



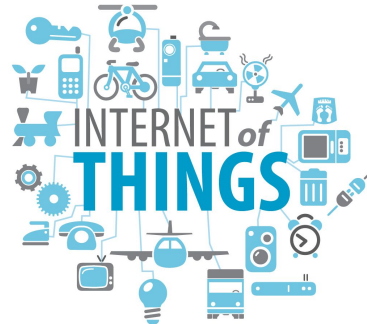
UNIVERSITY OF SCIENCE - VNUHCM

Faculty of Information Technology

INTERNET OF THINGS

1.1

INTRODUCE TO THE ARDUINO

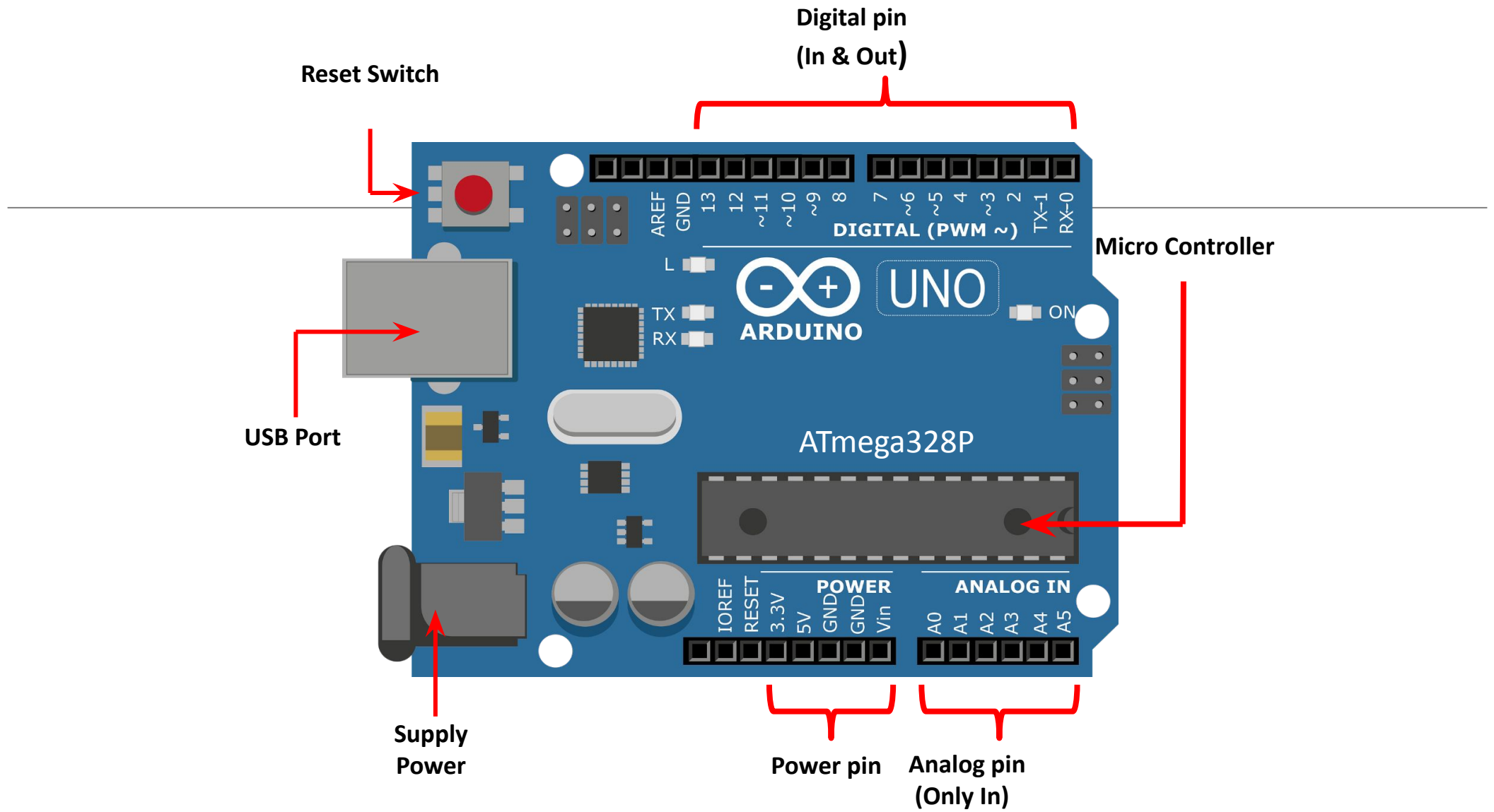


Content

1. Arduino board
2. Basic electronic devices
3. Arduino IDE
4. The first program “Hello World”

Arduino board





Electronic devices

					
Arduino UNO R3	Cable (1 m)	Bread Board	Jumper Wire M-M	Jumper Wire M-F	220Ω Resistance
					
10KΩ Resistance	Battery Adaptor	LED (15 ea)	RGB LED	Push Button (8 ea)	5V Active buzzer
					
5V Passive buzzer	PIR Motion Sensor	CdS cell	1602 LCD	10K Potentiometer	Temp. & Humid Sensor
					
