Chapter 8: Top-level components

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.

8.1 Complete Python programs

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 `sys` (various system services), `__builtin__` (built-in functions, exceptions and `None`) and `__main__`. The latter is used to provide the local and global name space for execution of the complete program.

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

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 name space of `__main__`.

Under UNIX , a complete program can be passed to the interpreter in three forms: with the **-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.

8.2 File input

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

```
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 `exec` statement;

8.3 Interactive input

Input in interactive mode is parsed using the following 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.

8.4 Expression input

There are two forms of expression input. Both ignore leading whitespace. The string argument to `eval()` must have the following form:

```
eval_input:       expression_list NEWLINE*
```

The input line read by `input()` must have the following form:

```
input_input:      expression_list NEWLINE
```

Note: to read ‘raw’ input line without interpretation, you can use the built-in function `raw_input()` or the `readline()` method of file objects.