Principles of Programming languages

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Lab Assignment -1.

- Problem Statement: Introduction to Basic Python commands.
- Objectives:
  1. To become familiar with the fundamentals of python.
  2. To study syntax of basic constructs in python such as for loop, while, if... else, functions, print, import etc.
- Theory.

1. Python is an interpreted, object-oriented, 3rd Generation high-level programming language with dynamic semantics. It is available in open source & binary formats for all major platforms and can be used & distributed commercially for free.
2. Python is an interpreted high level language that follows the object oriented paradigm.
3. Indentation is important in python in order to define code blocks.

4. Built in data types in python are:

- Text type - str.
- Numeric type - int, float, complex
- sequence types - list, tuple, range
- Mapping type - dict.
- set type - set, frozenset.
- boolean type - bool.
- Binary type - bytes, bytearray, memoryview.

Coding:

1. Implement a program in python for collecting 4 subject marks from user and find out average & display result in grades.

2. Display the table of 5 by using for & while loop in python.

```
def calcGrade():
    Marks = [0,0,0,0]
    average = 0.0
    grade = None

    print("> Please enter the marks for:")
```

```
# PPL Lab Assignment 1, PG43 Jaynam Modi, G3


# 1.Implement program in python for collecting 4 subject
  marks from user and find out average it and display result
  in grades.
# <40: failed
# >40 and <50 : C grade
# 50 and <60 :B grade
# >66 and <70 :A grade
# >70 and < 90: A+grade
# >90 : Excellent grade


def calcGrade():
    marks = [0,0,0,0]
    average = 0.0
    grade = None

    print(" > Please Enter the Marks for : ")

    for a in range(4):
        marks[a] = float(input("\t> Subject {} : ".format(a+1)))
        average = average + marks[a]

    average = average/4

    if average > 90.0:
        grade = "Excellent"
    elif average > 70.0:
        grade = "A+"
    elif average > 60.0:
        grade = "A"
    elif average > 50.0:
        grade = "B"
    elif average > 40.0:
        grade = "C"
    else:
        grade = "Failed"

    print(" > Average : {}".format(average))

    print(" > Grade : {}".format(grade))

calcGrade()


# 2.Display the table of 5 by using for and while loop in
  Python.

x = 5

for i in range(1,11):
    print(" > {} × {} = {}".format(x, i, x*i))

j = 11

while j <= 20:
    print(" > {} × {} = {}".format(x, j, x*j))
    j += 1
```

```
    For a in range(4):
        marks[a] = float(input("\t> Subject
                   {}: ".format(a+1)))
        average += marks[a]

    average = average/4.

    if average > 90:
        grade = "Excellent"
    elif average > 70:
        grade = "A+"
    .....
    else:
        grade = "Failed".

    print("> Average: {}".format(average))
    print("> Grade: {}".format(grade))

calcGrade()

x = 5

for i in range(1,11):
    print("> {} x {} = {}".format(x,i,x*i))

j = 11

while j <= 20:
    print("> {} x {} = {}".format(x,j,x*j))
    j += 1
```

```
u0_a362@localhost:~/github$ python ppl_assignment_1.py
 > Please Enter the Marks for :
        > Subject 1 : 65.4
        > Subject 2 : 75.2
        > Subject 3 : 82.9
        > Subject 4 : 98.6
 > Average : 80.525
 > Grade : A+
 > 5 × 1 = 5
 > 5 × 2 = 10
 > 5 × 3 = 15
 > 5 × 4 = 20
 > 5 × 5 = 25
 > 5 × 6 = 30
 > 5 × 7 = 35
 > 5 × 8 = 40
 > 5 × 9 = 45
 > 5 × 10 = 50
 > 5 × 11 = 55
 > 5 × 12 = 60
 > 5 × 13 = 65
 > 5 × 14 = 70
 > 5 × 15 = 75
 > 5 × 16 = 80
 > 5 × 17 = 85
 > 5 × 18 = 90
 > 5 × 19 = 95
 > 5 × 20 = 100
u0_a362@localhost:~/github$
```

FAQs.

1. Command to run python program:

→ on linux, the command to run a python program is "python filename.py".

2. Explain control structures used in python.

→ selection - used for decisions/ branching/ choosing from 2 or more alternative process flows.

eg: if-elif-else, ~~switch~~. if-else, if-elif, if.

→ iteration - used for looping, i.e. repeating a piece of code based on certain conditions.

eg: for, while

3. Name atleast 3 platforms for python implementation

→ Linux, MacOS, Windows, Android etc.