Supersonic sensor	Segment(cathode)	Servo-motor	1N4001 diode	2N2222 transistor	Shift Register 74HC595
					
HC-06 Bluetooth	5V Step Motor	ULN2003A module	Moisture sensor	Sound sensor	Real time clock module
					
5V Relay module	4x4 keypad module	Case	Manual book		



Arduino UNO R3



LED



Resistor



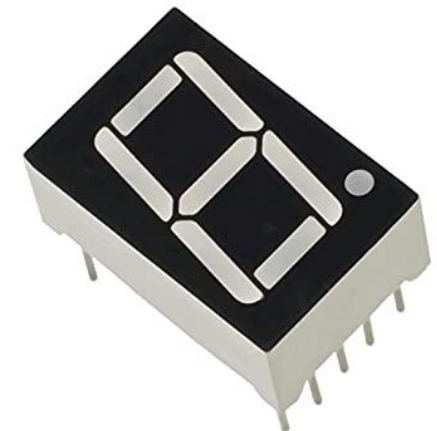
Button



Potentiometer



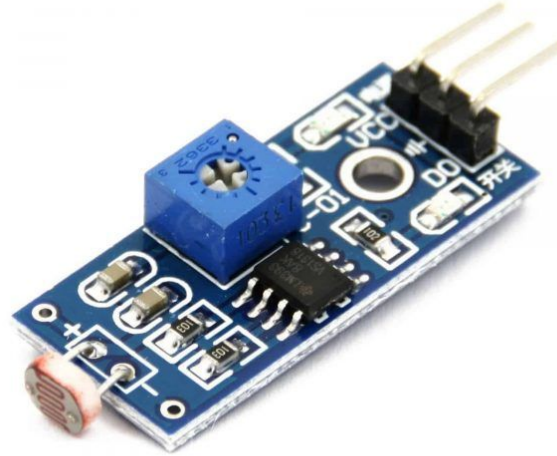
Buzzer



7-segment Display



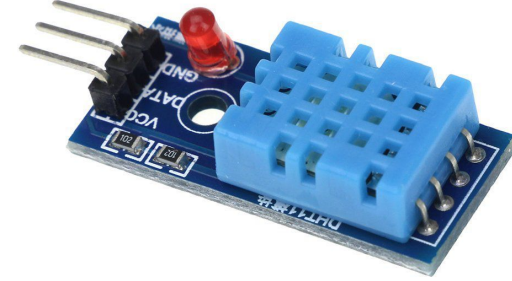
Ultrasonic sensor



Photoresistor sensor



PIR sensor



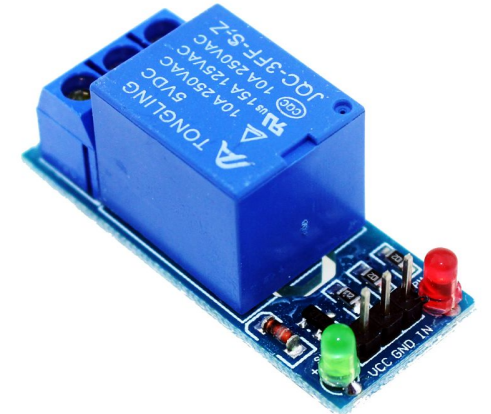
DHT11 sensor
(Temperature – Humidity)



