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1.What are the key features of Python?

- 1) python is an interpreted language.
- 2) Python is object oriented language and high level programming language.
- 3) It is simple to Debug.
- 4) Programmer friendly language.
- 5) It is Dynamically type language (No need to declare the data type of variables)
- 6) Python is compatible with different platform like Windows, Linux, Mac, Raspberry pi

2.What are the Data Types in Python?

- There are 7 datatypes in python
- 1) Numerical: int, float, complex
 - 2) Text: str
 - 3) Sequence: list, tuple, range
 - 4) Mapping: dict
 - 5) Seq_types: set, frozenset
 - 6) Boolean Types: True, False
 - 7) Binary: bytes, bytearray

3.What are local variables and global variables in Python?

local variable : We can defined the variables inside the function.

global variable : We can defined the variables outside the function.

4.How do you write comments in python? And Why Comments are important?

- 1) In python we use the hash symbol(#) to write a single line comment.
- 2) Also, we use the triple quotes("""") to write a multiline comment.
using comments within your python programs more readable for humans, including your future self.
i.e., Increasing readability
Explaining the code to others
Understanding the code easily after a long-term
Including resources

Re-using the existing code

5.How to comment on multiple lines in python?

we use the triple quotes("""") to write a multiple line comment.

6.What do you mean by Python literals?

Literals in python is defined as the raw data assigned to variables or constants while programming.

we mainly have five types of literals which includes:

string literals

numeric literals

boolean literals

literals collections

and a special literal None

7.What are different ways to assign value to variables?

There are two ways to assign the values to variables:

1) Assigning single value to multiple variables

for example:

```
x=50
```

```
y=50
```

```
z=50
```

```
print(f'x={x},y={y},z={z}')
```

```
or x=y=z=50
```

2) Assigning Multiple values to multiple variables

for example:

```
x=100
```

```
y=200
```

```
z="python"
```

```
print(f'x={x},y={y},z={z}')
```

8.What are the Escape Characters in python?

1) \' : This represent a single quote

2) \" : This represent a double quote

3) \n : This represent a newline is used to write words in a new separate line

4) \r : This represent a carriage return

5) \t : This represent a tab is used to get space between the word

6) \b : This represent a backspace is used to remove the space between the words

7) \\ : This represent a backslash is used to print ta single backslash

9. Which are the different ways to perform string formatting? Explain with example.

1) Formatting with format() string method >> .format()

For example:

```
a=100
```

```
b=200
```

```
c=a+b
```

```
print("Addition of {} and {} is {}".format(a,b,c))
```

2) Formatting with f-string >> Leading f char

For example:

```
a=100
```

```
b=200
```

```
c=a*b
```

```
print(f"multiplication of {a} and {b} is {c}")
```

3) Formatting with % operators

%d for integer

%f for float

%s for string

For example:

```
a=10
```

```
b=20
```

```
c=a+b
```

```
print("addition of %d and %d is %d" %(a,b,c))
```

10. Write a program to find the length of the string "machine learning" with and without using len function.

In [7]:

```
#with len function:
string="machine learning"
print("length of string:",len(string))
```

```
# without len funtcion
count=0
str="machine learning"
count=0
for i in str:
    count=count+1
print("length of string:",count)
```

```
length of string: 16
```

```
length of string: 16
```

11. Write a program to print every character of a string entered by the user in a new line using a loop

```
In [2]: string=input("Enter the string:")  
for i in string:  
    print(i)
```

Enter the string:shubhangi

s
h
u
b
h
a
n
g
i

12. Write a program to check if the word 'orange' is present in the "This is orange juice".

```
In [3]: string="This is orange juice"  
substring="orange"  
if substring in string:  
    print(f"{substring} is present in a given string")  
else:  
    print(f"{substring} is not present in a given string")
```

orange is present in a given string

13. Write a program to find the number of vowels, consonants, digits, and white space characters in a string.

```
In [10]: str=input("Enter the string:")
vowels=0
consonants=0
digit=0
spaces=0

for i in range(0,len(str)):
    if ((str[i]=='a'or str[i]=='e'or str[i]=='i'or str[i]=='o'or str[i]=='u')):
        vowels=vowels+1
    elif((str[i] >= 'a'and str[i] <= 'z')):
        consonants = consonants + 1
    elif( str[i] >= '0' and str[i] <= '9'):
        digit = digit + 1
    elif (str[i] == ' '):
        spaces= spaces+ 1

print("Vowels:",vowels)
print("Consonants:",consonants)
print("digit:",digit)
print("spaces:",spaces)
```

