K. J. Somaiya College of Engineering, Mumbai-77

Batch:C7   Roll No.:27
Experiment / assignment / tutorial No.
Grade: AA / AB / BB / BC / CC / CD /DD
Signature of the Staff In-charge with date

TITLE: Write a program to demonstrate use of basic data types in Python.
AIM: 1) Program to calculate salary of an employee
    2) Program to perform string operations.
OUTCOME: Student will be able to
    CO1: Formulate problem statement and develop the logic (algorithm/flowchart) for its solution.
    CO2: Understand the concepts of data structures in python.

Use of input output function, arithmetic operators in python and different operations on string.

Resource Needed: Python IDE

Books/ Journals/ Websites referred:

1. Reema Thareja, *Python Programming: Using Problem Solving Approach*, Oxford University Press, First Edition 2017, India
2. Sheetal Taneja and Naveen Kumar, *Python Programming: A modular Approach*, Pearson India, Second Edition 2018,India
3. https://www.geeksforgeeks.org/python-strings/?ref=lbp

Theory:

How the input function works in Python:
- When input() function executes program flow will be stopped until the user has given an input.
- The text or message displayed on the output screen to ask a user to enter input value is optional i.e. the prompt, will be printed on the screen is optional.
- Whatever you enter as input, the input function converts it into a string. If you enter an integer value still input() function convert it into a string. You need to explicitly convert it into an integer in your code using typecasting.

    Example:
    Name=input("Enter your name")
    print('Hello, ' + Name)

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Output:-
Enter your name Mahesh
Hello, Mahesh

Python Arithmetic Operators:
Assume variable **a** holds 10 and variable **b** holds 20, then

Operator	Description	Example
+ Addition	Adds values on either side of the operator.	a + b = 30
- Subtraction	Subtracts right hand operand from left hand operand.	a – b = -10
* Multiplication	Multiplies values on either side of the operator	a * b = 200
/ Division	Divides left hand operand by right hand operand	b / a = 2
% Modulus	Divides left hand operand by right hand operand and returns remainder	b % a = 0
** Exponent	Performs exponential (power) calculation on operators	a**b =10 to the power 20
//	Floor Division − The division of operands where the result is the quotient in which the digits after the decimal point are removed. But if one of the operands is negative, the result is floored, i.e., rounded away from zero (towards negative infinity) −	9//2 = 4 and 9.0//2.0 = 4.0, -11//3 = -4, -11.0//3 = -4.0

Strings:
We can create string simply by enclosing characters in quotes. Python treats single quotes the same as double quotes. Creating strings is as simple as assigning a value to a variable.

Example:-
var1= "Hello World"
var2="Python Programming"

Input:-
a="KJSCE"
b="student"

String Special Operators:

Assume string variable **a** holds 'Hello' and variable **b** holds 'Python', then

Operator	Description	Example	Output
+	Concatenation - Adds values on either side of the operator	a + b will give HelloPython	a + b will give KJSCE student
*	Repetition - Creates new strings, concatenating multiple copies of the same string	a*2 will give -HelloHello	a*2 will give KJSCEKJSCE
[]	Slice - Gives the character from the given index	a[1] will give e	a[1] will give J
[:]	Range Slice - Gives the characters from the given range	a[1:4] will give ell	a[1:4] will give JCS
in	Membership - Returns true if a character exists in the given string	H in a will give 1	J in a will give True

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not in	Membership - Returns true if a character does not exist in the given string	M not in a will give 1	s not in a will give True

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String Methods:

Input:

```
a="kjsce"
```

Function Name	Description	Output
capitalize()	Converts the first character of the string to a capital (uppercase) letter	Kjsce
casefold()	Implements caseless string matching	kjsce
center()	Pad the string with the specified character.	kjsce
count()	Returns the number of occurrences of a substring in the string.	1
encode()	Encodes strings with the specified encoded scheme	b'kjsce'
endswith()	Returns "True" if a string ends with the given suffix	True

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Function Name	Description	Output
expandtabs()	Specifies the amount of space to be substituted with the "\t" symbol in the string	kjsce
find()	Returns the lowest index of the substring if it is found	2
format()	Formats the string for printing it to console	kjsce
format_map()	Formats specified values in a string using a dictionary	kjsce
index()	Returns the position of the first occurrence of a substring in a string	0
isalnum()	Checks whether all the characters in a given string is alphanumeric or not	True
isalpha()	Returns "True" if all characters in the string are alphabets	True
isdecimal()	Returns true if all characters in a string are decimal	False
isdigit()	Returns "True" if all characters in the string are digits	False

