Functions

INFO/CSE 100, Autumn 2004
Fluency in Information Technology

http://www.cs.washington.edu/100

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Functions

A function is a way to bundle a set of instructions and give a name so that you can reuse them easily. Functions have a specific layout:

- `<name>` ← the function name is an identifier
- `<parameter list>` ← list of input variables for the function
- `<statements>` ← the statements do the work

Example Function

Write a simple function to compute the Body Mass Index when the inputs are in English units (ie, US units)

```
function <name> ( <parameter list> ) {
  <statements>
}
```

Example:

```
// Calculate Body Mass Index in English units
// weight in pounds
// height in inches
// returns body mass index

function bmiE(weightLBS, heightIN) {
  var heightFt = heightIN / 12; // convert to feet
  return 4.89 * weightLBS / (heightFt * heightFt);
}
```
Develop the function

First, make sure you understand what you want the function to do and how it will accomplish the task.

// Calculate Body Mass Index in English units
// weight in pounds
// height in inches
// returns body mass index

function name(parameter list) {
    statements
}

Pick a name for the function

Function names are identifiers

» start with a letter
» should have a fairly obvious meaning

// Calculate Body Mass Index in English units
// weight in pounds
// height in inches
// returns body mass index

function bmiE(parameter list) {
    statements
}

Pick the parameters

Parameter names are also identifiers

» these are the variable names that your function will use when it is performing its calculations
» should have a fairly obvious meaning

// Calculate Body Mass Index in English units
// weight in pounds
// height in inches
// returns body mass index

function bmiE(weightLBS, heightIN) {
    statements
}

Write the function body

The function body includes whichever statements are required to implement the desired capability.

// Calculate Body Mass Index in English units
// weight in pounds
// height in inches
// returns body mass index

function bmiE(weightLBS, heightIN) {
    var heightFt = heightIn / 12; // convert to feet
    return 4.89 * weightLBS / (heightFt * heightFt);
}
A Simple Testing Template

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<title>Body Mass Index</title>
<script type="text/javascript">
// Figure Body Mass Index in English units
function bmiE(weightLBS, heightIN) {
    var heightFt = heightIn / 12; // Change to feet
    return 4.89 * weightLBS / (heightFt * heightFt);
}
</script>
</head>
<body>
<p>This page provides a simple body mass index calculator. Normal weight corresponds to a BMI of 18.5-24.9</p>
<script type="text/javascript">
document.writeln("\n\nbmiE(100,72): "+bmiE(100,72));
document.writeln("\nbmiE(150,72): "+bmiE(150,72));
document.writeln("\nbmiE(175,72): "+bmiE(175,72));
document.writeln("\nbmiE(200,72): "+bmiE(200,72));
</script>
</body>
</html>

Try the function and see how it works

This page provides a simple body mass index calculator. Normal weight corresponds to a BMI of 18.5-24.9

bmiE(100,72): 13.583333333333333
bmiE(150,72): 20.375
bmiE(175,72): 23.770833333333333
bmiE(200,72): 27.166666666666664
Comments on Debugging

- Debugging JavaScript can be hard
  - The browsers all implement things a little differently, particularly old browsers
  - upgrade if you are using something old!

Use the W3Schools TryIt Editor

Use an editor that helps you

Display results using alert(...)
Display results using writeln(...) 

```html
<body>
<script type="text/javascript">
document.writeln("someVariable: "+someVariable);
</script>
</body>
```

Use a browser that helps you

- All browsers try to be forgiving of errors, which means that they generally don't produce a lot of error messages
  » use a browser that helps you debug like Mozilla

enable Mozilla JavaScript Console

The Mozilla JavaScript console helps you by showing good error messages.
By the way ...

- Why don't these pages have a `<META>` tag with the `charset` attribute?

  `<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=ISO-8859-1">`

- Because there's another way to fix the encoding issue.

  1. Create a file named `.htaccess` in your `public_html` directory on dante.
  2. Put the following text in that file using pico:
     
     ```
     AddType 'text/html; charset=ISO-8859-1' html
     ```