Enter the string:i have completed bsc statistic in 2020

Vowels: 10

Consonants: 18

digit: 4

spaces: 6

14. Write a Python program to count Uppercase, Lowercase, special character, and numeric values in a given string.

```

In [6]: str1=input("Enter the string:")
        Uppercase=0
        Lowercase=0
        special_character=0
        numeric_values=0
        for i in range(0,len(str1)):
            if ((str1[i]>="A" and str1[i]<="Z")):
                Uppercase=Uppercase+1
            elif (str1[i]>="a" and str1[i]<="z"):
                Lowercase=Lowercase+1
            elif (str1[i]>='0'and str1[i]<='9'):
                numeric_values+=1
            else:
                special_character+=1
        print("uppercase:",Uppercase)
        print("lowercase:",Lowercase)
        print("numeric_values:",numeric_values)
        print("special_character:",special_character)

```

```

Enter the string:shubhangiDHIKALE@1999
uppercase: 7
lowercase: 9
numeric_values: 4
special_character: 1

```

15. Write a program to make a new string with all the consonants deleted from the string "Hello, have a good day".

```

In [18]: string="Hello, have a good day"
        s1=" "
        v=("a","e","i","o","u",","," ")
        for i in string:
            if i in v:
                s1=s1+i
        print(s1)

```

```

eo, ae a oo a

```

16. Write a Python program to remove the nth index character from a non-empty string.

```
In [19]: string=input("Enter the string:")
n=int(input("Enter the index character:"))
new_str=""
for char in range(0,len(string)):
    if (char!=n):
        new_str=new_str+string[char]
print(new_str)
```

Enter the string:shubhangi
Enter the index character:5
shubhngi

17. Write a Python program to change a given string to a new string where the first and last characters have been exchanged.

```
In [50]: str1=input('Enter the string:')
def swap(str1):
    first_char=str1[0]
    last_char=str1[-1]
    swapped_str=last_char+str1[1:-1]+first_char
    print(swapped_str)
swap(str1)
```

Enter the string:python
nythop

18. Write a Python program to count the occurrences of each word in a given sentence

```
In [82]: word="we are learning python and data science and machine learning"
s1=word.split()
print(s1)
for i in s1:
    s2=s1.count(i)

    print(f'count of word "{i}" in list is:',s2)
```

['we', 'are', 'learning', 'python', 'and', 'data', 'science', 'and', 'machine', 'learning']
count of word "we" in list is: 1
count of word "are" in list is: 1
count of word "learning" in list is: 2
count of word "python" in list is: 1
count of word "and" in list is: 2
count of word "data" in list is: 1
count of word "science" in list is: 1
count of word "and" in list is: 2
count of word "machine" in list is: 1
count of word "learning" in list is: 2

19.How do you count the occurrence of a given character in a string?

```
In [80]: string=input('Enter the string:')
char=input("enter the char:")
count=0
for i in string:
    if i==char:
        count=count+1
print(f'{char} repeated at {count} times')
```

Enter the string:shubhangi
enter the char:h
h repeated at 2 times

20.Write a program to find last 10 characters of a string?

```
In [85]: string=input("Enter the string:")
last_char=string[-10:]
print('last 10 char is:',last_char)
```

Enter the string:python and machine learning
last 10 char is: e learning

21.WAP to convert a given string to all uppercase if it contains at least 2 uppercase characters in the first 4 characters

```
In [26]: string=input("Enter the string:")
count=0
string1=string[0:4]
for i in string1:
    if i.isupper()==True:
        count=count+1
print("Number of uppercase are:",count)
if count>=2:
    print("Updated string:",string.upper())
```

Enter the string:ShuBhangi
Number of uppercase are: 2
Updated string: SHUBHANGI

22.Write a Python program to remove a newline in Python


```
In [2]: string="We are learning\n python and Data Science\n programming"
string.replace("\n","")
```

```
Out[2]: 'We are learning python and Data Science programming'
```

23. Write a Python program to swap commas and dots in a string

Sample string: "32.054,23"

Expected Output: "32,054.23"

```
In [23]: string="32.054,23"

x1=string.replace(".", " ")
print(x1)
x2=x1.replace(",",".")
print(x2)
x3=x2.replace(" ",".")
print(x3)
print()
print("after the swapping string is:",x3)
```

