QUESTION-1

The following is a list of 10 students ages: ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24]

- Sort the list and find the min and max age
- Add the min age and the max age again to the list
- Find the median age (one middle item or two middle items divided by two)
- Find the average age (sum of all items divided by their number)
- Find the range of the ages (max minus min)

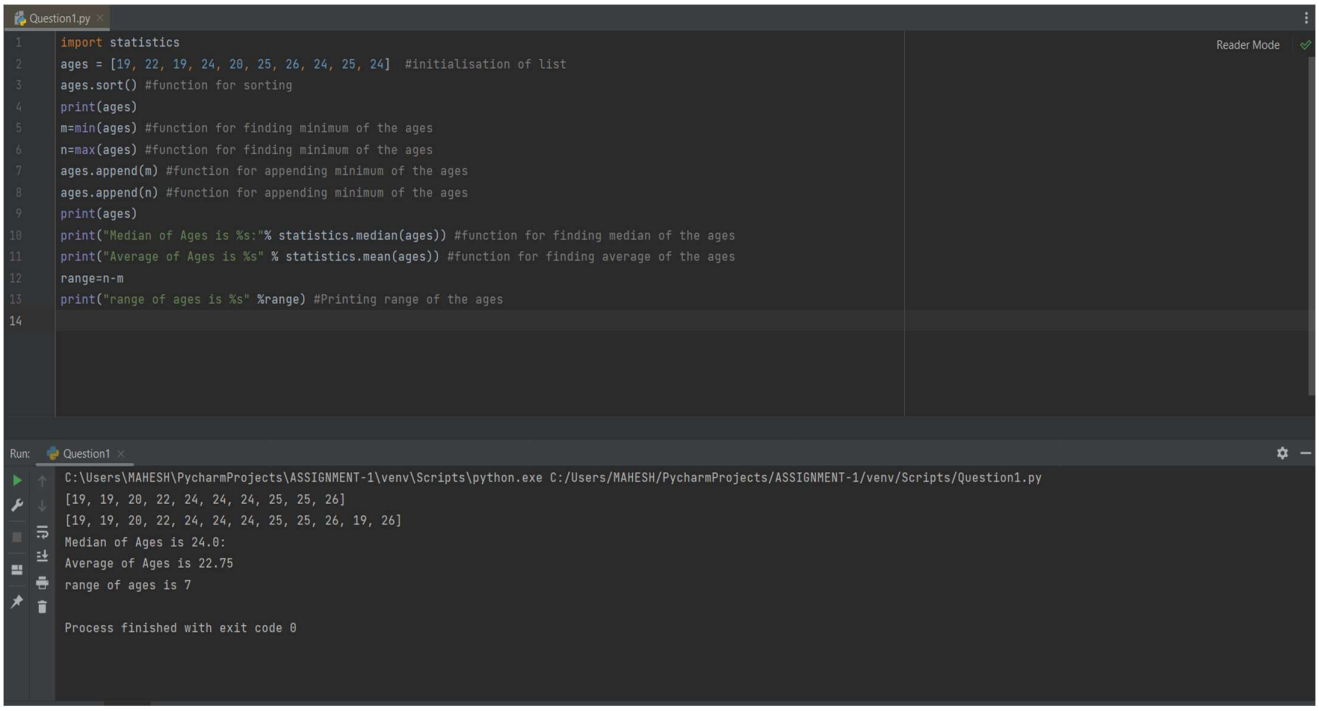
SOURCE CODE:

```
import statistics
ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24]  #initialisation of list
ages.sort() #function for sorting
print(ages)
m=min(ages) #function for finding minimum of the ages
n=max(ages) #function for finding minimum of the ages
ages.append(m) #function for appending minimum of the ages
ages.append(n) #function for appending minimum of the ages
print(ages)
print("Median of Ages is %s:"% statistics.median(ages)) #function for finding median of
the ages
print("Average of Ages is %s" % statistics.mean(ages)) #function for finding average of
the ages
range=n-m
print("range of ages is %s" %range) #Printing range of the ages
```

Output:

```
C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question1.py
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26]
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26, 19, 26]
Median of Ages is 24.0:
Average of Ages is 22.75
range of ages is 7

Process finished with exit code 0
```



