# Chapter-3 Solution
# Brief Overview of Python

1. Which of the following identifier names are invalid and why?

| a) | Serial_no. | e) | Total_Marks |
|----|-----------|----|-------------|
| b) | 1st_Room | f) | total-Marks |
| c) | Hundred$ | g) | _Percentage |
| d) | Total Marks | h) | True |

Ans:

| a) | Serial_no. | Invalid | We cannot use any punctuation mark in identifier name |
|----|-----------|---------|-------------------------------------------------------|
| b) | 1st_Room | Invalid | Variable name cannot begin with number |
| c) | Hundred$ | Valid | We can use '$'anywhere in variable name except at the beginning. |
| d) | Total Marks | Invalid | We cannot provide space between the names of variable. |
| e) | Total_Marks | Valid | We can use '_' anywhere in variable name. |
| f) | total-Mark | Invalid | We cannot use '-' in variable name as it is treated as system defined identifier. |
| g) | _Percentage | Valid | A variable name can begin with '_'. |
| h) | True | Invalid | System defined identifier |

2. Write the corresponding Python assignment statements:
   a. Assign 10 to variable length and 20 to variable breadth.
      Ans:   length = 10
             Breadth = 20
   b. Assign the average of values of variables length and breadth to a variable sum.
      Ans: sum = (length + breadth)/2
   c. Assign a list containing strings 'Paper, 'Gel Pen', and 'Eraser' to variable stationary.
      Ans:   stationary = ["paper", "Gel Pen", "Eraser"]
   d. Assign the strings 'Mohandas', 'Karamchand ', and 'Gandhi' to variable first, middle and last.
      Ans:   first = "Mohandas"        OR    first = 'Mohandas'
             Middle = "Karamchand"   OR    middle = 'Karamchand'
             last = "Gandhi"             OR    last = 'Gandhi'

e. Assign the concatenated value of string variables first, middle and last to variable fullname. Make sure to incorporate blank spaces appropriately between different parts of names.

Ans:   fullname = first + ' ' + middle + ' ' + last

3. Which data type will be used to represent the following data values and why?

a. Number of months in a year.

Ans: 'int' data type will be used because number of months is always an integer or whole number.

b. Resident of Delhi or not

Ans:   'bool' (boolean) data type is used because Resident of Delhi is represented either in True (yes) or False (no).

c. Mobile number

Ans:   'string' data type will be used. Although Mobile no is number but is taken as string because it is often used for ID not for calculation.

d. Pocket money

Ans: 'int' data type will be used because pocket money is always an integer value.

e. Volume of a sphere

Ans: 'float' data type will be used because volume of sphere can be a floating number or value with decimal point.

f. Perimeter of a square

Ans: 'float' data type will be used because Perimeter of a square can be a floating number or value with decimal point.

g. Name of the student

Ans: 'string' data type will be used because Name of the student is always a string or text.

h. Address of the student

Ans: 'string' data type will be used because Address of the student can have alphanumeric values which are taken as string.

4. Give the output of the following when num1 = 4, num2 = 3, num3 = 2

a. num1+=  num2 + num3

Ans: it will not display any output but value of num1 will become 9 because num1+= num2 + num3 is similar to num1 = num1 + num2 + num3

b. print(num1)

Ans: Will display 9 which is value of num1.

c. num1 = num1 ** (num2 + num3)

Ans: it will not display any output but value of num1 will be updated to 59049 because num1 = num1 ** (num2 + num3) is

num1 = 9**(3+2)

num1 = 9**5

num1 = 9*9*9*9*9

num1 =59049

d. print(num1)

Ans: will display 59049 as num1.

e. num1**= num2 + c

Ans: it will generate error because c is undefined.

f. num1 = '5' +'5'

Ans: it will not display any output but num1 will be updated to 55 because

num1 = '5' +'5'

num1 = 55 (because characters are concatenated always not added)

g. print(num1)

Ans: will display 55 as value of num1.

h. print(4.00/(2.0 + 2.0))

Ans: will display 1.0 because

4.00/(2.0 + 2.0)

