

Top-level components

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\reference\cpython-main) (Doc) (reference) toplevel_components.rst, line 8)

Unknown directive type "index".

```
.. index:: single: interpreter
```

The Python interpreter can get its input from a number of sources: from a script passed to it as standard input or as program argument, typed in interactively, from a module source file, etc. This chapter gives the syntax used in these cases.

Complete Python programs

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Unknown directive type "index".

```
.. index:: single: program
```

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Unknown directive type "index".

```
.. index::
   module: sys
   module: __main__
   module: builtins
```

While a language specification need not prescribe how the language interpreter is invoked, it is useful to have a notion of a complete Python program. A complete Python program is executed in a minimally initialized environment: all built-in and standard modules are available, but none have been initialized, except for `mod:'sys'` (various system services), `mod:'builtins'` (built-in functions, exceptions and `None`) and `mod:'__main__'`. The latter is used to provide the local and global namespace for execution of the complete program.

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Unknown interpreted text role "mod".

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Unknown interpreted text role "mod".

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Unknown interpreted text role "mod".

The syntax for a complete Python program is that for file input, described in the next section.

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Unknown directive type "index".

```
.. index::
   single: interactive mode
   module: __main__
```

The interpreter may also be invoked in interactive mode; in this case, it does not read and execute a complete program but reads and executes one statement (possibly compound) at a time. The initial environment is identical to that of a complete program; each statement is executed in the namespace of `mod: __main__`.

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Unknown directive type "index".

```
.. index::
   single: UNIX
   single: Windows
   single: command line
   single: standard input
```

A complete program can be passed to the interpreter in three forms: with the `:option: -c` *string* command line option, as a file passed as the first command line argument, or as standard input. If the file or standard input is a tty device, the interpreter enters interactive mode; otherwise, it executes the file as a complete program.

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Unknown interpreted text role "option".

File input

All input read from non-interactive files has the same form:

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Unknown directive type "productionlist".

```
.. productionlist:: python-grammar
   file_input: (NEWLINE | `statement`)*
```

This syntax is used in the following situations:

- when parsing a complete Python program (from a file or from a string);
- when parsing a module;
- when parsing a string passed to the `:func: exec` function;

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Unknown interpreted text role "func".

Interactive input

Input in interactive mode is parsed using the following grammar:

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Unknown directive type "productionlist".

```
.. productionlist:: python-grammar
   interactive_input: [`stmt_list`] NEWLINE | `compound_stmt` NEWLINE
```

Note that a (top-level) compound statement must be followed by a blank line in interactive mode; this is needed to help the parser detect the end of the input.

Expression input

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Unknown directive type "index".

```
.. index:: single: input
```

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Unknown directive type "index".

```
.. index:: builtin: eval
```

`:func:`eval`` is used for expression input. It ignores leading whitespace. The string argument to `:func:`eval`` must have the following form:

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[backlink](#)

Unknown interpreted text role "func".

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[backlink](#)

Unknown interpreted text role "func".

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Unknown directive type "productionlist".

```
.. productionlist:: python-grammar
   eval_input: `expression_list` NEWLINE*
```