32 054,23

32 054.23

32,054.23

after the swapping string is: 32,054.23

24. Write a Python program to find the first repeated character in a given string

```
In [47]: string=input("enter the string:")
for i in string:
    if string.count(i)>=2:
        print(f"first repeated character is:{i}")
        break
```

enter the string:hello world

first repeated character is:l

25. Write a Python program to find the second most repeated word in a given string

```
In [11]: string=input("enter the string:")
a=string.split()
most_repeated=0
second_most=0
for i in a:
    if a.count(i)>=most_repeated:
        most_repeated=a.count(i)
    elif a.count(i)>=second_most:
        second_most=a.count(i)
        second=i
print("The second most repeated word in the given string is:",second)
```

enter the string:python data python data python

The second most repeated word in the given string is: data

26.Python program to Count Even and Odd numbers in a string

```
In [43]: str="12345"
even=0
odd=0
for i in range(0,len(str)):
    if int(str[i])%2==0:
        even=even+1
    else:
        odd=odd+1
print("even numbers:",even)
print("odd numbers:",odd)
```

even numbers: 2

odd numbers: 3

27.How do you check if a string contains only digits?

```
In [44]: str1=input('Enter the string:')
if str1.isdigit()==True:
    print('string contains only digit')
else:
    print('string does not contain digit')
```

Enter the string:123456

string contains only digit

28.How do you remove a given character/word from String?

```
In [48]: string="Python and data science class"
x=string.replace("and","")
print(x)
```

Python data science class

29. Write a Python program to remove the characters which have odd index values of a given string

```
In [23]: string=input("enter the string:")
str1=""
for i in string:
    str2=string.index(i)
    if str2%2==0:
        str1=str1+string[str2]
print(str1)
```

#string="python"
#str2=string.index("p")
#print(str2)
#print(string[0])

enter the string:python
pto

30. Write a Python function to reverses a string if its length is a multiple of 5

```
In [43]: string=input("enter the string:")
n=len(string)
if n%5==0:
    print("string is mutltiple of 5")
    print("reverse string is:",string[::-1])
else:
    print("string is not multiple of 5")
```

enter the string:shubh
string is mutltiple of 5
reverse string is: hbuhs

31. Write a Python program to format a number with a percentage(0.05 >> 5%)

```
In [1]: number=float(input("Enter the number:"))
x=number*100
a=str(x)
print(a+'%')
```

Enter the number:0.05
5.0%

32. Write a Python program to reverse words in a string

```
In [17]: string=input("Enter the given string:")
words=string.split()
words=list(reversed(words))
print(" ".join(words))
```

Enter the given string:we are learning python and machine learning
learning machine and python learning are we

33. Write a Python program to swap cases of a given string

```
In [21]: string=input("Enter the string:")
str1=string.swapcase()
print(str1)
```

Enter the string:Machine
mACHINE

34. Write a Python program to remove spaces from a given string

```
In [22]: string="    we are learning python and data science    "
str1=string.strip()
print(str1)
```

we are learning python and data science

35. Write a Python program to remove duplicate characters of a given string

```
In [33]: string="machine learning"
a=string.replace("a","").replace("e","").replace("i","").replace("n","")
print(a,type(a))
```

mch lrg <class 'str'>

36. Write a Python Program to find the area of a circle

```
In [6]: pi=3.14
r=float(input("Enter the radius:"))
area=pi*r*r
print("area of circle is=%.2f" %area)
```

Enter the radius:4
area of circle is=50.24

37. Python Program to find Sum of squares of first n natural numbers

```
In [10]: num=int(input("enter the number:"))
sum=0
for i in range(1,num+1):
    sum=sum+(i*i)
print("sum of squares is:",sum)
```

enter the number:10
sum of squares is: 385

38. Python Program to find cube sum of first n natural number

```
In [7]: num=int(input("enter the number:"))
sum=0
for i in range(1,num+1):
    sum=sum+(i*i*i)
print("sum of cube is:",sum)
```

enter the number:4
sum of cube is: 100

39. Python Program to find simple interest and compound interest

```
In [18]: p=float(input("Enter the principle amount:"))
R=float(input("Enter the rate:"))
T=float(input("Enter the time:"))
simple_interest=(p*T*R)/100
compund_interest=p*((1+R/100)**T-1)
print("simple_interest is: %f" %(simple_interest))
print("compund_interest is: %f" %(compund_interest))
```

Enter the principle amount:2000
Enter the rate:4
Enter the time:15
simple_interest is: 1200.000000
compund_interest is: 1601.887011

40. Python program to check whether a number is Prime or no

```
In [31]: num=int(input("Enter the number:"))
if num > 1:
    for i in range(2,num):
        if num%i==0:
            print("Given number is not prime number")
            break
    else:
        print("Given number is prime number")
else:
    print("Given number is not grater than one")
```

Enter the number:3
Given number is prime number