QUESTION 1

1. The list is given in the question and sort() method is used for sorting.
2. Inbuilt min() and max() method is used to add the min age and max age.
3. To find the median and mean , statistics has been imported and statistics.median() and statistics.mean() are used.
4. For range, did the subtraction.

Q1

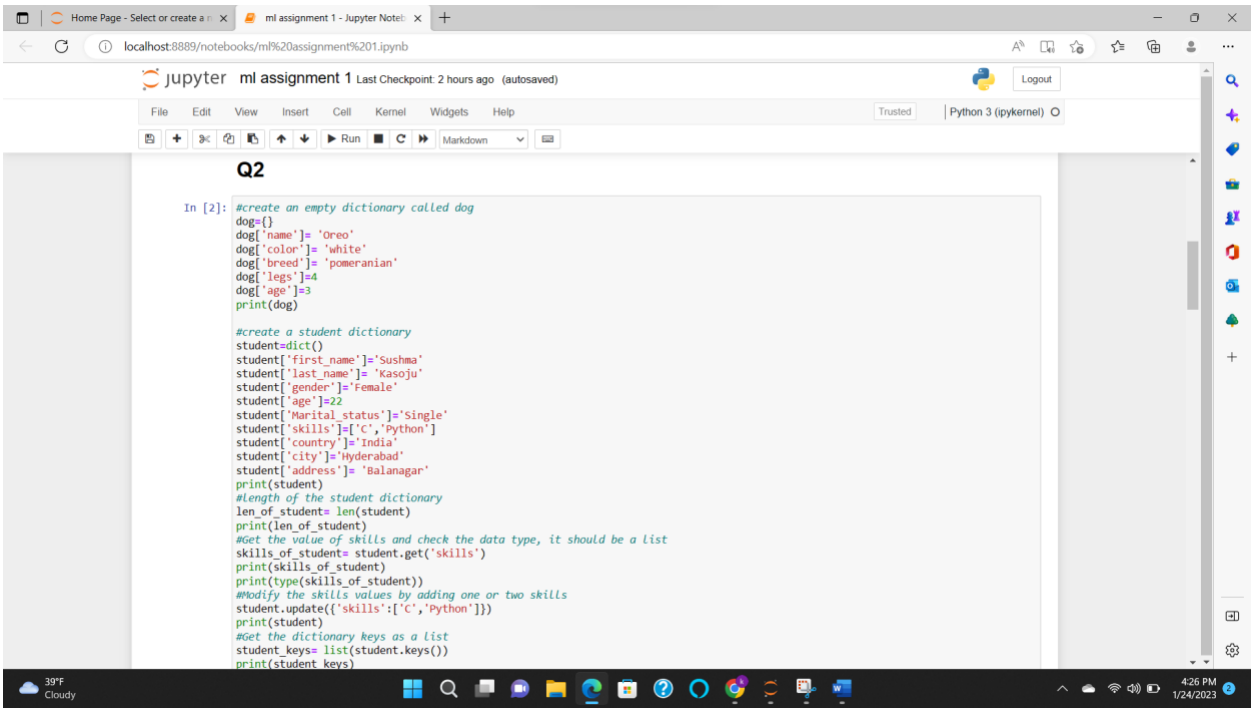
In [1]:

