Training: Python Academy

# Python Extensions with Other Languages

## TRAINING GOALS:

Python can be readily connected with other languages. This way, existing libraries in other languages can be used.

Programming in Python is rather comfortable and efficient. The speed of Python programs for some tasks is considerably slower than for programs in other languages such as C/C++, C#, Java, or FORTRAN. As a solution slow program parts can be reimplemented in other languages and seamlessly incorporated in Python.

Furthermore, Python is often termed "glue languages" because of its ability to connected very different systems. The connection of libraries and programs that are implemented in other languages plays a important role for this ability.

## CONSPECT:

- Introduction to example that will be used in further part of that module.
- Use of Python's C-API - Standard Python is implemented in C and offers a comprehensive API for writing extensions. The basics of this API are taught.
- Python extensions with Pyrex/Cython.
- Use of DLLs with ctypes - package ctypes allows to acces DLLs or shared libraries from Python.
- Automatic generation of extensions with SWIG.
    - The "Simplified Wrapper and Interface Generator" allows to make C/C++ libraries accesible from 13 different languages - one of them is Python.
    - Examples in C as well as in C++ are provided.
- Jython - basics of Python in Java implementation. Examples for use of existing Java classes as well as self writen classes.
- IronPython - implementation of Python in .NET allowing access to all .NET features and making it a first class .NET language right next to C# and Visual Basic.
- Use of FORTRAN subroutines from Python - example of usage F2PY to connect FORTRAN77 as well as FORTRAN90/95 programs with Python. Object-oriented interfaces to FORTRAN libraries.

## REQUIREMENTS:

Basic knowledge of Python language.



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## Difficulty level



## CERTIFICATE:

The participants will obtain certificates signed by Python Academy.

## TRAINER:

Authorized Python Academy Trainer.



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