

3.12 Why functions?

It may not be clear why it is worth the trouble to divide a program into functions. There are several reasons:

- Creating a new function gives you an opportunity to name a group of statements, which makes your program easier to read and debug.
- Functions can make a program smaller by eliminating repetitive code. Later, if you make a change, you only have to make it in one place.
- Dividing a long program into functions allows you to debug the parts one at a time and then assemble them into a working whole.
- Well-designed functions are often useful for many programs. Once you write and debug one, you can reuse it.

3.13 Debugging

If you are using a text editor to write your scripts, you might run into problems with spaces and tabs. The best way to avoid these problems is to use spaces exclusively (no tabs). Most text editors that know about Python do this by default, but some don't.

Tabs and spaces are usually invisible, which makes them hard to debug, so try to find an editor that manages indentation for you.

Also, don't forget to save your program before you run it. Some development environments do this automatically, but some don't. In that case the program you are looking at in the text editor is not the same as the program you are running.

Debugging can take a long time if you keep running the same, incorrect, program over and over!

Make sure that the code you are looking at is the code you are running. If you're not sure, put something like `print('hello')` at the beginning of the program and run it again. If you don't see hello, you're not running the right program!

3.14 Glossary

function: A named sequence of statements that performs some useful operation. Functions may or may not take arguments and may or may not produce a result.

function definition: A statement that creates a new function, specifying its name, parameters, and the statements it executes.

function object: A value created by a function definition. The name of the function is a variable that refers to a function object.

header: The first line of a function definition.

body: The sequence of statements inside a function definition.

parameter: A name used inside a function to refer to the value passed as an argument.