**Serial Monitor in Arduino**

The Arduino IDE has a feature that can be a great help in debugging sketches or controlling Arduino from your computer's keyboard.

**The Serial Monitor** is a separate pop-up window that acts as a separate terminal that communicates by receiving and sending Serial Data. See the icon on the far right of the image above.

Serial Data is sent over a single wire (but usually travels over USB in our case) and consists of a series of 1's and 0's sent over the wire. Data can be sent in both directions (In our case on two wires).

You will use the Serial Monitor to debug Arduino Software Sketches or to view data sent by a working Sketch. You must have an Arduino connected by USB to your computer to be able to activate the Serial Monitor.

Code:

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| --- |
| /\* YourDuinoStarter\_SerialMonitor\_SEND\_RCVE<br> - WHAT IT DOES:  - Receives characters from Serial Monitor  - Displays received character as Decimal, Hexadecimal and Character  - Controls pin 13 LED from Keyboard  - SEE the comments after "//" on each line below  - CONNECTIONS:  - None: Pin 13 built-in LED  -  - V1.00 02/11/13  Questions: terry@yourduino.com \*/  /\*-----( Import needed libraries )-----\*/  /\*-----( Declare Constants and Pin Numbers )-----\*/  #define led 13 // built-in LED  /\*-----( Declare objects )-----\*/  /\*-----( Declare Variables )-----\*/  int ByteReceived;  void setup() /\*\*\*\*\*\* SETUP: RUNS ONCE \*\*\*\*\*\*/  {  Serial.begin(9600);  Serial.println("--- Start Serial Monitor SEND\_RCVE ---");  Serial.println(" Type in Box above, . ");  Serial.println("(Decimal)(Hex)(Character)");  Serial.println();  }  //--(end setup )---  void loop() /\*\*\*\*\*\* LOOP: RUNS CONSTANTLY \*\*\*\*\*\*/  {  if (Serial.available() > 0)  {  ByteReceived = Serial.read();  Serial.print(ByteReceived);  Serial.print(" ");  Serial.print(ByteReceived, HEX);  Serial.print(" ");  Serial.print(char(ByteReceived));    if(ByteReceived == '1') // Single Quote! This is a character.  {  digitalWrite(led,HIGH);  Serial.print(" LED ON ");  }    if(ByteReceived == '0')  {  digitalWrite(led,LOW);  Serial.print(" LED OFF");  }    Serial.println(); // End the line  // END Serial Available  }  }  //--(end main loop )---  /\*-----( Declare User-written Functions )-----\*/  /\*\*\*\*\*\*\*\*\*( THE END )\*\*\*\*\*\*\*\*\*\*\*/ |

**DEBUGGING WITH THE SERIAL MONITOR**

If you are testing a new sketch you may need to know what's happening when you try to run it. But**"Software Is Invisible ! "**. So you need the tell the software to tell you what it's doing, and sometimes the value of changing variables. You do this my using the Serial Monitor and adding code to your sketch to send characters that you can see.

**SETUP:**  
In Setup you need to begin Serial Communications and set the Baud Rate (speed) that data will be transferred at. That looks like this:

Serial.begin(9600); // Other baud rates can be used...

Serial.println("My Sketch has started");

The second line is optional...

**LOOP:**  
Here you can print helpful info to the Serial Monitor. Examples:

Serial.println("Top of loop");

Serial.println("Reading Temperature Sensor");

Serial.print("LoopCounter value = ");

Serial.println(LoopCounter);