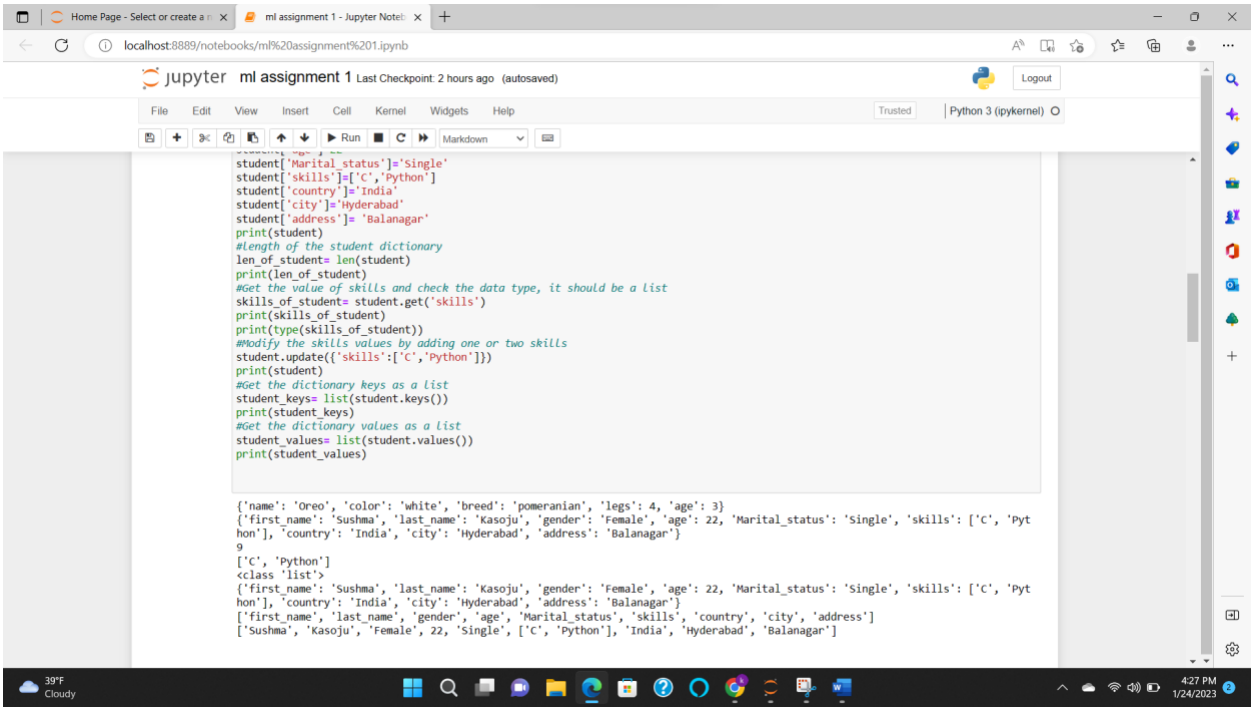
```
import statistics
ages=[19,22,19,24,20,25,26,24,25,24]
#sorting the ages
ages.sort()
print("after sorting the list is ", ages)
#find the min and max of ages
Min=min(ages)
Max=max(ages)
print("The min age is :", Min)
print("The max age is :", Max)
#add the min and max ages to the list
ages.append(Min)
ages.append(Max)
print("after adding the min and max ages:",ages)
#find the median of ages
Median=statistics.median(ages)
print("median age:",Median)
#find the average of ages
Average=statistics.mean(ages)
print("Average age:",Average)
#find the range  of ages
Range=Max-Min
print("Range of ages :", Range)
```

```
after sorting the list is  [19, 19, 20, 22, 24, 24, 24, 25, 25, 26]
The min age is : 19
The max age is : 26
after adding the min and max ages: [19, 19, 20, 22, 24, 24, 24, 25, 25, 26, 19, 26]
median age: 24.0
Average age: 22.75
Range of ages : 7
```

QUESTION 2

1. Created an empty dictionary called as ‘Dog’ as the dict rep as {}.
2. Added the keys and values to the dictionary.
3. Created an another dictionary for students along with the keys and values.
4. By using len() method, found the len of dict.
5. To know the data type of a key, type() method has been used.





QUESTION 3

1. Created two tuples and created a new variable sibling and joined both the tuple by using '+' sign.
2. Using count(), found the length of the tuple.
3. As per the question, added fathers and mothers name to the siblings tuple by creating new variable as family members and added both the tuples.

