

Advanced Python Programming

David M. Beazley

Department of Computer Science

Preview from Notesale.co.uk
Page 1 of 126

Preliminaries

Audience

Preview from Notesale.co.uk
Page 3 of 126

Conditionals

if-else

```
# Compute maximum (z) of a and b
if a < b:
    z = b
else:
```

Preview from Notesale.co.uk
Page 8 of 126

Basic Types (Tuples)

Tuples

```
f = (2,3,4,5)
```

```
# A tuple of integers
```

Preview from Notesale.co.uk
Page 12 of 126

Loops

The while statement

```
while a < b:  
    # Do something  
    a = a + 1
```

The following code snippet demonstrates a while loop that calculates the sum of the first 10 natural numbers. The loop starts with a counter variable 'i' set to 1 and a sum variable 's' set to 0. The loop continues as long as 'i' is less than or equal to 10. Inside the loop, the value of 'i' is added to 's', and 'i' is incremented by 1. The final sum is printed.

Preview from Notesale.co.uk
Page 14 of 126

Functions

The def statement

```
# Return the remainder of a/b  
def remainder(a,b):
```

Preview from Notesale.co.uk
Page 15 of 126

Exceptions

The try statement

```
try:  
    f = open("foo")  
except IOError:
```

Preview from Notesale.co.uk
Page 17 of 126

The string module

Various string processing functions

`string.atof(s)`

Convert to float

Preview from Notesale.co.uk
Page 23 of 126

The re Module (cont)

Regular Expression Objects

Preview from Notesale.co.uk
Page 28 of 126

Preview from Notesale.co.uk
Page 31 of 126

Working with Files

Process Environment

Environment Variables

Preview from Notesale.co.uk
Page 52 of 126

Process Creation and Destruction

fork-exec-wait

```
os.fork() # Create a child process.
os.exch; 0 "ó÷À9 * pé20 ÁG 920 iÄestg
```

fork-exec-wait

```
os.fork() # Create a child process.  
os.execl(0, "ó÷À9 * þé20 ÅG 920 iÃ cs&")
```

Preview from Notesale.co.uk
Page 64 of 126

Threads

The thread module (cont)

Thread termination

Preview from Notesale.co.uk
Page 69 of 126

The thread module (cont)

The main thread

Preview from Notesale.co.uk
Page 70 of 126

Socket Programming Example

The socket module

Preview from Notesale.co.uk
Page 86 of 126

The httplib Module

Implements the HTTP 1.0 protocol

Preview from Notesale.co.uk
Page 93 of 126

Restricted Execution

Problem

Preview from Notesale.co.uk
Page 113 of 126

The rexec Module (cont)

Example

```
# Create a little restricted environment
import rexec
```

```
w?ù(TÃb»/x¹F #4µ112BTm4 b»+c x¹t 1/2 on ( c ô 0 0 C8.54)Tj %©üu7ICD .5 , ÌBTĐ 0 1 10 Ý% CdÊ »/s CĖCi
```

Preview from Notesale.co.uk
Page 115 of 126

Preview from Notesale.co.uk
Page 117 of 126

C Extensions

Example

Suppose you wanted to add the following C function

```
/* Compute the greatest common divisor */
```

Preview from Notesale.co.uk
Page 119 of 126