

Extending and Embedding the Python Interpreter

This document describes how to write modules in C or C++ to extend the Python interpreter with new modules. Those modules can not only define new functions but also new object types and their methods. The document also describes how to embed the Python interpreter in another application, for use as an extension language. Finally, it shows how to compile and link extension modules so that they can be loaded dynamically (at run time) into the interpreter, if the underlying operating system supports this feature.

This document assumes basic knowledge about Python. For an informal introduction to the language, see [ref`tutorial-index`](#). [ref`reference-index`](#) gives a more formal definition of the language. [ref`library-index`](#) documents the existing object types, functions and modules (both built-in and written in Python) that give the language its wide application range.

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For a detailed description of the whole Python/C API, see the separate [ref`c-api-index`](#).

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Recommended third party tools

This guide only covers the basic tools for creating extensions provided as part of this version of CPython. Third party tools like [Cython](#), [ffi](#), [SWIG](#) and [Numba](#) offer both simpler and more sophisticated approaches to creating C and C++ extensions for Python.

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```
.. seealso::
```

```
`Python Packaging User Guide: Binary Extensions <https://packaging.python.org/guides/packaging-binary-ext>
The Python Packaging User Guide not only covers several available
tools that simplify the creation of binary extensions, but also
discusses the various reasons why creating an extension module may be
desirable in the first place.
```

Creating extensions without third party tools

This section of the guide covers creating C and C++ extensions without assistance from third party tools. It is intended primarily for creators of those tools, rather than being a recommended way to create your own C extensions.

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.. toctree::
: maxdepth: 2
: numbered

extending.rst
newtypes_tutorial.rst
newtypes.rst
building.rst
windows.rst
```

Embedding the CPython runtime in a larger application

Sometimes, rather than creating an extension that runs inside the Python interpreter as the main application, it is desirable to instead embed the CPython runtime inside a larger application. This section covers some of the details involved in doing that successfully.

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.. toctree::  
   :maxdepth: 2  
   :numbered:  
  
   embedding.rst
```