

Arduino Programming Basics

Command	Description
<code>pinMode(n, INPUT)</code>	Set pin <i>n</i> to act as an input. One-time command at top of program.
<code>pinMode(n, OUTPUT)</code>	Set pin <i>n</i> to act as an output
<code>digitalWrite(n, HIGH)</code>	Set pin <i>n</i> to 5V
<code>digitalWrite(n, LOW)</code>	Set pin <i>n</i> to 0V
<code>delay(x)</code>	Pause program for <i>x</i> millisec, <i>x</i> = 0 to 65,535
<code>tone(n, f, d)</code>	Play tone of frequency <i>f</i> Hz for <i>d</i> millisec on speaker attached to pin <i>n</i>
<code>for()</code>	Loop. Example: <code>for (i=0; i<3; i++){}</code> Do the instructions enclosed by <code>{}</code> three times
<code>if (expr) {}</code>	Conditional branch. If <i>expr</i> true, do instructions enclosed by <code>{}</code>
<code>while (expr) {}</code>	While <i>expr</i> is true, repeat instructions in <code>{}</code> indefinitely

For more commands see the ME2011 “Arduino Microcontroller Guide” and the Language Reference section of the arduino web site.

Instructions in the `setup()` function are executed once. Those in the `loop()` function are executed indefinitely.

Examples

1. Turn on LED connected to Pin 2 for 1 s.

```
void setup() {  
  pinMode(2, OUTPUT);  
  digitalWrite(2, HIGH);  
  delay(1000);  
  digitalWrite(2, LOW);  
}  
void loop()  
{}
```

2. Flash LED connected to Pin 2 at 1 Hz forever.

```
void setup() {  
  pinMode(2, OUTPUT);  
}  
void loop() {  
  digitalWrite(2, HIGH);  
  delay(500);  
  digitalWrite(2, LOW);  
  delay(500);  
}
```

3. Turn on motor connected to Pin 4 for 1 s.

```
void setup() {  
  pinMode(4, OUTPUT);  
  digitalWrite(4, HIGH);  
  delay(1000);  
  digitalWrite(4, LOW);  
}  
void loop()  
{}
```

4. Play 440 hz tone for one second on speaker connected to pin 5. Delay is needed because the program does not wait for the `tone()` command to finish but rather immediately goes to the command following `tone()`.

```
void setup() {  
  pinMode(5, OUTPUT);  
  tone(5, 440, 1000);  
  delay(1100);  
}  
void loop()  
{}
```

5. LED is on Pin 2 and switch is on Pin 6. Turns on the LED for one sec when switch is pressed.

```
void setup() {  
  pinMode(2, OUTPUT);  
  pinMode(6, INPUT);  
  while (digitalRead(6) == HIGH)  
    ;  
  digitalWrite(2, HIGH);  
  delay(1000);  
  digitalWrite(2, LOW);  
}  
void loop()  
{}
```