Q3

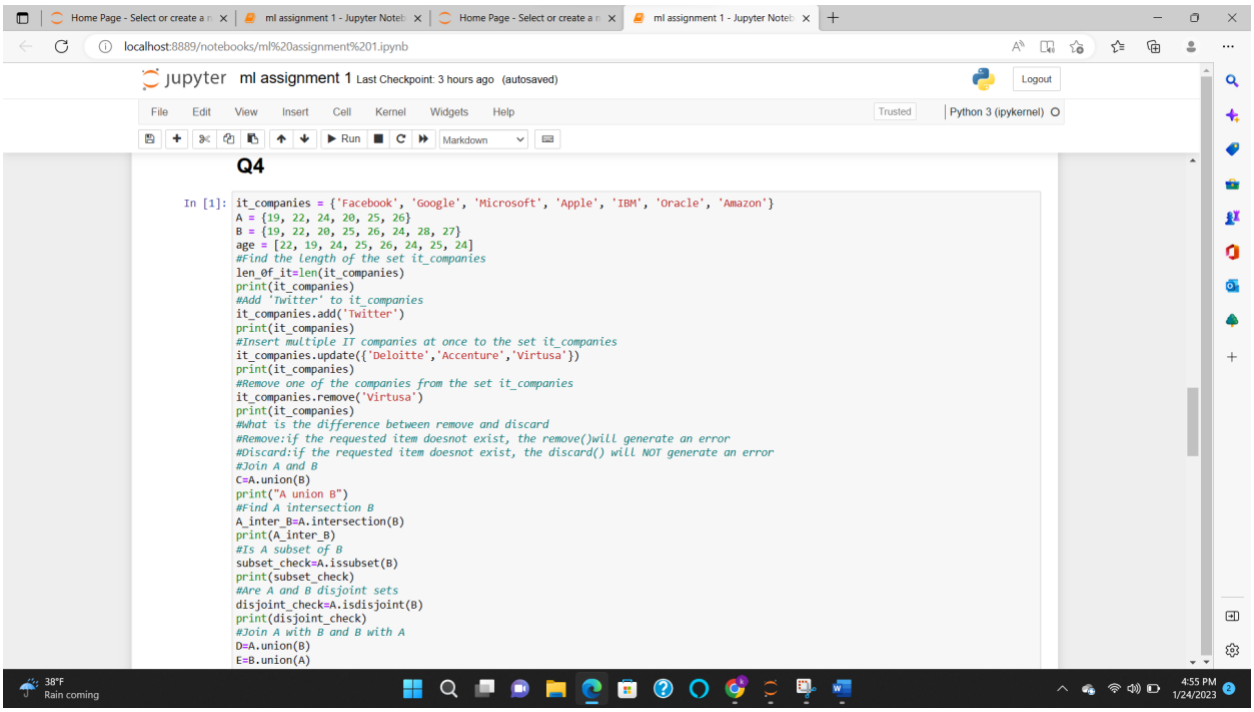
In [51]:

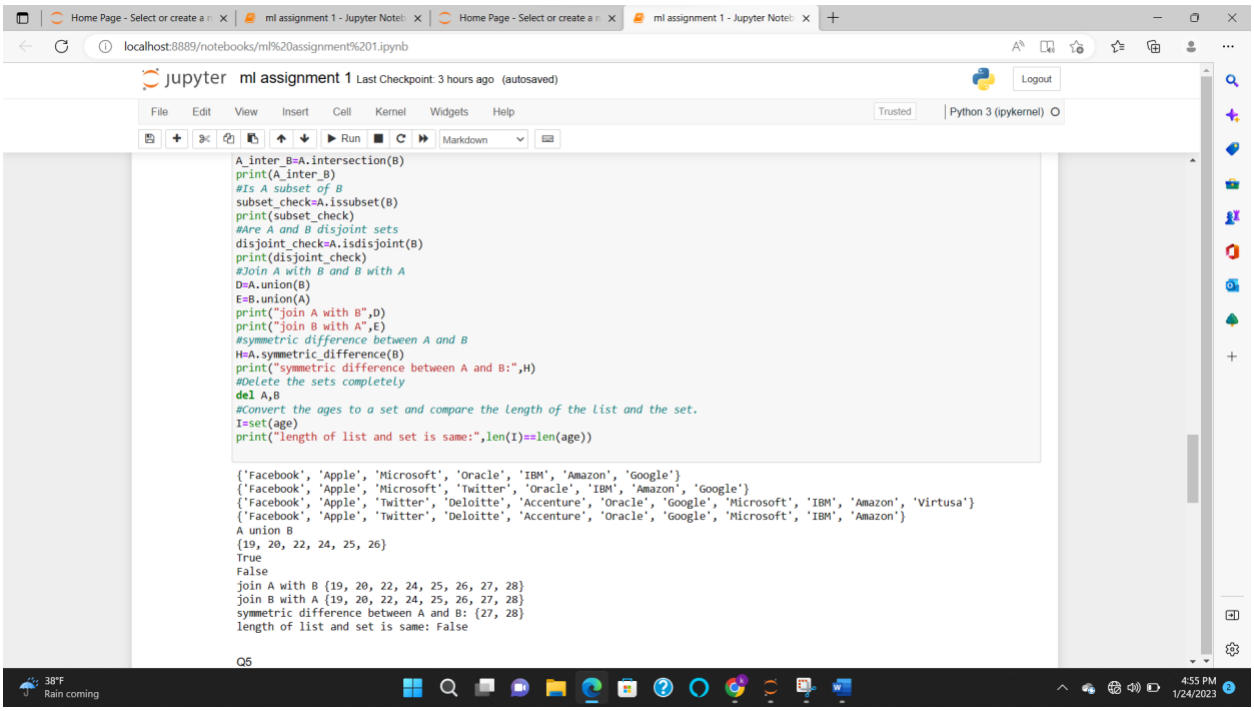
```
sisters=('hepsiba','divya')
brothers=('bablu','nivas')
#Join brothers and sisters tuples and assign it to siblings
siblings=sisters+brothers
print(siblings)
#siblings count
siblings_count=len(siblings)
print(siblings_count)
#adding the name of your father and mother and assign it to family_members
Father="venkatesh"
Mother="akhila"
family_members=list(siblings)
family_members.append(Father)
family_members.append(Mother)
family_members=tuple(family_members)
print("family_members",family_members)
```

```
('hepsiba', 'divya', 'bablu', 'nivas')
4
family_members ('hepsiba', 'divya', 'bablu', 'nivas', 'venkatesh', 'akhila')
```

