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I N D E X

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Machine Exercise-1

Q1. Explain the various steps to install Python.

Soln:- Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Python language is popular for data science and analytics. Many data processing software use Python. Many Python libraries are used in machine learning projects. Here is install Python on windows machine.

It is important to download latest version from Python official site only.

Step: 1:- Navigate to Python site

<https://www.python.org/download> for downloading latest version.

Step: 2:- → Click on button "Download Python 3.10.2"

Step: 3:- → After clicking on "Download Python 3.10.2" site will download exe file to download folder section.

Step: 4:- → Double click on exe file "python-3.10.2.exe" and Run the Setup.

STEP:5:- Select check box "Add Python 3.10 to Path" and then click on Install Now button.

STEP:6:- Wait for installer to complete installation (It will take couple of minutes for installation).

STEP:7:- System will give successful message along with path ~~in~~ limitation (which can be ignored). Click on close button.

STEP:8:- To start coding in Python or to write first program we can use default editor "IDLE" is a default editor that comes with Python.

To open default editor type IDLE in Windows "Type here to search" section and hit Enter system will display below Editor.

D2. Explain the various data types in python and how will you find the type of the data type.

Ans : - The data stored in the memory can be of many types. Python has six basic data types which are as follows:

1. Numeric.
2. String.
3. List.
4. Tuple.
5. Dictionary.
6. Boolean.

1. Numeric : - Numeric data can be broadly divided into integers and real numbers. Integers can themselves be positive or negative. Integers is a immutable. Floating point numbers contain a decimal and a fractional part. floating point is immutable.

2. String : - A String in python can be a series or a sequence of alphabets, numbers and special characters. Single quotes or double quotes are used to represent strings. Strings are immutable.

3. Lists :- List is a collection of data ~~sits~~ sits between commas and enclose them within square brackets ([]). Lists are mutable.

4. Tuple :- A tuple is used to store sequence of items and a collection of data sits between(). Tuple is immutable.

5. Dictionary :- A dictionary is an unordered collection of key-value pairs. Items in dictionary are enclosed in the curly-braces {} and separated by the comma(,). Dictionary is mutable.

6. Boolean :- Data is stored as True and False in Python. When This True and False data is known as Boolean data and the data type which stores this Boolean data are known as Boolean data types. Boolean data types are immutable.

Type() function in Python programming language is a built-in function which returns the datatype of any arbitrary object. Type() function can take anything as an argument and return its datatype, such as integers, strings, dictionaries, lists etc.

Q3.

OUTPUT:-

Enter the first number = 3.1

Enter the second number = 4.2

After Swapping the numbers:

4.2 3.1

The integer value of first number = 3

Round off value of second number = 4

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3. write a program to swap two floating point numbers and convert the first number to int and find the round off value of second number.

a = eval(input("Enter the first number = "))

b = eval(input("Enter the second number = "))

x = a

y = b

a = a+b

b = a-b

a = a-b

Print ("After swapping the numbers : ")

print(a, b)

x = int(x)

Print ("The integer of first number = "; x)

Print ("Round off value of second number = ", round(y))

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Q4.

OUTPUT

(a) $(2xy - 9y/2xy^3) - (4yx^2/2y)$:

Enter the value = 10

Enter the value = 1

-19.9

(b) OUTPUT

$\log(x) - \log(y)$:

Enter the value = 10

Enter the value = 1

1

Q4. write a program to calculate the following expression and show the usage of importing module math in all ways in program.

$$(a) (2xy - 9y/2x^3) - (4yx^2/2y)$$

$$(b) \log(x) - \log(y)$$

(a) code :-

```
import.math
x= eval(input("enter the value = "))
y= eval(input("enter the value = "))
a= (((2*x*y)-(9*y))/(2*x*pow(y,3)))-
(4*y*pow(x,2))/(2*y))
print(a)
```

(b) code :-

```
import.math
x= eval(input("Enter the value = "))
y= eval(input(" Enter the value = "))
b= math.log(x,10)-math.log(y,10)
print(b)
```

Q5.

OUTPUT :-

Enter the value of string = "Ram"

3

Ram

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Q5. Write a program to calculate the length of a string and convert the given lowercase into uppercase if length of string is greater or equal to 10 otherwise convert into lowercase.

Code :-

```
String = eval(input("enter the value of string = "))
a = len(string)
print(a)
if (a >= 10):
    print(string.upper())
else:
    print(string.lower())
```

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Q6.

OUTPUT :-

Enter the value of 1st string = 'Sumit'

Enter the value of 2nd string = 'Sum'

Sumit is the largest string.

Q6. write a program to find larger between to
two strings.

