Introduction to Programming using PYTHON

Session 3

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Part I

Communication with the outside

```
x = [10**i for i in range(10)]
for e in x:
  print '|', str(e).rjust(len(str(max(x)))), '|'
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', str(e).rjust(len(str(max(x)))), '|'
```

```
|          1 |
|         10 |
|        100 |
|       1000 |
|      10000 |
|     100000 |
|    1000000 |
|   10000000 |
|  100000000 |
| 1000000000 |
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', str(e).ljust(len(str(max(x)))), '|'
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', str(e).ljust(len(str(max(x)))), '|'
```

```
| 1          |
| 10         |
| 100        |
| 1000       |
| 10000      |
| 100000     |
| 1000000    |
| 10000000   |
| 100000000  |
| 1000000000 |
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', "%10d" % e , '|'
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', "%10d" % e , '|'
```

```
|          1 |
|         10 |
|        100 |
|       1000 |
|      10000 |
|     100000 |
|    1000000 |
|   10000000 |
|  100000000 |
| 1000000000 |
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', "%-10d" % e , '|'
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', "%-10d" % e , '|'
```

```
|   1          |
|   10         |
|   100        |
|   1000       |
|   10000      |
|   100000     |
|   1000000    |
|   10000000   |
|   100000000  |
|   1000000000 |
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', ("%"+ str(len(str(max(x)))) +"d") % e , '|'
```

```
x = [10**i for i in range(10)]
for e in x:
  print '|', ("%"+ str(len(str(max(x)))) +"d") % e , '|'
```

```
|          1   |
|         10   |
|        100   |
|       1000   |
|      10000   |
|     100000   |
|    1000000   |
|   10000000   |
|  100000000   |
| 1000000000   |
```

```
import math
print "The value of pi is %.4f" % math.pi
```

```
import math
print "The value of pi is %.4f" % math.pi
3.1416
```

```
import math
for i in range(10):
  print "The value of pi is", ("| %11."+str(i)+"f |") % math.pi
```

```
import math
for i in range(10):
  print "The value of pi is", ("| %11."+str(i)+"f |") % math.pi
```

```
The value of pi is |   3           |
The value of pi is |   3.1         |
The value of pi is |   3.14        |
The value of pi is |   3.142       |
The value of pi is |   3.1416      |
The value of pi is |   3.14159     |
The value of pi is |   3.141593    |
The value of pi is |   3.1415927   |
The value of pi is |   3.14159265  |
The value of pi is |   3.141592654 |
```

```
dict = { 'Portugal':351, 'France':33, 'UK':44 }
print "International calling codes:  Portugal = +%(Portugal)d, France= +%(France)d, UK=
+%(UK)d" % dict


International calling codes:  Portugal = +351, France = +33, UK = +44
```

Part II

Input

You can get information from:

- The command-line arguments

```
import sys
print "This is program is named", sys.argv[0]
print "We have %d command-line arguments" %
(len(sys.argv)-1)
```

You can get information from:

- The command-line arguments

```
import sys
print "This is program is named", sys.argv[0]
print "We have %d command-line arguments" %
(len(sys.argv)-1)
```

- The standard input

```
answer = raw_input("This is a question:  ")
print "Your answer is", answer
```

You can get information from:

- The command-line arguments

```
import sys
print "This is program is named", sys.argv[0]
print "We have %d command-line arguments" %
(len(sys.argv)-1)
```

- The standard input

```
answer = raw_input("This is a question:  ")
print "Your answer is", answer
```

- From any file
  More on this later

Part III

Branching and Decisions

In Python, the following evaluate to False:

- `None`
- `False`
- `0`, `0L`, `0.0`, `0j`
- `''`, `""`, `[]`, `()`
- `{}`
- User-defined classes defining methods `__nonzero__()` or `__len__()` returning `0` or `False`

Everything else is true

The way to specify an alternate execution in Python is using the `if` construct:

```
if income < 400*14:
  print "You don't have to pay any taxes"
elif income < 5000*14:
  print "You have to pay some taxes"
else:
  print "I wouldn't worry about taxes"
```

Part IV

Exercises

Exercises

Write a program that asks your name and your date of birth and then prints your name alongside your age

Hint: Use the `datetime` module

For the next session

- From the manual
  - Read chapters 8, 9, 10, 11, 12
- Start working of Series 1