

INTRODUCTION

Until now, your selection of input devices and output devices has been limited to the sensors and human input devices available in your classroom. In today's world of electronics, there are a tremendous number of other devices you could use in your designs.

In this activity you will create your first **programs** (sketches) to control systems with unique sensors, human input controls, motors, and **servos** that you may not have used previously. The ATmega328 **microcontroller** found on the Arduino™ UNO Microcontroller Board will be used to explore these controls and inputs.

Programming languages have their own grammar called "syntax". Programs written with the Arduino software are called Sketches. A **Sketch** (program written with Arduino) will contain: a title, **constants**, **variables**, `setup()` functions, and `loop()` functions.

If the syntax of a language is not followed, the program will not compile correctly. This means that no executable code will be produced. Fortunately, the Arduino integrated development environment (IDE) will provide error messages that will help you fix your "bad grammar"... called "syntax errors". One of the most common syntax errors that students make is forgetting that lines of code need to end with a semicolon.

What is the controlled used?

What is a syntax error?

Draw a sketch of an Arduino Uno and label the inputs, outputs and important chips clearly.

Name: _____

What does this program do?

```
/*
Title: Description and comments.
Blink: This example make the LED at pin 13 blink.
This example code is in the public domain.
*/
// Constants: Constants won't change. They're used here to set the pin numbers:
const int ledPin = 13;          // constant ledPin assigned to pin 13
// Variables: Variables will change. They're used do assign variable names:
                                // there are no variables in this example
// Setup: The setup routine runs once when you start or press reset:
void setup() {                  // put your setup code here, to run once
  pinMode(ledPin, OUTPUT);      // initialize the LED pin as an output
}
// Loop: The loop routine runs over and over again forever:
void loop() {                   // put your main code here, to run repeatedly:
  digitalWrite(ledPin, HIGH);   // turn the LED on (HIGH is the voltage level)
  delay(1000);                  // wait for one second
  digitalWrite(ledPin, LOW);    // turn the LED off by making the voltage LOW
  delay(1000);                  // wait for one second
}
```

What type of variable is ledPin?

What does const mean?

What are the 2 ways that comments are noted?

1. Single line comment
2. Multi line comment

Instead of the colon, Java uses _____

Every statement ends with either { } or _____

What are the 2 required functions in each program?

What functions does this program call?