```
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Assignment no 01: Variables, String, int, float
```

1. What are the key features of Python?

In [ ]:

```
python is general purpose high level popular programing language
high community in the world
python is dynamically typed language
easy to code, learn and read
python support on any platform like, linux, mac,raspberry and window etc
in python cant requre to assign type of variable it take inbuilt
python allow developer to write a program in simple few words
python supports many free access library like, pandas, numpy,seaborn,matplotlib etc
python is open source and free platform
python code support in other language platform it does not require to edit the code
```

2. What are the Data Types in Python?

In [ ]:

```
in python various datatypes is there
text :- string
numeric:- integer, float, complex
sequence:- list, tuple, range
set:- set, frozenset
mapping:- dictionary(key:value pair)
boolean:- True, False
binary:- bytes, bytearray
```

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

In [ ]:

```
Local variable:- Local variable is defined inside the function and it allow to call ins
Global variable:-Global variable is define ouside the function and it allow us to call
if we want to call local variables also globally then inside the function we use global

```

In [2]:

```
# Ex: of global and local variable

x=100      #global variable
def fun():
    y=50      #local variable
    print(y)   #local variable call inside the function
    print(x)  #global variable call inside the function
fun()
print(x)      #global variable call outside function
print(y)      #local variable call outside function
```

```
50
100
100

---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp/ipykernel_7208/219107230.py in <module>
      8 fun()
      9 print(x)      #global variable call outside function
---> 10 print(y)

NameError: name 'y' is not defined
```

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

In [ ]:

```
we write comments in python by using single hash (#) character
comment are used to stop the execution on code line
comment provide better reading and understanding of code to new developer
by using comment developer express their logic in the form of comment at the time of wr
comment also usefull at the time of testing the python code

```

In [ ]:

```
 Ex:# python is programing language this is my comment
```

5. How to comment on multiple lines in python?

In [ ]:

```
we cant write the multiple line comments in python but,
we use hash character at each line if we want to write multiline comments in python
we also use the triple quotation to assign the multiline comments

```

In [5]:

```
#Ex:  #we cant write the multiple line comments in python but,
     #we use hash character at each line if we want to write multiline comments in pyth
     #comment also usefull at the time of testing the python code

```

6. What do you mean by Python literals?

In [ ]:

```
literals are raw_materials of comments or uses which is
```

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

In [ ]:

```
valid assign variables

_
_abc
ab_cd
abcd_
abc1231
Myvar123
myvar_123
abCD_123

Not valid assign variables
1abc
0abd
@abcd
abc#s
abcs dg
avsg 123

```

8. What are the Escape Characters in python?

In [ ]:

```
# escape characters are in python
\n-this character is used to start the new line or shift the string in new line
\t-this character act as tab which provides the multiple spaces in the string
\r-this character give the value return
```

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

In [8]:

```
a=10
b=20
c=a+b
print(f"the value of a is {a} and the value of is {b} and the sum of a & b is {a+b}")
```

```
the value of a is 10 and the value of is 20 and the sum of a & b is 30
```

In [6]:

```
print("value of a is {} and value of b is {} sum of a&b is {}".format(a,b,a+b))
```

```
value of a is 10 and value of b is 20 sum of a&b is 30
```

In [7]:

```
print("sum of a&b is",a+b)
```

```
sum of a&b is 30
```

In [9]:

```
print(c)
```

```
30
```

In [16]:

```
print("a is greater") if a>b else print("b is greater")
```

```
b is greater
```

In [21]:

```
print("value of a is",{a},"value of b is",{b},"sum of a&b is",{c})
```

```
value of a is {10} value of b is {20} sum of a&b is {30}
```

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

In [27]:

```
s1=str(input("enter the string:"))

for i in s1:
    print(i)
```

```
enter the string:python is popular programming language
p
y
t
h
o
n

i
s

p
o
p
u
l
a
r

p
r
o
g
r
a
m
m
i
n
g

l
a
n
g
u
a
g
e
```

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

In [28]:

```
string="machine learning"
x=len(string)
x
```

Out[28]:

