QUESTION 1 LECTURE 5-6

Write data types in python with few examples to support how you can use it in real world applications. Create jupyter note book for your practice.

In [4]:

```
# FOR A CLASSROOM STUDENT DATA SHEET
# Using Sequence Data Type (list)
listy= ['Ali', 'Ahmed', 'Abbas', 'Alia', 'Amna', 'Asad', 'Bilal', 'Bushra', 'Daniyal',
'Hamza', 'Fatima', 'Zubair']
print (listy)
```

```
['Ali', 'Ahmed', 'Abbas', 'Alia', 'Amna', 'Asad', 'Bilal', 'Bushra', 'Dani
yal', 'Hamza', 'Fatima', 'Zubair']
```

In [6]:

```
# FOR MAKING ATTENDENCE SHEET OF STUDENTS
# Using int Data Type (len)
listy= ['Ali', 'Ahmed', 'Abbas', 'Alia', 'Amna', 'Asad', 'Bilal', 'Bushra', 'Daniyal',
'Hamza', 'Fatima', 'Zubair']
print (len(listy))
```

```
12
```

In [16]:

```
# FOR GRADING THE MARKS OF STUDENTS
# Using bool Data Type (if/else)
marks= int(input("Enter your marks: "))
if marks >= 1 and marks <= 49:
    print ('F')
if marks >= 50 and marks <= 59:
    print ('D')
if marks >= 60 and marks <= 69:
    print ('C')
if marks >= 70 and marks <= 79:
    print ("B")
if marks >= 80 and marks <= 100:
    print ("A+" +  " You are great!")
```

```
Enter your marks: 89
A+ You are great!
```

In [20]:

```
# FOR CALLING THE NAME/BIO OF A CRIMINAL FROM CRIMINAL RECORD
# Using sequence Data Type (range)
crmnl_rcrd = {"Snatching" : "Steve, Jack, Tim, Lauren, Isla, Karen, Jimmy, Khan, Bill"
              , "Murder" : "Stella, jake, logan, paul, smith, rob, nigel, yuna, nick, ma
thais"
              , "Speed driving" : "Jake, tim, beth, rebbeca, jane, luna, lisa, paul, ki
m, mike"}
x= crmnl_rcrd ["Murder"]
print (x)
```

```
Stella, jake, logan, paul, smith, rob, nigel, yuna, nick, mathais
```

QUESTION 2 LECTURE 5-6

Do practice problem 2.1 to 2.10, you can telly your answers at the end of the chapter.

2.1

In [2]:

```
# a) The sum of first 5 positive integers
pos_int=[1,2,3,4,5]
x=sum(pos_int)
print("The sum of first 5 positive integers is: ", x)
```

```
The sum of first 5 positive integers is:  15
```

In [1]:

```
# b) The average age
s= 23
m= 19
f= 31
import math
x=int((s+m+f)/3)
print ("The average age among Sara, Mark and Fatima is: ", x )
```

```
The average age among Sara, Mark and Fatima is:  24
```

In [3]:

```
# c) The number of times 73 goes into 403
x=403//73
print(x)
```

```
5
```

In [4]:

```
# d) The remainder when 403 is divided by 73
x= 403%73
print(x)
```

```
38
```

In [5]:

```
# e) 2 to the 10th power
x=2**10
print(x)
```

```
1024
```

In [7]:

```
# f)The absolute value of the difference between Sara’s height (54 inches) and Mark’s h
eight (57 inches)
s_h= 54
m_h=57
x= (s_h-m_h)
print (abs(x))
```

```
3
```

In [8]:

```
#g) The lowest price among the following prices: $34.99, $29.95, and $31.50
lst=[34.99,29.95,31.50]
x=min(lst)
print (x)
```

```
29.95
```

2.2

In [9]:

```
# a) The sum of 2 and 2 is less than 4.
a= 2 + 2 < 4
print (bool(x))
```

```
True
```

In [10]:

```
# b) The value of 7 // 3 is equal to 1 + 1
x= 7 // 3 == 1 + 1
print(x)
```

```
True
```

In [11]:

```
# c) The sum of 3 squared and 4 squared is equal to 25
x=3**2
y=4**2
x + y == 25
```

Out[11]:

```
True
```

In [12]:

```
# (d) The sum of 2, 4, and 6 is greater than 12.
2+4+6>=12
```

Out[12]:

```
True
```

In [13]:

```
# (e) 1387 is divisible by 19.
1387 % 19==0
```

Out[13]:

```
True
```

In [14]:

```
# f) 31 is even. (Hint: what does the remainder when you divide by 2 tell you?)
31 % 2==0
```

Out[14]:

```
False
```

In [15]:

```
# (g) The lowest price among $34.99, $29.95, and $31.50 is less than $30.00.
min(34.99, 29.95, 31.50) < 30.00
```

Out[15]:

```
True
```

2.3

In [16]:

```
#(a) Assign integer value 3 to variable a.
a=3
print (a)
```

```
3
```

