### Introduction to Programming in Python

Python is basically a scripting language - it needs an interpreter to run. However, since it has gained a lot of attention lately (plus, my daughter has to learn it and I obviously HAVE to help her), I will start some notes on that here :-p

Since I am from a C-programming background, I will most of the time compare the two languages.

### **Development Environment**

For this, we only need a code editor to write our code and python interpreter installed. For those using Linux, most distributions have this installed by default. For Windows users, you will have to get the installer from here.

I prefer simple code editors, so I recommend Geany. If you want an IDE, pycharm (a commercial software - but has a community edition version available) is not bad. Its interface is VERY similar to Android Studio :-p

There are currently two python versions that is being used python2.7 and python3.x - somehow, python3 brings a lot of changes that render scripts/codes written for python2.7 no longer usable. So, until that is fixed, we will have to choose. Slackware Linux (MY Linux distribution of choice) installs python2.7 by defaut - so, that is what I will be using.

## **Writing Programs in Python**

A few things to note:

- 1. python is like assembly, a line holds a single statement/command (so, no need for ';' like in C)
- a block of codes is presented using the same indentation (so, no need for '{' and '}' pairs like in
   C)
- 3. it supports OOP classes (inheritance,polymorphism,abstraction), exception handling, etc.

to be continued...

## **Coding: Basic User Interface**

#### learn1.py

```
# howto: print text
# howto: get input from user
# howto: display variable
```

```
from datetime import date
import sys
def get input(ask):
 if sys.version_info[0] < 3 or sys.version_info[1] < 4:</pre>
    temp = raw input(ask)
  else:
   temp = input(ask)
  return temp
def get_year():
 year = date.today().strftime("%Y")
  return int(year)
print("This is "+"awesome!")
name = get input("Please enter your name: ")
print("Hello, " + name + "!")
year = get input("Please enter the year you were born: ")
print("You were born in year " + year + "?" )
age1 = get year()-int(year)
print("That means you are " + str(age1) + " years old!")
```

### **Exception Handling**

#### learn1\_exception.py

```
# howto: detect input error (using exception)
from datetime import date
import sys
def get input(ask):
  if sys.version_info[0] < 3 or sys.version_info[1] < 4:</pre>
    temp = raw input(ask)
  else:
    temp = input(ask)
  return temp
def get year():
  year = date.today().strftime("%Y")
  return int(year)
print("This is "+"awesome!")
name = get input("Please enter your name: ")
print("Hello, " + name + "!")
year = get input("Please enter the year you were born: ")
try:
```

```
test = int(year)
print("You were born in year " + year + "?" )
agel = get_year() - test
print("That means you are " + str(agel) + " years old!")
except ValueError :
   print("Is '" + year + "' a valid year?")
```

### **Output Control**

learn1 no newline.py

```
# howto: print text with no newline
# howto: delay execution
# need this to enable python3 print feature in python2
from __future__ import print_function
import sys
import time
print("This... ",end='')
sys.stdout.flush()
time.sleep(1)
print("is... ",end='')
sys.stdout.flush()
time.sleep(1)
print("legend (wait for it)... ",end='')
sys.stdout.flush()
time.sleep(1)
print("ary!")
```

## **Coding: Code Selection**

Branch statement (if-else)

learn2.py

```
# howto: branch statement (selection)
import sys

def get_input(ask):
   if sys.version_info[0] < 3 or sys.version_info[1] < 4:
     temp = raw_input(ask)</pre>
```

```
else:
    temp = input(ask)
  return temp
mark = get input("Enter your mark: ")
mark = int(mark)
if mark > 100 or mark < 0:
  print("That is out of valid range!")
elif mark >= 80 :
  print("Grade : A")
elif mark >= 75 :
  print("Grade : A-")
elif mark >= 70 :
  print("Grade : B+")
elif mark >= 65 :
  print("Grade : B")
elif mark >= 60 :
  print("Grade : B-")
elif mark >= 55 :
  print("Grade : C+")
elif mark >= 50 :
 print("Grade : C")
elif mark >= 45 :
  print("Grade : C-")
elif mark >= 40 :
  print("Grade : D+")
elif mark >= 35 :
  print("Grade : D")
elif mark >= 30 :
 print("Grade : D-")
  print("Grade : F")
```

### **Coding: Code Iteration**

Iterative code (loops)

learn3.py

```
loop = 0
while loop < 100:
  loop = loop + 1
  if loop==9:
     break
elif loop==4:
     continue</pre>
```

```
print(loop)

print("-- Range:")
for loop in range(3):
   print(loop)

print("-- Spell:")
for that in "pisang goreng":
   if that==' ':
      continue
   print(that)
```

# **Coding: Command-line parameters**

learnX read args.py

```
# howto: get command-line text

import sys

print('Number of arguments:'+str(len(sys.argv))+'arguments.')
print('Argument String:'+str(sys.argv));

step=0
for that in sys.argv:
    step = step + 1
    print("#"+str(step)+": "+that)
```

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