**Arduino Uno Specifications and Pin Configuration**

The **Arduino Uno** is one of the most popular boards in the Arduino family, designed for beginners and experienced users alike. Below are the detailed specifications, along with its pin configuration.

**1. Specifications**

* **Microcontroller**: ATmega328P
* **Operating Voltage**: 5V
* **Input Voltage (Recommended)**: 7V to 12V (can operate from 6V to 20V)
* **Digital I/O Pins**: 14 (of which 6 can provide PWM output)
* **Analog Input Pins**: 6 (A0 to A5)
* **Flash Memory**: 32 KB (of which 0.5 KB is used by the bootloader)
* **SRAM**: 2 KB
* **EEPROM**: 1 KB
* **Clock Speed**: 16 MHz
* **LED\_BUILTIN**: Pin 13
* **Dimensions**: 68.6 mm x 53.4 mm (2.7 in x 2.1 in)
* **Weight**: Approximately 25 g

**2. Power Supply**

* **Power Jack**: Yes (DC barrel jack)
* **USB Power**: Yes (via USB-B connector)
* **Vin Pin**: Yes (for supplying voltage)
* **Max Current Draw from 5V Pin**: 500 mA

**3. Communication**

* **Serial Ports**: 1 (TX and RX pins)
* **I2C (TWI)**: Yes (SDA on A4, SCL on A5)
* **SPI**: Yes (pins 10, 11, 12, and 13)

**4. Operating Temperature**

* **Range**: -40°C to 85°C (operational temperature range)

**3. Pin Configuration**

Here's a detailed description of the **pin configuration** on the Arduino Uno:

**Digital Pins (0-13)**

* **Pin 0 (RX)**: Receive pin for serial communication.
* **Pin 1 (TX)**: Transmit pin for serial communication.
* **Pin 2-13**: Digital input/output pins. Pins 3, 5, 6, 9, 10, and 11 support PWM output.

**Analog Pins (A0-A5)**

* **A0 - A5**: Analog input pins for reading analog signals. Each can read a voltage from 0 to 5V (10-bit resolution, values 0-1023).

**Power Pins**

* **GND (Ground)**: Two GND pins for the ground connection.
* **5V**: Provides a regulated 5V output from the onboard regulator.
* **3.3V**: Provides a 3.3V output (limited current).
* **Vin**: Input voltage to the Arduino when using an external power source (7V to 12V).

**Reset and Other Pins**

* **Reset Pin**: Resets the Arduino board when connected to ground.
* **IOREF**: Voltage reference pin; provides the voltage that the I/O pins use.
* **AREF**: Analog reference voltage for the analog inputs.