Lab 3

Variables

Lecturer: Hussien Omer AL _ Baiti

Previous Exercise 3

- Write python Program and it’s algorithm that request user information such as (name , age, phone number) ?

Algorithm

1. Start
2. Read name , age , dep
3. Print the result
4. End

Python Comments

```
name = input("enter your name")
age = input("enter your age")
dep = input("enter your dep")
print("your name is :",name)
print("your age is :",age,"years")
print("your departemnt is :",dep)
```

Creating Variables

- Variables are containers for storing data values.

```
x = 5
y = "John"
print(x)
print(y)
```

Variables name rules

- A variable name must start with a letter or the underscore character.
- A variable name cannot start with a number.
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _).
- Variable names are case-sensitive (age, Age and AGE are three different variables).
- A variable name cannot be any of the python keyword such as (for , print , input ,..etc.).

```
myvar = "John"
my_var = "John"
_my_var = "John"
myVar = "John"
MYVAR = "John"
myvar2 = "John"
```

Variables name rules

- Python allows you to assign values to multiple variables in one line:

```
x, y, z = "Orange", "Banana", "Cherry"
print(x) # x = Orange
print(y) # y = Banana
print(z) # z = Cherry
```

One Value to Multiple Variables

- And you can assign the same value to multiple variables in one line:

```
x = y = z = "Orange"
print(x) # x = Orange
print(y) # y = Orange
print(z) # z = Orange
```

Output Variables

- The Python print() function is often used to output variables.

```
x = "Python"
y = "is"
z = "Programming"
o = "Language"
print(x, y, z , o)
```

- Output

```
C:\Users\SuperLap\PycharmProjects\pyt
Python is Programming Language
```

Python Data Types

- In programming, data type is an important concept.
- Variables can store data of different types, and different types can do different things. Python has the following data types by default :

Text Type:	`str`
Numeric Types:	`int`, `float`, `complex`
Sequence Types:	`list`, `tuple`, `range`
Mapping Type:	`dict`
Set Types:	`set`, `frozenset`
Boolean Type:	`bool`
Binary Types:	`bytes`, `bytearray`, `memoryview`
None Type:	`NoneType`

Cont..

- You can get the data type of any object by using the type() function:

```
name = "ali"
age = 20
average = 90.5
print (type(name))
print (type(age))
print (type(average))
```

Output

```
C:\Users\SuperLap\PycharmPr
<class 'str'>
<class 'int'>
<class 'float'>
```

Exercise 1

- Write python Program and it’s algorithm that request user age and add 5 years to it ?

Algorithm

1. Start
2. Read age
3. init y = 5
4. Z = age + y
5. Print (z)
6. end

1. Start
2. Read age
3. Print (age + 5)
4. end

Casting

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None Type:	`NoneType`

Casting

```
age = input("enter your age")
print( age + 5 )
```

- Why error ?
- Why it’s called you can concatenate **int** to **str** ?

```
C:\Users\SuperLap\PycharmProjects\pythonProject\venv\Sc
enter your age20
Traceback (most recent call last):
  File "C:\Users\SuperLap\PycharmProjects\pythonProject
    print( age + 5 )
TypeError: can only concatenate str (not "int") to str
```

Cont..

- Because each value that user enter it python language translate into string value, so if user enter number value should be convert it into it’s original type.. this operation called **Casting**

```
age = int(input("enter your age"))
print( age + 5 )
```

```
C:\Users\SuperLap\Pych
enter your age20
25
```

Output

Cont..

```
x = int(1)    # x will be 1
y = int(2.8)  # y will be 2
z = int("3")  # z will be 3
```

Example1

```
x = float(1)     # x will be 1.0
y = float(2.8)   # y will be 2.8
z = float("3")   # z will be 3.0
w = float("4.2") # w will be 4.2
```

Example2

```
x = str("s1") # x will be 's1'
y = str(2)    # y will be '2'
z = str(3.0)  # z will be '3.0'
```

Example3

Home Work 1

- Write python Program and it’s algorithm to calculates (area of a Circle , Rectangle, Triangle, Square ,and Rhombus)

Notes : user read all values of inputs


GOOD LUCK