QUESTION 4

1. For the given set in the question , found the length of the set by using len() method.
2. Used add() method to add an element to the set.
3. update([]) method has been used for adding multiple elements in to the sets.
4. Remove() method has been used for removing an element.
5. Union, intersection, issubset(), isdisjoint() , symmetric difference() methods has been used.
6. To find the length, len() method is used.





QUESTION 5

1. The question says to give 30 as Input and I imported math .
2. Area of the circle and circumference of the circle had been defined by the formula for area and circumference .

Q5

In [13]:

```
import math
constant=math.pi
radius=30
#calculate the area of the circle and assigning the value
Area=constant*radius*radius
print("Area of the circle :",Area)
#calculate the circumference of the circle and assigning the value
circumference=2*constant*radius
print("circumference of the circle:",circumference)
#taking input and calculate the area
new_radius=float(input("enter the radius value:"))
Area=constant*new_radius*new_radius
print("for given radius:",new_radius,"\nArea",Area)
```

```
Area of the circle : 2827.4333882308138
circumference of the circle: 188.49555921538757
enter the radius value:10
for given radius: 10.0
Area 314.1592653589793
```

QUESTION 6

1. Split() method is used for getting the individual elements.
2. Len() method is used to find the length.

Q6

```
In [15]: statement="I am a teacher and I love to inspire and teach people"

         #using split method for getting the individual elements
         split=statement.split(" ")
         sp_set=set(split)
         print("set:",sp_set)
         print("number of unique words:",len(sp_set))
```

```
set: {'to', 'I', 'am', 'teacher', 'love', 'teach', 'people', 'a', 'and', 'inspire'}
number of unique words: 10
```

QUESTION 7

1. I have used '\t' to create the required spacing between the header names and printed.

Q7

```
In [16]: print('Name \tAge \tcountry \tcity')
         print('Asabeneh \t250 \tFinland \tHelsinki')
```

```
Name    Age     country         city
Asabeneh        250     Finland         Helsinki
```

QUESTION 8

1. Created a variable 'radius' to store the radius of a circle as 10.
2. Created a variable 'area' with the given formula to calculate area.
3. Printed the area value using string format.

Q8

```
In [21]: radius = 10
         area = int(3.14 * radius ** 2)
         #using string formatting method
         print('The area of a circle with radius{} is {} meters square.'.format(radius,area))
```

```
The area of a circle with radius10 is 314 meters square.
```

QUESTION 9

1. Used for loop , added the required formula in for loop to convert the weights in to kilometers .
2. Printed the list kgs as shown.

