

Data Structures Assignment

Q1. How do you comment code in Python? What are the different types of comments?

The comments can be given in python using '#' sign.

There are different types of comments in python:

1. Single line comment - Single line comment can be given by using '#' sign
2. Multiline comment - Multiline comments can be given by using '''content'''(triple quotes)

Q2. What are variables in Python? How do you declare and assign values to variables?

1. Variable is location used to store data in a memory temporarily.
2. We don't need to specify the type of variable in python because Python is "dynamically-typed" language.
3. num = 4 # declaration and assigning a value to a variable

Q3. How do you convert one data type to another in Python?

1. We can convert one data type into another data type in Python and it is called as type-casting
2. We can use the built-in function of various data types to convert one data type to another
3. To convert any data type following built-in functions are used :
 - A. int() - to convert in 'integer' data type
 - B. float() - to convert in 'float' data type
 - C. str() - to convert in 'string' data type
 - D. bool() - to convert in 'boolean' data type
 - E. complex() - to convert in 'complex' data type

Q4. How do you write and execute a Python script from the command line?

1. To execute a Python script from the command line, Python command is used.
2. First, we have to type word 'python' followed by 'first_script.py' and press ENTER.

Q5. Given a list my_list = [1, 2, 3, 4, 5], write the code to slice the list and obtain the sub-list [2, 3].

```
In [3]: # Code
my_list = [1,2,3,4,5]
print(my_list[1:3])
```

```
[2, 3]
```

Q6. What is a complex number in mathematics, and how is it represented in Python?

1. Complex numbers in mathematics is defined in the form of $x+iy$, where x and y are real numbers and $i = \sqrt{-1}$
2. In Python, complex number is represented in the form of $x+jy$, where x and y are real numbers and $j = \sqrt{-1}$ and the real part and imaginary parts can be accessed by `real()` and `imag()` functions respectively.

Q7. What is the correct way to declare a variable named age and assign the value 25 to it?

1. The correct way to declare a variable named age and assign the value 25 to it is as follows :
A. --> `age = 25`
2. In python, the declaration and assignment can be done simultaneously and we don't have to specify the type of data type we are using because python is 'dynamically-typed' language.

Q8. Declare a variable named price and assign the value 9.99 to it. What data type does this variable belong to?

```
In [7]: # Code -->

# Declaration of variable named price

price = 9.99 # Assign a value to the variable named price
# Data type of the above variable belongs to float, it is considered as value 10
# we are checking the data type, the data type will be of the above variable is f
```

Q9. Create a variable named name and assign your full name to it as a string. How would you print the value of this variable?

```
In [11]: name = 'Yogita Jain'
# Value of variable
type(name)
```

```
Out[11]: str
```

Q10. Given the string "Hello, World!", extract the substring "World".

```
In [8]: string = "Hello, World!"  
print(string[7:12])
```

World

Q11. Create a variable named "is_student" and assign it a boolean value indicating whether you are currently a student or not.

```
In [12]: is_student = 1  
print("Currently, I am a Student : {}".format(is_student))
```

Currently, I am a Student : 1