

# CODE TOOLBOX

Tell the story. What  
is this code doing?

A container to  
store text,  
numbers lists,  
data, etc

COMMENT

VARIABLE

STATEMENT

LOOP

FUNCTION

LIBRARY

OUTPUT

Ask a question...

If someting equals  
someting do something

When you have lots of  
stuff to work through  
this is a way to step  
through the list

A separate package of  
code you can use in  
your code

Libraries often contain  
functions you can use  
in your code

When you need to know  
what's going on,  
output someting from  
your code

If part of your code will  
be used over and over, a  
function is a great way to  
package it up for reuse.  
Now it's a tool!

# NUT AND BOLTS

VARIABLE | BOX

BOLT, NUT BOLT

VARIABLE | TOTAL BOLTS

0

LOOP

BOLT

NUT

BOLT

IF  
BOLT

IF  
BOLT

IF  
BOLT



"TOTAL BOLTS"

1

"TOTAL BOLTS"

1

"TOTAL BOLTS"

2

OUTPUT

THERE ARE A TOTAL OF 2 BOLTS

# SAME CODE, 3 WAYS

## LANGUAGES

Just like writing, computers and devices have multiple languages they speak.

The important part is to know the logic goal then, you choose what language you want to use to express it.

## ARDUINO C++

```
// Count the socks in the box

void setup() {

  Serial.begin(9600);

  String box[3] = {"bolt", "nut", "bolt"};
  int total_bolts = 0;

  for (int i=0; i < 3; i++) {
    if (box[i] == "bolt") {
      total_bolts = total_bolts + 1;
      Serial.println("bolt");
    }
    else {
      Serial.println("nut");
    }
  }
  Serial.print("Total Bolts ");
  Serial.println(total_bolts);
}
```

```
// Count how many items in the box are bolts

var box = [ 'bolt', 'nut', 'bolt' ];
var total_bolts = 0;

for (i=0; i<box.length; i++) {
  if (box[i] == 'bolt') {
    total_bolts = total_bolts + 1;
    alert('bolt');
  }
  else {
    alert('nut');
  }
}
```

## PYTHON

```
# Count how many items in the box are bolts

box = ['bolt', 'nut', 'bolt']
total_bolts = 0

for item in box:
  if item == 'bolt':
    total_bolts = total_bolts + 1
    print 'bolt'
  else:
    print 'nut'
```

# CODE + ELECTRONICS

ELECTRONIC BOARDS LIKE ARDUINO, MICRO:BIT AND RASPBERRYPI CONNECT YOUR CODE TO THE OUTSIDE WORLD USING INPUT AND OUTPUT COMPONENTS.

## INPUT

SWITCHES

KNOBS

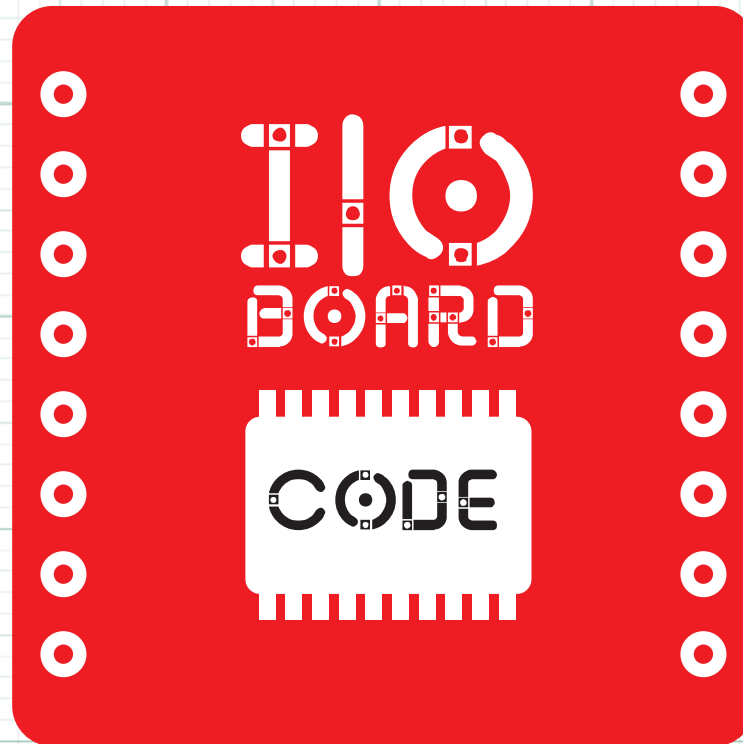
SOUND

LIGHT

DISTANCE

GPS

ACCELERATION



## OUTPUT

LIGHTS

LEDS

RELAYS

MOTORS

SERVOS

SOUND

MEMORY