LCD

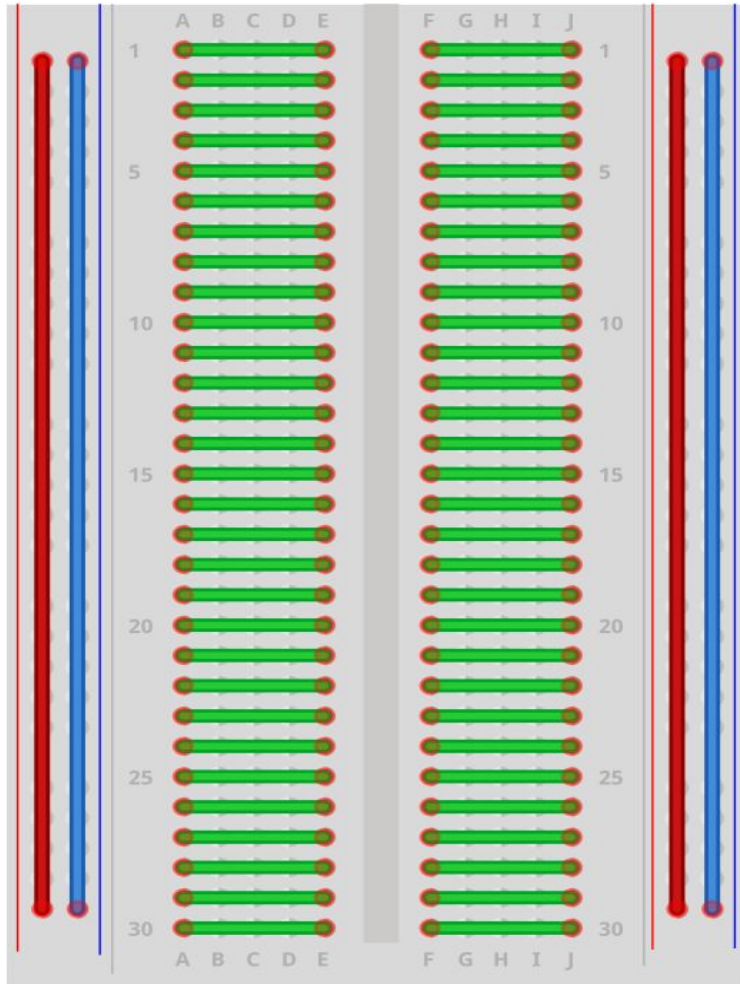


Servo



Relay

Test board – Bread board



< Bread Board >



< Inside of Bread Board >



Arduino IDE

Compile
& Upload

The screenshot shows the Arduino IDE 2.3.2 interface. At the top, the 'Board & Port' menu is open, showing 'Arduino Uno' selected. To the left of this menu, the 'Compile & Upload' button (a green checkmark and arrow) is circled in red. To the right, the 'Serial Monitor' button (a magnifying glass) is also circled in red. Below the menu, the code editor displays the following code:

```
1 void setup() {  
2   // put your setup code here, to run once:  
3  
4 }  
5  
6 void loop() {  
7   // put your main code here, to run repeatedly:  
8  
9 }  
10
```

The code is enclosed in a red box, with an arrow pointing to it from the label 'Code'. Below the code editor, the 'Serial Monitor' window is open, showing a message input field and a 'New Line' button. An arrow points from the label 'Message & Console' to this window. The status bar at the bottom indicates 'Ln 10, Col 1' and 'Arduino Uno on /dev/cu.usbmodem14101'.

```
> Hello world
```

The First Program

```
void setup() {  
    // put your setup code here, to run once:  
    Serial.begin(9600);  
}  
  
void loop() {  
    // put your main code here, to run repeatedly:  
    Serial.println("Hello World");  
    delay(1000);  
}
```