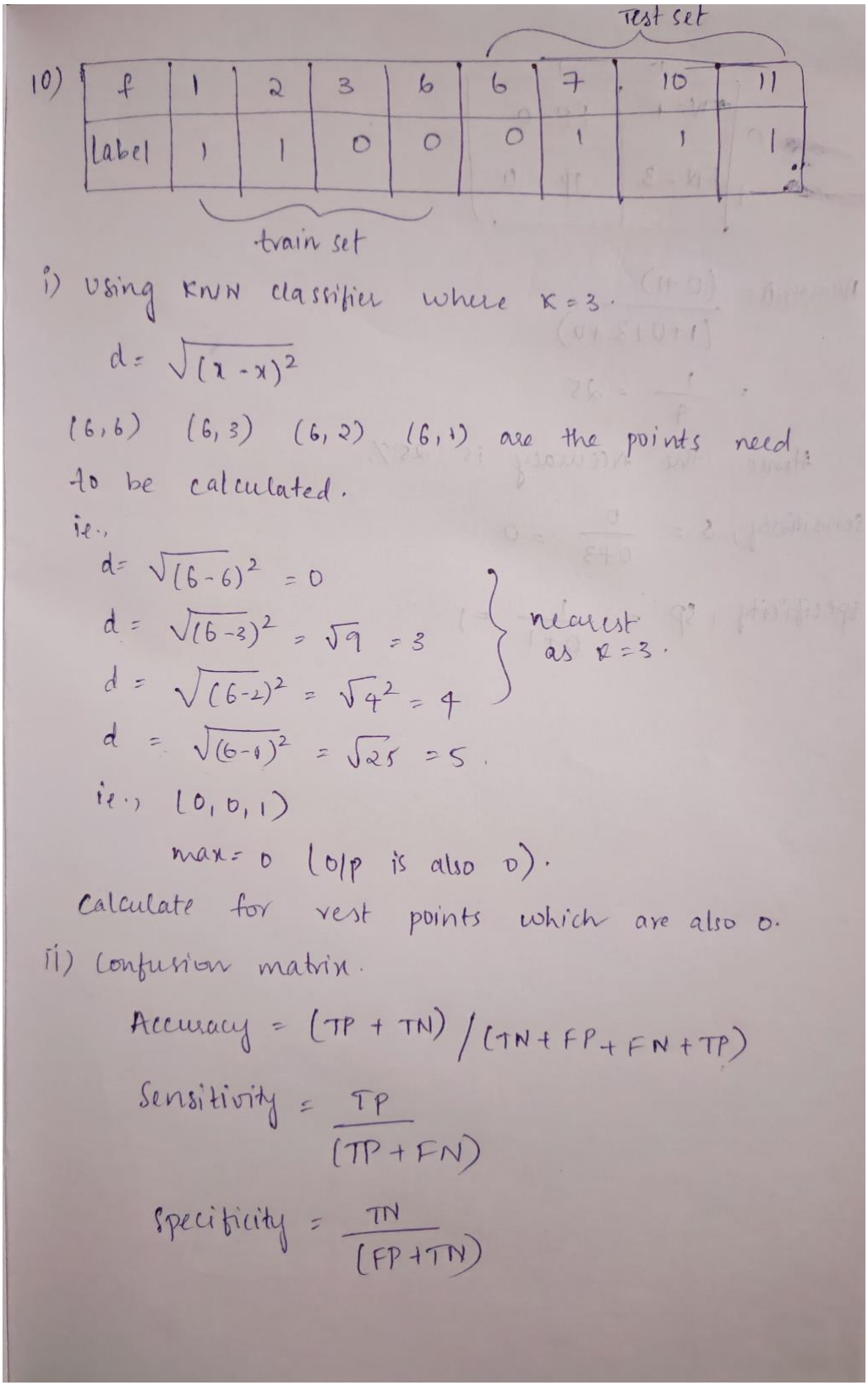
Q9

In [2]:
```
#taking the input
n=input('Enter the Length:')
Lbs=n.split()
#creating two lists one for lbs and other for kgs.
kgs=[]
for i in Lbs:
    kgs.append((int(i)*0.45));
print(kgs)
```

```
Enter the Length:28
[12.6]
```

In [ ]:

QUESTION 10



10)

f	1	2	3	6	6	7	10	11
label	1	1	0	0	0	1	1	1

test set

train set

i) Using KNN classifier where $K = 3$.

$$d = \sqrt{(x - x)^2}$$

(6,6) (6,3) (6,2) (6,1) are the points need to be calculated.

ie.,

$d = \sqrt{(6-6)^2} = 0$

$d = \sqrt{(6-3)^2} = \sqrt{9} = 3$

$d = \sqrt{(6-2)^2} = \sqrt{4^2} = 4$

$d = \sqrt{(6-1)^2} = \sqrt{25} = 5$.

} nearest as $K = 3$.

ie., (0, 0, 1)

max = 0 (o/p is also 0).

Calculate for rest points which are also 0.

ii) Confusion matrix.

$$\text{Accuracy} = (TP + TN) / (TN + FP + FN + TP)$$

$$\text{Sensitivity} = \frac{TP}{(TP + FN)}$$

$$\text{Specificity} = \frac{TN}{(FP + TN)}$$

	0	1
0	TN = 1	FP = 0
1	FN = 3	TP = 0

Accuracy, $A = \frac{(0+1)}{(1+0+3+0)}$

$= \frac{1}{4} = 25$

Hence, the Accuracy is 25%.

Sensitivity, $S = \frac{0}{0+3} = 0$

specificity, $SP = \frac{1}{0+1} = 1$