



Programming, Serial and Virtual Prototyping

Serial Communication

Serial Communication is the transferring and receiving of information between two machines, the Arduino dedicates pin # 0 to receiving information and pin 1 to transferring information

Serial in Setup

```
void setup() {  
  // initialize the digital pin as an output.  
  // Pin 13 has an LED connected on most Arduino boards:  
  Serial.begin(9600);  
  
  void loop() {  
    Serial.println("This is Serial Communication");  
    digitalWrite(LED_PIN, HIGH); // set the LED on  
    delay(1000); // wait for a second  
    digitalWrite(LED_PIN, LOW); // set the LED off  
    delay(1000); // wait for a second  
  }  
}
```

Begin Serial Communication

Baud Rate of 9600

Serial Monitor

```
void setup() {  
  // initialize the digital pin as an output.  
  // Pin 13 has an LED connected on most Arduino boards:  
  pinMode(LED_PIN, OUTPUT);  
  Serial.begin(9600);  
  digitalWrite(LED_PIN, HIGH);  
}  
  
void loop() {  
  Serial.println("This is Serial communication"); // send Serial data  
  digitalWrite(LED_PIN, HIGH); // set the LED on  
  delay(1000);  
  digitalWrite(LED_PIN, LOW); // set the LED off  
  delay(1000);  
}
```

Activate Serial Monitor

Serial Communication

```
void setup() {  
  // initialize the digital pin as an output.  
  // Pin 13 has an LED connected on most Arduino boards:  
  pinMode(LED_PIN, OUTPUT);  
  Serial.begin(9600);  
}  
  
void loop() {  
  Serial.println("This is Serial Communication");  
  digitalWrite(LED_PIN, HIGH); // set the LED on  
  delay(1000); // wait for a second  
  digitalWrite(LED_PIN, LOW); // set the LED off  
  delay(1000); // wait for a second  
}
```

Serial Communication

Baud Rate of 9600

```
Pin = 2; // the number of the pushbutton pin  
LED_PIN = 13; // the number of the LED pin  
  
int change;  
int state = 0; // variable for reading the pushbutton status  
  
// the LED pin as an output:  
pinMode(LED_PIN, OUTPUT);  
// the pushbutton pin as an input:  
pinMode(PIN_BUTTON, INPUT);  
  
// state of the pushbutton value:  
digitalRead(PIN_BUTTON);  
// pushbutton is pressed:  
// the buttonstate is HIGH:  
if (state == HIGH) {  
  digitalWrite(LED_PIN, HIGH);  
}  
else {  
  digitalWrite(LED_PIN, LOW);  
}
```

Place a Serial.println ("Comment") here.

Place a Serial.println (variable or pinState) here.

Serial Activity with Circuit 7

- Communication
- Troubleshooting circuits
- Debugging Code

Serial Communication: Serial Setup

```
void setup ( ) {  
  Serial.begin ( 9600 ) ;  
}
```

In this case the number 9600 is the baudrate at which the computer and Arduino communicate

Serial Communication: Sending a Message

```
void loop ( ) {  
  Serial.print ( "Constructivism & " ) ;  
  
  Serial.println ( "Mechatronics" ) ;  
}
```

Serial Communication: Serial Debugging

```
void loop ( ) {  
  int xVar = 10 ;  
  Serial.print ( "Variable xVar is " ) ;  
  Serial.println ( xVar ) ;  
}
```

Serial Communication: Serial Troubleshooting

```
void loop ( ) {  
  Serial.print ( "Digital pin 9 reads " ) ;  
  Serial.println ( digitalRead ( 9 ) ) ;  
}
```

Serial Communication: Circuit 7 code

```
void loop ( ) {  
  buttonState = digitalRead(inputPin);  
  if (buttonState== HIGH){  
    digitalWrite (ledPin, LOW)  
  }  
  else {  
    digitalWrite(ledPin, HIGH);  
    Serial.print ("button state is ");  
    Serial.println ( buttonState );  
  }  
}
```

Questions?



www.sparkfun.com
6175 Longbow Drive, Suite 200
Boulder, Colorado 80301