16

In [56]:

```
count=0
for i in string:
    count+=1
print(count)
```

16

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

In [60]:

```
string="this is orange juice"
if 'orange' in string:
    print("word orange present in string")
else:
    print('not available')
```

word orange present in string

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

In [7]:

```
string="program to find the number of vowels, consonants, digits, and white space chara
vowels=['a','e','i','o','u']
string_with_vowels=[]
string_with_consonants=[]
string_with_digits=[]
string_with_spaces=[]
for char in string:

    char=char.lower()

    if char.isalpha() and char in vowels:
        string_with_vowels.append(char)
    elif char.isalpha():
        string_with_consonants.append(char)
    elif char.isdigit():
        string_with_digits.append(char)
    elif char.isspace():
        string_with_spaces.append(char)
print("no of vowels:",len(string_with_vowels))
print("no of consonants:",len(string_with_consonants))
print("no of digits:",len(string_with_digits))
print("no of spaces:",len(string_with_spaces))

```

```
no of vowels: 26
no of consonants: 52
no of digits: 0
no of spaces: 15
```

In [8]:

```
s="Python program to count Uppercase, Lowercase, special character, and numeric values
vowels=['a','e','i','o','u']
vowel=[]
consonants=[]
digits=[]
spaces=[]
for char in s:

    char=char.lower()

    if char.isalpha() and char in vowels:
        vowel.append(char)
    elif char.isalpha():
        consonants.append(char)
    elif char.isdigit():
        digits.append(char)
    elif char.isspace():
        spaces.append(char)

print("no of vowels:",len(vowel))
print("no of consonants:",len(consonants))
print("no of digit:",len(digits))
print("no of spaces:",len(spaces))

```

```
no of vowels: 32
no of consonants: 52
no of digit: 0
no of spaces: 14
```

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

In [13]:

```
x1="Python program to count Uppercase, Lowercase, special character, and numeric values
uppercase=[]
lowercase=[]
special_character=[]
numeric=[]
for char in x1:
    if char.isupper():
        uppercase.append(char)
    elif char.islower():
        lowercase.append(char)
    elif not char.isalnum() and not char.isspace():
        special_character.append(char)
    elif char.isdigit():
        numeric.append(char)

print("no of upper case character:",len(uppercase))
print("no of lowercase character:",len(lowercase))
print("no of special character:",len(special_character))
print("no of numeric:",len(numeric))
```

```
no of upper case character: 3
no of lowercase character: 81
no of special character: 4
no of numeric: 0
```

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

In [ ]:

```
a = ['a','e','i','o','u','A','E','I','O','U','']
b = "Hello, have a good day"
c = ""
for i in b:
    if i not in a:
        print(i, end=" ")
```

In [6]:

```
x= "Hello, have a good day"
y=['a','e','i','o','u','A','E','I','O','U',' ']
z=""
for i in x:
    if i not in y:
        continue
    else:
        z=z+i
print(z)
```

```
eo ae a oo a
```

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

In [10]:

```
def remove_char(str, n):
      first_part = str[:n]
      last_pasrt = str[n+1:]
      return first_part + last_pasrt
print(remove_char('Python', 0))
print(remove_char('Python', 3))
print(remove_char('Python', 5))
```

```
ython
Pyton
Pytho
```

In [34]:

```
x='python'
y=list(x)
y
```

Out[34]:

```
['p', 'y', 't', 'h', 'o', 'n']
```

In [35]:

```
y.remove('p')
y

```

Out[35]:

```
['y', 't', 'h', 'o', 'n']
```

In [36]:

```
''.join(y)
```

Out[36]:

```
'ython'
```

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

In [14]:

```
string="python java"
ls=list(string)
ls[0],ls[-1]=ls[-1],ls[0]
"".join(ls)
```

Out[14]:

```
'aython javp'
```

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

In [22]:

```
string = 'Python is an if interpreted high-level general-purpose.'
print(string.count('i'))

```

4

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

In [18]:

```
string="Python program to count the occurrences of each word in a given sentence."
string.count('o')
```

Out[18]:

7

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

In [2]:

```
x="program to find last 10 characters of a string"
x[-10::1]
```

Out[2]:

'f a string'

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

In [3]:

```
def to_uppercase(str1):
    num_upper = 0
    for letter in str1[:4]:
        if letter.upper() == letter:
            num_upper += 1
    if num_upper >= 2:
        return str1.upper()
    return str1

print(to_uppercase('Python'))
print(to_uppercase('PyThon'))
```

Python
PYTHON

In [24]:

```
string = "HEllo, Have a Good day"
first_four_chars = string[:4]
threshold = 0
for char in first_four_chars:
    if char.isupper() :
        threshold+=1
    if threshold >= 2 :
        string = string.upper()
print(string)
```

```
HELLO, HAVE A GOOD DAY
```