In [17]:

```
#(b) Assign 4 to variable b
b=4
print(b)
```

```
4
```

In [18]:

```
#(c) Assign to variable c the value of expression a * a + b * b
c= a*a + b*b
print(c)
```

```
25
```

2.4

In [20]:

```
s1 = 'ant'
s2 = 'bat'
s3 = 'cod'
print(' (a) For expression : "ant bat cod" :', s1+ ' '+ s2+ ' '+s3)
print(' (b) For expression : "ant ant ant ant ant ant ant ant ant ant " :', 10 * (s1 +
' '))
print(' (c) For expression : "ant bat bat cod cod cod" : ',s1 + ' ' + 2 * (s2 + ' ') +
2 * (s3 + ' ') + s3)
print(' (d) For expression : "ant bat ant bat ant bat ant bat ant bat ant bat ant bat
 ": ', 7 * (s1 + ' '+ s2 + ' '))
print(' (e) For expression : "batbatcod batbatcod batbatcod batbatcod batbatcod" : ',
5* (s2 + s2 + s3+ ' '))
```

```
 (a) For expression : "ant bat cod" : ant bat cod
 (b) For expression : "ant ant ant ant ant ant ant ant ant ant " : ant ant
ant ant ant ant ant ant ant ant
 (c) For expression : "ant bat bat cod cod cod" :  ant bat bat cod cod cod
 (d) For expression : "ant bat ant bat ant bat ant bat ant bat ant bat ant
bat ":  ant bat ant bat ant bat ant bat ant bat ant bat ant bat
 (e) For expression : "batbatcod batbatcod batbatcod batbatcod batbatcod"
:  batbatcod batbatcod batbatcod batbatcod batbatcod
```

2.5

In [21]:

```
s= '0123456789'
s=[0]
print('a)',s)
s=[1]
print('b)',s)
s=[6]
print('c)',s)
s=[8]
print('d)',s)
s=[9]
print('e)',s)
```

```
a) [0]
b) [1]
c) [6]
d) [8]
e) [9]
```

2.6

In [22]:

```
words = ['bat', 'ball', 'barn', 'basket', 'badminton']
x= min(words)
print("The word that contains maximum words is:", x)
y=max(words)
print("The word that contains minimum words is:", y)
```

```
The word that contains maximum words is: badminton
The word that contains minimum words is: bat
```

2.7

In [23]:

```
grades = [9, 7, 7, 10, 3, 9, 6, 6, 2]
a= grades.count(7)
print("The grades counted till 7 are:", a)
b= grades[-1] = 4
print("A statement that changes the last grade to 4 is: grades[-1] = 4" )
c= max([grades])
print("Maximum grade is: ", c)
d= grades.sort()
print("The grades in ascending order are:", d )
e= int(sum(grades) / len(grades))
print("Average grades are: ", e )
```

```
The grades counted till 7 are: 2
A statement that changes the last grade to 4 is: grades[-1] = 4
Maximum grade is:  [9, 7, 7, 10, 3, 9, 6, 6, 4]
The grades in ascending order are: None
Average grades are:  6
```

2.8

In [24]:

```
#a
((2 + 3) == 4) or (a >= 5)
```

Out[24]:

```
False
```

In [25]:

```
#b
lst= [3,6,7,8,1,2,77,43,100,45,23,56]
(((lst[1]) * (-3)) < (-10)) == 0
```

Out[25]:

```
False
```

In [26]:

```
#c
lst= [3,6,7,8,1,2,77,43,100,45,23,56]
(((lst[1]) * (-3)) < (-10)) in [0, True]
```

Out[26]:

```
True
```

In [27]:

```
#d
4*(5**2)
```

Out[27]:

```
100
```

In [28]:

```
#e
4/2 in [1,2,3]
```

Out[28]:

```
True
```

2.9

In [29]:

```
#(a) False + False
a= type(False + False)
print (a)
```

```
<class 'int'>
```

In [30]:

```
#(b) 2 * 3**2.0
b= type(2 * 3**2.0)
print(b)
```

```
<class 'float'>
```

In [31]:

```
#(c) 4 // 2 + 4 % 2
c=type(4 // 2 + 4 % 2)
print (c)
```

```
<class 'int'>
```

In [32]:

```
#(d) 2 + 3 == 4 or 5 >= 5
d=type(2 + 3 == 4 or 5 >= 5)
print(d)
```

```
<class 'bool'>
```

2.10

In [34]:

```
# a) The length of the hypotenuse in a right triangle whose other two sides have length
s a and b
a=7
b=4
import math
c= int(math.sqrt(a**2 + b**2))
print("The length of the hypoteneous in a right angle triangle is: ", c)
```

```
The length of the hypoteneous in a right angle triangle is:  8
```

In [36]:

```
# b) The value of the expression that evaluates whether the length of the above hypoten
use is 5
a=7
b=4
import math
c= int(math.sqrt(a**2 + b**2))==5
print (c)
```

```
False
```

In [37]:

```
#c) The area of a disk of radius a
a=5
import math
c= int(math.pi* a**2)
print ("For area of disk is: ", c)
```

```
For area of disk is:  78
```