HIFIS

CERTIFICATE

Hereby we confirm the participation

of **Fatemeh Ebrahimi Sohroforouzany**

in **First Steps with Python**

on 22. — 24. January 2024 for 11:15 hours

The instructors and organizers thank you for your active participation an wish you great success with your newly acquired skills!

Signed by Fredo Erxleben
Dresden, 2024-01-31, 10:08 UTC
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Course Contents

Lessons

Setting up a Python Project You learn how a basic project is set up and explore two approaches to Python programming: using the REPL and writing Python files.

Variables, Assignments and Data Types Get to know the basic constructs for storing and manipulating information in a program. Understand what data types are and how they influence how information is processed.

Importing Since projects often get distributed over multiple files or require code from other sources, we will investigate how to import code from other files or libraries.

Conditionals It is often necessary to check conditions and act accordingly. This section will cover expressing those conditions and how to control in which order they get checked and how to react to them.

While-Loops Loops are a good choice when it comes to repeating actions. In this section, the ”while”-loop will be introduced as a method of repeating code based on condition.

Functions Splitting parts of programs off into self contained, reusable blocks is a good way to handle complexity and allow for parts of a program to also be used in other projects.

For-Loops Introducing the second kind of loop, the ”for”-loop is well suited to iterate over a set of data or repeat a set of instructions a given amount of times.

Tuples Tuples are a great way to bundle up multiple values. Learn how to employ them and take advantage of Python’s automatic Packing/unpacking feature.

Lists Another very useful data type is the List, a sorted collection of data. In this section we introduce some basic functionality and learn where to find more detailed information for this data type and many others.

Finalizing the Project We will put some finishing touches on our example project to make it ready for a first release. Further, possible future learning paths will be outlined.

Exercises

Exercise: Basics In this exercise session we will write our first own programs to solve small problems. The focus is on gaining experience with the use of assignments, conditionals and loops and fostering structure-oriented thinking.

Exercise: Increased complexity Further training the use of the basic structures to solve increasingly complex problems. Planning approaches to solve tasks that are increasingly hard to solve by "just doing it".

Exercise. Functions In addition to the basic concepts we will now also use functions to better structure and sub-divide our programs, enabling us to solve increasingly complex tasks.

Exercise: Larger Programs In this exercise part we will encounter increasingly complex tasks that also require the use of lists, tuples, other loop structures and imports. The required approaches need to become increasingly more structured and require subdividing into multiple files.