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

In [3]:

```
string="python\n"
string.rstrip()
```

Out[3]:

```
'python'
```

In [4]:

```
string
```

Out[4]:

```
'python\n'
```

23. Write a Python program to swap commas and dots in a string ○ Sample string: "32.054,23" ○ Expected Output: "32,054.23"

In [19]:

```
string ="32.054,23"
ls = list(string)
for index, item in enumerate(ls):
    if item == '.' :
        ls[index] = ','
    elif item == ',':
        ls[index] = '.'
print(''.join(ls))

```

```
32,054.23
```

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

In [33]:

```
string = "HeLlo, Have a Good day"
lookup = []
for char in string :
    if char in lookup :
        print(f'{char} is repeated')
        break
    lookup.append(char)
```

```
H is repeated
```

In [30]:

```
def first_repeated_char(str1):
    for index,c in enumerate(str1):
        if str1[:index+1].count(c) > 1:
            return c
        return "None"
print(first_repeated_char("abcdabcd"))
print(first_repeated_char("abcd"))
```

```
None
None
```

In [34]:

```
str="codespeedy"
a=0
for i in range(0 , len(str) ):  #traversing through the entire string
    if a==1:
        break
    for j in range(i+1 , len(str)): #traversing characters after the current one
        if str[i]==str[j]:
            print(str[i])
            a=1               #this character is the first repeating character
            break
if a==0:
    print(-1)
```

```
d
```

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

In [35]:

```
stri = "Welcome to Datacurators.tech"
counts={}
for i in stri:
    counts[i]=stri.count(i)
print (counts)
```

```
{'W': 1, 'e': 3, 'l': 1, 'c': 3, 'o': 3, 'm': 1, ' ': 2, 't': 4, 'D': 1,
'a': 3, 'u': 1, 'r': 2, 's': 1, '.': 1, 'h': 1}
```

In [38]:

```
second_large_count = sorted(set(counts.values()),reverse=True)[1] # 1 means second (lar

second_large_char_set = {k for k,v in counts.items() if v ==second_large_count}

print(second_large_char_set)
```

```
{'a', 'o', 'e', 'c'}
```

In [40]:

```
stri = "Welcome to Datacurators.tech"
counts={x:0 for x in stri}
for i in stri:
    counts[i] += 1

```

In [41]:

```
str1 = 'visheshsahu'

dict = {}

for n in str1:

        keys = dict.keys()
        if n in keys:
            dict[n] += 1
        else:
            dict[n] = 1
r = sorted(dict.items(),key=lambda x: x[1])

print(r[-2])
```

```
('s', 3)
```

In [43]:

```
string = input("Enter a string :-")
lst = string.split()
max = 0
for i in lst:
    if lst.count(i) > max :
        max = lst.count(i)
        maxvalue = i

print(maxvalue)
```

```
Enter a string :-ram is available in is everywhere
is
```

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

In [45]:

```
numbers = (1, 2, 3, 4, 5, 6, 7, 8, 9) # Declaring the tuple
count_odd = 0
count_even = 0
for x in numbers:
        if not x % 2:
             count_even+=1
        else:
             count_odd+=1
print("Number of even numbers :",count_even)
print("Number of odd numbers :",count_odd)
```

```
Number of even numbers : 4
Number of odd numbers : 5
```

In [44]:

```
# Python program to count Even
# and Odd numbers in a List

# list of numbers
list1 = [10, 21, 4, 45, 66, 93, 1]

even_count, odd_count = 0, 0

# iterating each number in list
for num in list1:

    # checking condition
    if num % 2 == 0:
        even_count += 1

    else:
        odd_count += 1

print("Even numbers in the list: ", even_count)
print("Odd numbers in the list: ", odd_count)
```

```
Even numbers in the list:  3
Odd numbers in the list:  4
```

In [46]:

```
list1 = [21,3,4,6,33,2,3,1,3,76]
#odd numbers
odd_count = len(list(filter(lambda x: (x%2 != 0) , list1)))
#even numbers
even_count = len(list(filter(lambda x: (x%2 == 0) , list1)))
print("Even numbers available in the list: ", even_count)
print("Odd numbers available in the list: ", odd_count)
```

```
Even numbers available in the list:  4
Odd numbers available in the list:  6
```