= 4.00/(4.0)

= 1.0

i. num1 = 2 + 9*((3*12)-8)/10

Ans: will not display any output but num1 will be updated to 27.2 because

num1 = 2 + 9*((3*12)-8)/10

num1 = 2 + 9*(36-8)/10

num1 = 2 + 9*(28)/10

num1 = 2 + 252/10

num1 = 2 + 25.2

num1 = 27.2

j. print(num1)

Ans: will display 27.2 as value of num1.

k. num1 = float(10)

Ans: will not display output but num1 will be updated to 10.0 because

In num1 = float(10) 10 will be converted to 10.0 by float method.

float() is a method in python which returns a floating point value from a number or string.

l. print(num1)

Ans: will display 10.0

m. num1 = int('3.14')

Ans: will not display output but generate error because passing 3.14 as string literal will be unidentified by compiler.

n. print(num1)

Ans: display Error as mentioned in answer no n.

o. print(10!=9 and 20>=20)

Ans: Will display True as output because both conditions 10 != 0 and 20 >= 20 are True.

p. print(5 % 10 + 10 < 50 and 29 <= 29)

Ans: will return True because

print (5 % 10 + 10 < 50 and 29 <= 29)

= print (5 + 10 <50 and 29 <=29)

= print (15 <50 and 29<=20)

```
= print (True and 29<=20)
= print (True and True)
= True
```

5. categorize the following as syntax error, logical error or runtime error:
   a. 25 / 0

   Ans: Runtime Error (Division by Zero)

   b. num1 = 25; num2 = 0; num1/num2

   Ans: Runtime Error (Division by Zero)

6. Write a Python program to calculate the amount payable if money has been lent on simple interest. Principal or money lent = P, Rate = R% per annum and Time = T years. Then Simple Interest (SI) = (P x R x T)/100.

   Amount payble = Principal + SI.

   P, R and T are given as input to the program.

   Ans:

   ```
   P = int(input("Enter Principal Amount or Money lent"))
   R= int(input("Enter Rate of Interest"))
   T = int(input("Enter Time Period"))
   SI = (P*R*T)/100
   amt = P + SI
   print("Amount Payable is = " , amt)
   ```

7. Write a program to repeat the string "GOOD MORNING" n times. Here n is an integer entered by the user.
   Ans:

   ```
   n = int(input("How many times you want to repeat message"))
   for num in range(n):
       print("GOODMORNING")
   ```

8. Write a program to find the average of 3 numbers.
   Ans:

   ```
   num1 = int(input("Enter Num1")
   num2 = int(input("Enter Num2")
   num3 = int(input("Enter Num3")
   average = (num1 + num2 + num3 )/3
   print("Average = ", average)
   ```

9. Write a program that asks the user to enter one's name and age. Print out a message addressed to the user that tells the user the year in which he/she will turn 100 years old.

   Ans:

   ```
   from datetime import date
   dates = date.today()
   name = input("Enter your Name")
   age = int(input("Enter your Age"))
   diff = 100 - age
   result_year = dates.year + diff
   print("You will turn 100 years old in ", result_year)
   ```

   **(To know more please watch my youtube channel 'techtipnow')**

10. What is the difference between else and elif construct of if statement?

    Ans:
    To implement conditions in a program we always use if statement. We can use single if statement or multiple if statement as per our condition.
    When we want to implement multiple if statement than we use if…elif…else statement in python. Here 'eleif' is short form of 'else if' which is used in other languages. We use elif statement to implement condition(s). If the condition for if is False, it checks the condition of the next elif block and so on. else part can be used with 'if' or 'if…elif' and is only executed when none of the condition(s) is true.

11. Find the output of the following program segments:
    a. for I in range (20,30,2):
          print(i)

       Ans: will display output
       20
       22
       24
       26
       28

    b. country = 'INDIA'
          for i in country:
              print (i)

Ans: will display output
I
N
D
I
A

c. i=0; sum = 0
while i < 9 :
     if i % 4 == 0:
         sum = sum + i
     i = i + 2
print (sum)

Ans: will display output 12