Code :-

```
String1 = eval(input("Enter the value of 1st string = "))  
String2 = eval(input("Enter the value of 2nd string = "))  
a = len(String1)  
b = len(String2)  
if (a > b):  
    print(String1, "is the largest string")  
elif (a == b):  
    print("Both strings are of same size")  
else:  
    print(String2, "is the largest string")
```

Q7.

OUTPUT :-

Enter the value of string = 'Shyam'

Shyaming.

Q7. write a program to adding at the end of given string, the length should be at least 3. If the given string already ends with ing then add ly. If the length is less than 3 leave it unchanged.

⇒ Code:-

```

String = eval(input ("Enter the value of string = "))
a = len(string)
if (a < 3):
    Print (string)
elif (string [-a+2:] == 'ing'):
    String += 'ly'
else:
    String += 'ing'
print (String)

```

Q8. write a program to make simple calculator.

→

```
def add (num1, num2):
```

```
    return num1 + num2
```

```
def subtract (num1, num2):
```

```
    return num1 - num2
```

```
def multiply (num1, num2):
```

```
    return num1 * num2
```

```
def divide (num1, num2):
```

```
    return num1 / num2
```

```
Print ("please select operation-\n")
```

```
"1. Add \n")
```

```
"2. Subtract \n")
```

```
"3. multiply \n")
```

```
"4. Divide \n")
```

```
select = int(input("Select operation from 1,2,3,4: "))
```

```
number_1 = int(input("Enter first number: "))
```

```
number_2 = int(input("Enter second number: "))
```

```
If select == 1:
```

```
print (number_1, "+", number_2, "= ", add  
(number_1, number_2))
```

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Q8.

OUTPUT:-

Please select operation:-

1. Add
2. Subtract
3. Multiply
4. Divide

Select operations from 1,2,3,4: 1

Enter first number: 15

Enter second number: 14

$$15 + 14 = 29$$

elif select == 2:

 print (number_1, "-", number_2, "=", Subtract(number_1,
 number_2))

elif select == 3:

 print (number_1, "*", number_2, "=", multiply(number_1,
 number_2))

elif select == 4:

 print (number_1, "/", number_2, "=", divide(number_1,
 number_2))

else:

 print ("Invalid input")

Q9.

OUTPUT :-

Enter the number : 45

Entered Number is : 45

45 is divisible by 5 or 10

Q9. write a program to test whether a number
is divisible by 5 and 10, or by 5 or 10.

```
→ num = int(input('Enter the number:'))
    print('Entered Number is: ', num)
    if (num % 5 == 0 and num % 10 == 0):
        print(num, 'is divisible by both 5 and 10')
    if (num % 5 == 0 or num % 10 == 0):
        print(num, 'is divisible by 5 or 10')
    else:
        print(num, 'is not divisible either by 5 or 10')
```

Q10.

OUTPUT

Enter the marks of first Subject : 76

enter the marks of second Subject : 56

enter the marks of third subject : 84

total marks obtained 216.0 out of 300

percentage = 72.0

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Q10. write a program to accept marks of 3 subjects from user and print accordingly,

if marks	Grade
≥ 90	A
$\geq 80 \text{ and } \leq 89$	B
$\geq 70 \text{ and } \leq 79$	C
< 70	D

⇒

```
Subject1 = float(input("enter the marks of first subject:"))
Subject2 = float(input("enter the marks of second subject:"))
Subject3 = float(input("enter the marks of third subject:"))
Sum = Subject1 + Subject2 + Subject3
```

P

```
per = Sum/3
```

```
print("total marks obtained", Sum, "out of 300")
```

```
print("percentage = ", per)
```

```
if per >= 90
```

```
    print("A")
```

```
else:
```

```
    if per >= 80 and per <= 89:
```

```
        print("B")
```

```
else:
```

```
    if per >= 70 and per <= 79:
```

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Print("C")

else:

if per<70:

print("D")

else:

print("fail")

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Mr.

OUTPUT

enter the salary: 25000

Sales

Commission is 10.

enter the salary: 3000

Sales

Commission is 0.

Q11. write a program to accept sales from the user and calculate Commission accordingly;

Sales	Commission
≥ 30001	15
22001 - 30000	10
12001 - 22000	7
5000 - 12000	5
0 - 5000	0

\Rightarrow

```
Sales = int(input("enter the salary : "))
Print ("Sales")
```

```
if Sales  $\geq 30001$ :
    Print ("Commission is 15")
else:
    if Sales  $\geq 22001$  and Sales  $\leq 30000$ :
        Print ("Commission is 10")
    else:
        if Sales  $\geq 12001$  and Sales  $\leq 22000$ :
            Print ("Commission is 7")
        else:
            if Sales  $\geq 5000$  and Sales  $\leq 12000$ :
                Print ("Commission is 5")
            else:
                if Sales  $\geq 0$  and Sales  $\leq 5000$ :
                    Print ("Commission is 0")
```