In [49]:

```
string=[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15]
even=0
odd=0
for i in string:
    if i%2==0:
        even+=1
    else:
        odd+=1
print('even numbers in list is:',even)
print('odd numbers in list is:',odd)
```

```
even numbers in list is: 7
odd numbers in list is: 8
```

In [86]:

```
string=[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,18,19,20,21,22,23,24,25,27]
count=0
for i in string:
    if i%2==1:
        count+=1
print("odd number in list is:",count)
```

```
odd number in list is: 13
```

In [48]:

```
string=[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,18,19,20,21,22,23,24,25,27]
even_number=0
odd_number=0
for char in string:
    if char%2==0:
        even_number+=1
    else:
        odd_number+=1
print("even numbers in list:",even_number)
print("odd numbers in list:",odd_number)

```

```
even numbers in list: 11
odd numbers in list: 13
```

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

In [8]:

```
string="1234345676"
string.isdigit()
```

Out[8]:

```
True
```

In [5]:

```
string="python123"
string.isdigit()

```

Out[5]:

```
False
```

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

In [8]:

```
string="python is popular language"
string.replace('popular','programming')
```

Out[8]:

```
'python is programming language'
```

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

In [17]:

```
string="Python program to remove the characters which have odd index values of a given
string[1::2]
```

Out[17]:

```
'yhnpormt eoetecaatr hc aeodidxvle fagvnsrn.'
```

In [18]:

```
string="Python program to remove the characters which have odd index values of a given
string[0::2]
```

Out[18]:

```
'Pto rga ormv h hrceswihhv d ne auso  ie tig'
```

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

In [52]:

```
name=input("enter a name:")

if(len(name)%5==0):
    print(name[::-1])
else:
    print("cant")
```

```
enter a name:moter
retom
```

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

In [21]:

```
x=eval(input("enter the marks:"))
y=x/100
z= y*100
print(z,'%')

```

```
enter the marks:87
87.0 %
```

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

In [22]:

```
string='Python program to reverse words in a string'
string[::-1]
```

Out[22]:

```
'gnirts a ni sdrow esrever ot margorp nohtyP'
```

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

In [9]:

```
string="Python program to swap cases of a given string"
string.swapcase()
```

Out[9]:

```
'pYTHON PROGRAM TO SWAP CASES OF A GIVEN STRING'
```

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

In [23]:

```
x="Python program to reverse words in a string"
x.replace(' ','')
```

Out[23]:

```
'Pythonprogramtoreversewordsinastring'
```

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

In [10]:

```
string = input("Enter a string :-")
new_str = ""
for i in string:
    if i not in new_str :
        new_str += i
print(new_str)
```

```
Enter a string :-python python is is
python is
```

In [ ]:

```
string="python is programming language python is programming language"
new_string=""
for i in string:
    if i not in new_string:
        new_string+=1
print(new_string)
```

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

In [25]:

```
d=eval(input("enter the value of diameter:"))
a=(3.14*(d)**2)/4
a
```

```
enter the value of diameter:5
```

Out[25]:

```
19.625
```

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

In [3]:

```
n=15
sum_num=sum([x**2 for x in range(1,n+1)])
print(f"the cube sum of {1} to {n} is {sum_num}")
```

```
the cube sum of 1 to 15 is 1240
```

In [59]:

```
u=int(input('enter the value:'))

x=u**2

print(f"the square of {u} is{x}")
```

```
enter the value:2
the square of 2 is4
```

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

In [2]:

```
n=15
sum_num=sum([x**3 for x in range(1,n+1)])
print(f"the cube sum of {1} to {n} is {sum_num}")
```

```
the cube sum of 1 to 15 is 14400
```

In [60]:

```
x=eval(input('enter the value:'))

y=x**3

print(f"the enter value is {x} and the square of is {y}")
```

```
enter the value:4
the enter value is 4 and the square of is 64
```

39. Python Program to find simple interest and compound interest

In [33]:

```
p=float(input("enter the principle amount:"))
r=float(input("enter the rate of intrest:"))
t=float(input("enter the year:"))

a=p*r*t/100

print(a)

c=p*(1+r/100)**t

print(c)
```

```
enter the principle amount:10000
enter the rate of intrest:5
enter the year:5
2500.0
12762.815625000003
```

40. Python program to check whether a number is Prime or not

In [40]:

```
p=int(input("enter the value"))
if p%2==0:
    print("no prime number")
else:
    print("prime number")
```

```
enter the value2
no prime number
```