Serial Output & Input

November 12, 2013

- Review
  - serial.print
  - serial.println
- Manual Input via Serial
- Harrison: Using node.js to input via serial

```
// Example 07: Send to the computer the values read from
// analogue input 0
// Make sure you click on "Serial Monitor"
// after you upload

const int SENSOR = 0; // select the input pin for the
                      // sensor resistor

int val = 0; // variable to store the value coming
             // from the sensor

void setup() {

  Serial.begin(9600); // open the serial port to send
                      // data back to the computer at
                      // 9600 bits per second
}

void loop() {

  val = analogRead(SENSOR); // read the value from
                            // the sensor

  Serial.println(val); // print the value to
                       // the serial port

  delay(100); // wait 100ms between
              // each send
}
```

Serial Comm Examples / analogueSensor

Let’s try changing sensors - right now set to sensor 0 which is bit rate of communication over serial port

Try temperature sensor - what is the pin number? A1

blow on it

Try light sensor - A6

```
/*
 * SerialOutput sketch
 * Print numbers to the serial port
*/
void setup()
{
  Serial.begin(9600); // send and receive at 9600 baud
}

int number = 0;

void loop()
{
  Serial.print("The number is ");
  Serial.println(number);    // print the number

  delay(500); // delay half second between numbers
  number++; // to the next number
}
```

Serial Comm Examples / SerialOutput

this one combines mathematical operation with string of text and combines serial.print and serial.println

- Let’s write code to display an text introduction
    - Hello, my name is
- Add your major
- Add birth year
- Add a mathematical operation to calculate age and display age

Hello, My name is (declare variable NAME)
I was born in (declare variable BirthYear)
I am ___ years old (math currentYear - BirthYear)

```
/* Serial print introductory message

*/

char NAME[4] = "Kim";

int CurrentYear = 2013;
int BirthYear = 1973;

void setup () {
```

```
/*
 * SerialReceive sketch
 * Blink the LED at a rate proportional to the received digit value
*/
const int ledPin = 13; // pin the LED is connected to
int   blinkRate=0;     // blink rate stored in this variable

void setup()
{
  Serial.begin(9600); // Initialize serial port to send and receive at 9600 baud
  pinMode(ledPin, OUTPUT); // set this pin as output
}

void loop()
{
  if ( Serial.available()) // Check to see if at least one character is available
  {
    char ch = Serial.read();
    if( isDigit(ch) ) // is this an ascii digit between 0 and 9?
    {
      blinkRate = (ch - '0');      // ASCII value converted to numeric value
      blinkRate = blinkRate * 100; // actual rate is 100mS times received digit
    }
  }
  blink();
}

// blink the LED with the on and off times determined by blinkRate
void blink()
{
  digitalWrite(ledPin,HIGH);
  delay(blinkRate); // delay depends on blinkrate value
  digitalWrite(ledPin,LOW);
  delay(blinkRate);
}
```

Serial Comm Examples / SerialReceive

Varies the rate of a light blinking depending on ASCII char entered (0-9)

Harrison and input using node.js