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Function Name	Description	Output
isidentifier( )	Check whether a string is a valid identifier or not	True
islower()	Checks if all characters in the string are lowercase	True
isnumeric()	Returns "True" if all characters in the string are numeric characters	False
isprintable( )	Returns "True" if all characters in the string are printable or the string is empty	True
isspace()	Returns "True" if all characters in the string are whitespace characters	False
istitle()	Returns "True" if the string is a title cased string	False
isupper()	Checks if all characters in the string are uppercase	False
join()	Returns a concatenated String	-kjsce-
ljust()	Left aligns the string according to the width specified	kjsce

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Function Name	Description	Output
lower()	Converts all uppercase characters in a string into lowercase	kjsce
lstrip()	Returns the string with leading characters removed	kjsce
maketrans()	Returns a translation table	{107: 115, 106: 99}
partition()	Splits the string at the first occurrence of the separator	('kj', 's', 'ce')
replace()	Replaces all occurrences of a substring with another substring	kjjce
rfind()	Returns the highest index of the substring	4
rindex()	Returns the highest index of the substring inside the string	2
rjust()	Right aligns the string according to the width specified	kjsce
rpartition()	Split the given string into three parts	('kj', 's', 'ce')
rsplit()	Split the string from the right by the specified separator	['kj', 'ce']

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Function Name	Description	Output
rstrip()	Removes trailing characters	kjsc
splitlines()	Split the lines at line boundaries	['kjsce']
startswith()	Returns "True" if a string starts with the given prefix	True
strip()	Returns the string with both leading and trailing characters	jsce
swapcase()	Converts all uppercase characters to lowercase and vice versa	KJSCE
title()	Convert string to title case	Kjsce
translate()	Modify string according to given translation mappings	kjsce
upper()	Converts all lowercase characters in a string into uppercase	KJSCE
zfill()	Returns a copy of the string with '0' characters padded to the left side of the string	0000000kjsce

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2) a) Create a variable and assign it the string "Python programming"
   b) Access the character "i" from the variable by index and print it
   c) Find the length of the string
   d) Print the slice "Python" from the variable
   e) Print the slice "program" from the variable
   f) Get the string "thing" from the variable
   g) Convert string into uppercase.
    h) Create another variable and assign it the string "is interesting". Now concatenate
       both the strings
   i) Apply different string methods given in table.

Implementation details:

Problem Definition:

1) Write a python program to calculate salary of an employee given his basic pay (to be
entered by user), HRA = 10 percent of basic pay, TA = 5 percent of basic pay. Define
HRA and TA as constants and use them to calculate the salary of the employee.

INPUT:

```
basic_pay=int(input("enter  your  basic  salary"))    #input=basic
salary
HRA=0.10*basic_pay                                     #HRA is 10% of
basic salary
TA=0.05*basic_pay                                      #TA is 5% of the
basic pay
salary=basic_pay+HRA+TA                                #final amount=
basic sal+HRA + TA
print("the final amount is ", salary)                 #output= final
amount
```

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Input:

```
a= "Python Programming"  #a
print(a[15]) #b
print(a.count) #c
print(a[:6]) #d
print(a[7:14]) #e
print(a[2:4] + a[15:]) #f
print(a.upper()) #g
b=" is interesting" #h
print(a+b)    #i
```

Output(s):
1)

```
enter your basic salary10000
the final amount is  11500.0
```

2)

```
<built-in method count of str object at 0x00000206500D66F0>
Python
Program
thing
PYTHON PROGRAMMING
Python Programming is interesting
PS C:\Users\Admin>
```

Conclusion:

Post Lab Descriptive Questions:-

1. **Which data type will you use to represent the following data values?**
   a. **Number of days in a year**
      Ans.Integer
   b. **The circumference of a circle**
      Ans. Float
   c. **Distance between moon and earth**
      Ans. Long
   d. **Whether you will go for a trip?**
      Ans. String
   e. **Name of your favourite celebrity**

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Ans. String