temperature and Humanity



3. Bluetooth connection