TASK

Beginner Programming with Functions — Using Built-in Functions

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Introduction

Welcome to The Beginner Programming With Functions — Using Built in Functions Task!

This is an introduction to Functions in Python. A function is a reusable and organised block of code that is used to perform a single action or specific task. Functions can either be user-defined or built-in. In this task, you will be introduced to functions that are built into the Python language itself and are readily available for us to use. We are going to be exploring some of the more useful and most common Python functions.

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A note from the
Hyperion Team

Why does 19200 Big Macs a year equal potential job security? Why can South African software developers buy more Big Macs than their American counterparts, and, what do Big Macs and software development have in common anyway? All these questions are answered **HERE** when considering 5 key reasons as to why software development is a great career to find yourself in.

What are Functions?

A **function** is a reusable and organised block of code that is used to perform a single action or specific task. Functions are also sometimes referred to as **'methods'** (if you have used Java before, functions in Python are very similar to Java methods).

Functions in programming also relate to mathematical functions — perhaps you recall f(x) in mathematics. A mathematical function took some input, in this case x, did some computations with it, and returned a value, normally called y. For example, y = f(x) is a function that when called with the parameter x returns the value y.

Functions can either be user-defined or built-in. Built-in functions are built into the Python language itself and are readily available for us to use. You have actually already been using some built-in functions such as *print(), input(), len(), int(), str()* and *float()*. See a list of available built-in functions **here**. The *write* command, i.e. *ofile.write(name+"\n")*, is in fact also a function, implemented by some programmer, that tells Python how to write the content you give it to the file.

There are thousands of functions already implemented in Python that you can use to get things done. Programmers have already written the logic for many common and even complex tasks. Sometimes you can find the exact built-in function that you need to complete a task.

However, you are not limited to these functions. You can also create your own

functions to meet your needs, these are what are known as user-defined functions.

Importing Outside Modules

We mentioned earlier that there are thousands of already written functions, but how do you get access to them? Modules are the answer. Modules, or libraries, are pieces of code already written by other programmers that you can *import* into your program. Though you don't see their code directly, you can access them. You import these modules using the *import* keyword followed by the module's name.

An example of a very useful module is the *math* module, which has many pre-built in functions for you to use. To find out more about the math module and its functions, go to **https://docs.python.org/3.7/library/math.html**. Python modules and their functions are usually very well documented online. See the example file that accompanies this task to see how some functions in the math module can be used.

Instructions

First read **example.py**. Open it using Notepad++ or IDLE.

- **example.py** should help you understand some simple Python. Every task will have example code to help you get started. Make sure you read all of **example.py** and try your best to understand.

- You may run **example.py** to see the output. Feel free to write and run your own example code before doing the Task to become more comfortable with Python.

Compulsory Task 1

Follow these steps:

- Create a new Python file in this folder called **binary.py**
- Write a program that can convert a binary number to a decimal number.
- A binary number is a number that is made up entirely of 0s and 1s (e.g 101101). You can represent any amount you would like using binary.
- Ask the user to enter a binary number and convert that number to a decimal number.
- You can visit the following website to find out how to convert from binary to decimal: http://www.rapidtables.com/convert/number/how-binary-to-decimal.htm
- Print out the decimal value of the number.
- Remember to make use of the built-in functions found in the math module as well as lists (remember to import the *math* module into your program!).

Compulsory Task 2

Follow these steps:

- Create a new Python file in this folder called **jokes.py**

- You are going to create a random joke generator using Python's *random* module. This will require a bit of research on your part. For more information on the *random* module: https://pynative.com/python-random-module/

- Create a list of jokes.

- Use the *random* module to display a random joke each time the code runs.

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