**Male header**: Male headers are the simplest type and generally ship with any board that uses them. Use male headers if you want to build your project into a breadboard - solderless or permanent. They are also used in conjunction with female headers if you want to stack your boards together.

**Female header**: Female headers are the corresponding parts of headers that mate directly to male pin headers. Female headers (often referred to as socket headers) are made of a plastic housing with many sockets where the male pins are meant to fit.

**The difference between male and female headers**

A male connector is commonly referred to as a plug and has a solid pin for a center conductor. A female connector is commonly referred to as a jack and has a center conductor with a hole in it to accept the male pin.

**The function of LCD display 20x4**

A 20x4 LCD means it can display 20 characters per line and there are 4 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. This is standard HD44780 controller LCD.

Advantages of 20 x 4 LCD

It produces less amount of heat due to less use of power. In this module, there is no geometric distortion. It can be constructed in any shape and size according to user requirements. The LCD used in the computer monitor uses twelve volts.

**I2C\_LCD :** I2C\_LCD is an easy-to-use display module, It can make display easier. Using it can reduce the difficulty of make, so that makers can focus on the core of the work. We developed the Arduino library for I2C\_LCD, user just need a few lines of the code can achieve complex graphics and text display features.

**The use of IR sensor in the project**

IR sensor is an electronic device, that emits the light in order to sense some object of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. Usually, in the infrared spectrum, all the objects radiate some form of thermal radiation

**The SG90**: Itis a 9 gram servo motor that can rotate 0 - 180 degrees (roughly) at a rate of about 0.3 seconds (0.1s/60 degrees). The SG90 is used in low-cost projects, typically with motorized vehicles and robotic arms

**The purpose of servo motor in Arduino**

As a result, servo motors are used to control the position of objects, rotate objects, move legs, arms or hands of robots, move sensors etc. with high precision. Servo motors are small in size, and because they have built-in circuitry to control their movement, they can be connected directly to an Arduino

**5V, 2A Power Supply Adapter:**

5V, 2A Power Supply Adapter is compatible to handle up to 2A current so applications like toy cars, CCTV Cameras, Routers, Modems, Cordless Phones, Set-Top Boxes, Wireless Devices, and POS Machines are compatible with this adapter.

**Features:**

* The adapter is easy to use.
* Wide input voltage range (110VAC-240VAC).
* Very Low no-load power consumption.
* Very low ripple & noise output for device safety.
* Highly efficient, compact, durable and long life.

**Specifications:**

* AC input voltage: 110V - 240V, 50Hz / 60Hz
* Output DC Voltage: 5V
* Output Current: 2A
* Standby power: <0.3W