

# Arduino Serial Monitor and Plotter

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- Introduction to Serial Communication with Arduino
- Serial Monitor and Serial Plotter is nice to use since Arduino programs have no GUIs
  - Serial Monitor
  - <u>Serial Plotter</u>
- Send Serial Data
  - Note! Typically, you use Serial Monitor to present values for different variables
  - But you can also use the Serial Monitor to update variables, etc.
  - Examples



# Serial Communication with Arduino

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# Arduino UNO

- Arduino is a Microcontroller
- Arduino is an open-source platform with Input/Output Pins (Digital In/Out, Analog In and PWM)
- Price about \$20
- Arduino Starter Kit ~\$40-80 with Cables, Wires, Resistors, Sensors, etc.

### Configuration

PC with the Arduino Programming Environment



### **Arduino Programming Environment**



# **Serial Communication**

Speed: Baud Rate in bits per second

• Serial.begin(9600)

-Open the Serial Port and set Baud rate

- Serial.print("Hello")
- Serial.println("Hello")
- <u>https://www.arduino.cc/reference/en/lan</u> guage/functions/communication/serial/

```
int x = 0;
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  Serial.print(x);
  x++;
  delay(1000);
}
```



# Serial Monitor

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# **Serial Monitor**

	sketch_nov16b   Arduino 1.6.10		💿 СОМ10		<u> </u>	x I
			1			Send
sketch_nov16b						Joend
<pre>void setup() {     // put your setup of </pre>	code here, to run once:		3012			
}						
<pre>void loop() {     // put your main co</pre>	ode here, to run repeatedly:					
}						
	•					
			Autoscroll Show timestamp	No line ending 🧹 9600 baud	✓ Cle	ar output
	Arduino/Genuino Uno on /dev.	/cu.usbmodem1A1231				



```
int x = 0;
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  Serial.println(x);
  x++;
  delay(1000);
```





# Serial Plotter

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### **Serial Plotter**





```
float x = 0;
float y;
```

```
void setup()
```

```
Serial.begin(9600);
```

```
void loop()
{
```

```
y = sin(x);
Serial.println(y);
```

x = x + 0.1; delay(100);



```
float x = 0;
float y;
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  y = sin(x);
  Serial.print(y);
  y = \cos(x);
  Serial.print("\t");
  Serial.println(y);
  x = x + 0.1;
  delay(100);
```





# Send Serial Data

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# Send Serial Data

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We can also send Serial Data using the Serial Monitor or the Serial Plotter



# Example

COM10

Autoscroll Show timestamp

Are you ready (Y/N)? Let me know when you are ready Great. You are ready

No line ending

```
char input;
```

```
void setup()
```

```
Serial.begin(9600);
Serial.println("Are you ready (Y/N)?");
```

```
void loop()
  if (Serial.available() > 0)
    input = (byte)Serial.read();
    if (input == 'Y')
      Serial.println("Great. You are ready");
    }else if (input == 'N')
      Serial.println("Let me know when you are ready");
  delay(100);
```



# Code

```
char input;
int x;
int y;
```

```
void setup()
```

```
Serial.begin(9600);
```

```
void loop()
{
```

```
if (Serial.available() > 0)
{
```

```
input = (byte)Serial.read();
```

```
if (input == 'x')
{
    x = random(0,10);
    Serial.println(x);
}else if (input == 'y')
{
    y = random(20,30);
    Serial.println(y);
```

```
}
delay(100);
```

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