In [ ]:
```
## #Quel  explain the key features of Python that make it a popular choice for programing.

#Ans
# 1=> Object oriented programing.
# 2=> Simplicity.
# 3=> Memory allocation.
##1=> class and object.
#1=> it helps programing and support to developers/programers to write code easily and maintain their projects using this features.
#2=> simplicity means easy to understand the code and write the code because of the english language.
#3=> allow users/programmers to see the memory where their data stored and readable,reusable.
##1=> because python is suport object oriented programing thats why it allow parents class and child class to use the features of other class by inheritance method.
```

In [ ]:
```

```

In [133]:
```
#QUE 3 Compare and contrast mutable and immutable objects in Python with examples

#Mutable objects:- obects which we can change by our need like data types int to float etc.Objects present in list and which we can change by accessing them with the help of indexing called

R = [1,2,3,4,5]

print(R[2])
```

```
3
```

In [142]:
```
R[2] = 9
```

In [175]:
```
R
```

Out[175]:
```
[1, 2, 9, 4, 5]
```

In [4]:
```
# immutability:- objects present in any string and can't be changed caalled immutability.

R1 ="Python"
R1
```

Out[4]:
```
'Python'
```

In [111]:
```
R1[2]=3
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[111], line 1
----> 1 R1[2]=3

TypeError: 'str' object does not support item assignment
```

In [12]:
```
# QUE 5 EXplain the concept of type casting in Python with examples.

# The process of converting data type of a specified object called type casting.

R = "5"
S = 3
R+S
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[2], line 7
      3 R = "5"
      4 S = 3
----> 7 R+S

TypeError: can only concatenate str (not "int") to str
```

In [36]:
```
R = "5"
S = 3
int(R)+S
```

Out[36]:
```
8
```

In [38]:
```
# type casting is of two types implicit and explicit.

# IMPLICIT:- these are the data types which are pre-defined in python

a = 5
a
```

Out[38]:
```
5
```

In [39]:
```
# EXPLICIT:- these are the data types which are not pre defined in this we have to perform some actions to understood the python that what is written or what we have to write.

a = "5"
a
```

Out[39]:
```
'5'
```

In [40]:
```
type(a)
```

Out[40]:
```
str
```

In [41]:
```
# QUE 7 Describe the different types of loops in Python and their use cases with example.

#ANS:- We have 3 types of loop conditionals,loops statements,control.
#conditionals:- these loops are used in the condition where we have 2 or more than 2 conditions for proceeding actions.
# EX.:-

marks = 63
if marks>90:
    print("excellent")
elif marks<=70  <=90:
    print("good")
elif marks<=50  <=71:
    print("average")
else:
    print("bellow average")
```

```
good
```

In [42]:
```
# loos statement:- these are of two types for and while.
#for:-

for a in range(5,30,2):
    print(a)
```

```
5
7
9
11
13
15
17
19
21
23
25
27
29
```

In [43]:
```
# while:-
num = 1
while num<16:
    print(num)
    num+=2
```

```
1
3
5
7
9
11
13
15
```

In [54]:
```
# control:-
# these are of two types break and continue.
#break:-

num = 1
while num<5:
    num+=1
    if num==4:
        break
    print(num)
```

```
  Cell In[54], line 5
    num = 1
    ^
IndentationError: unexpected indent
```

In [55]:
```
# QUE 4 Discuss the different types of opeRatoRs in Python and provide examples of how they are used.

# There are so many types of oerators in the pyhton, These are the special keywords to perform actions .
#1:- Arithmatic operators:-
#addition
a = 2
b = 4
a+b
```

Out[55]:
```
7
```

In [56]:
```
#subtraction:-
a = 55
b = 23
b-a
```

Out[56]:
```
-32
```

In [65]:
```
#2:- comparision:- it will give you value in true and false statemants.
2 == 2
```

Out[65]:
```
True
```

In [66]:
```
2 > 3
```

Out[66]:
```
False
```

In [67]:
```
# 3logical opeaarators:- this operator work on AND, OR statements.
```

In [70]:
```
# 4 assignment operators:-

a = 5
a = a + 3
a
```

Out[70]:
```
8
```

In [73]:
```
a = 5
a += 3
a
```

Out[73]:
```
8
```

In [74]:
```
# 5 membership:- if condition is right then it will show you true and if not then false.

a = "python"
"p" in a
```

Out[74]:
```
True
```

In [75]:
```
"z" in a
```

Out[75]:
```
False
```

In [76]:
```
# 6 idnetity operators:- it compare the location of two objects in memory.
a = 2
b = 3
a is b
```

Out[76]:
```
False
```

In [77]:
```
a is not b
```

Out[77]:
```
True
```

In [80]:
```
# 7 bitwise operator:- perfrom operation at a bit level, manupulate individuals bits within integer.

3 & 10
```

Out[80]:
```
2
```

In [83]:
```
bin(3)
```

Out[83]:
```
'0b11'
```

In [84]:
```
bin(10)
```

Out[84]:
```
'0b1010'
```

In [85]:
```
bin(2)
```

Out[85]:
```
'0b10'
```

In [86]:
```
# shift operator:-

35<<3
```

Out[86]:
```
280
```

In [87]:
```
# right shift operators:-

57>>2
```

Out[87]:
```
14
```

In [90]:
```
# flooc operator:- it will give ypu the base value of the reminder present in the decimal between two number.

# common division.
4/3
```

Out[90]:
```
1.3333333333333333
```

In [92]:
```
# flooc operator division

4//3
```

Out[92]:
```
1
```

In [153]:
```
# QYE 2:-Describe the role of predefined keywords in Python and provide examples of how they are used in a program.

# ANS:-These words are pre defined in python which have special meaning,these words like variables,identifers.Where we store our value to perfrom actionsin programming.
#variables:-

a = 4
type(a)
```

Out[153]:
```
int
```

In [148]:
```
a
```

Out[148]:
```
4
```

In [151]:
```
b = "robin"
b
```

Out[151]:
```
'robin'
```

In [139]:
```
type(b)
```

Out[139]:
```
str
```

In [155]:
```
c = 5.4
c
```

Out[155]:
```
5.4
```

In [387]:
```
type(c)
```

Out[387]:
```
float
```

In [391]:
```
d = True
```

In [402]:
```
type(d)
```

Out[402]:
```
bool
```

In [433]:
```
e = None
```

In [445]:
```
e
```

In [451]:
```
# QUE 7= Describe the different types of loops in Python and their use cases with examples.

#ANS:- if we have conditions which are repeating and have a condition of many type of repeation. It reduce the tendency to write the code again and again for the same condition.
# TYPES:- For - it halve the range function.

for i in range(1,10,3):
    print(i)
```

```
1
4
7
```

In [644]:
```
# WHILE :- it have multiple conditions at one go.

a = 15
while a > 6:
    a -= 3
    print(a)
```

```
12
9
6
```