QUESTION-2

• Create an empty dictionary called dog
• Add name, color, breed, legs, age to the dog dictionary
• Create a student dictionary and add first_name, last_name, gender, age, marital status, skills, country, city and address as keys for the dictionary
• Get the length of the student dictionary
• Get the value of skills and check the data type, it should be a list
• Modify the skills values by adding one or two skills
• Get the dictionary keys as a list
• Get the dictionary values as a list

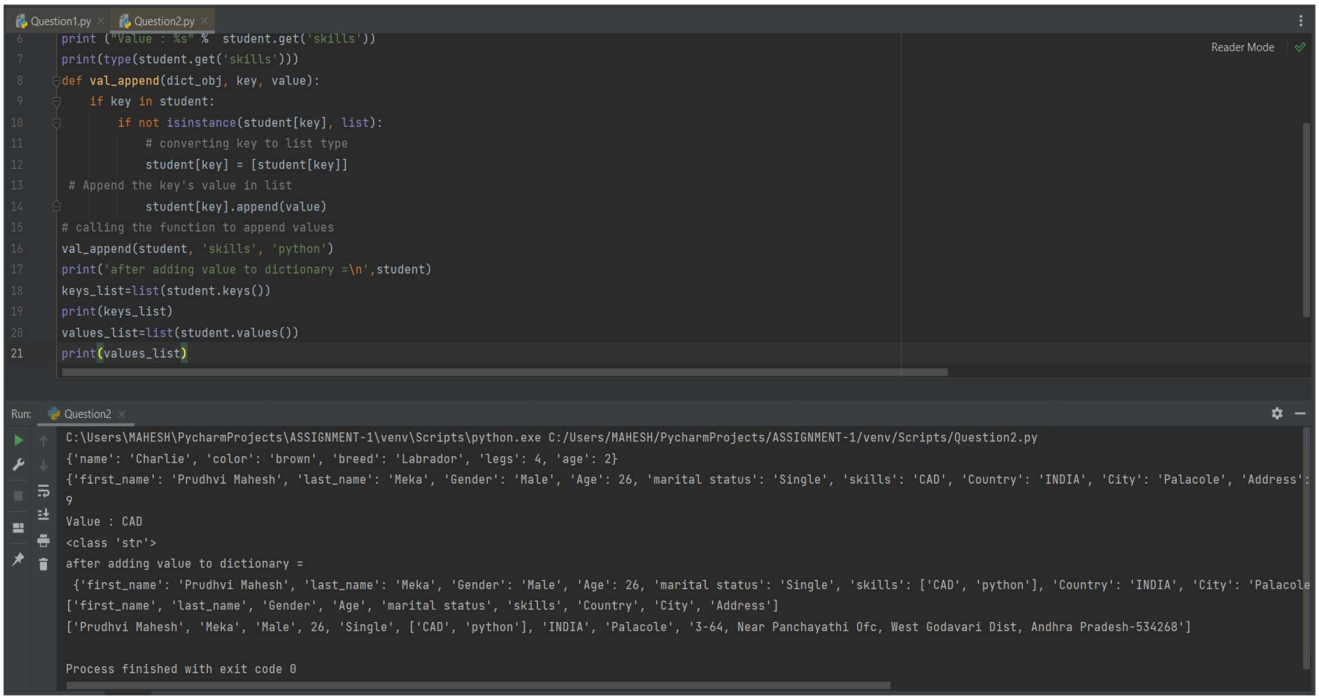
SOURCE CODE:

```
dog ={"name":"Charlie","color":"brown","breed": "Labrador","legs": 4,"age": 2}
print(dog) # Dog Dictonary
student={"first_name":"Prudhvi Mahesh","last_name":
"Meka","Gender":"Male","Age":26,"marital
status":"Single","skills":"CAD","Country":"INDIA","City":"Palacole","Address":"3-64,
Near Panchayathi Ofc, West Godavari Dist, Andhra Pradesh-534268"}
print(student) # Student Dictionary
print(len(student)) #length of the student dictonary
print ("Value : %s" %  student.get('skills'))
print(type(student.get('skills')))
def val_append(dict_obj, key, value):
    if key in student:
        if not isinstance(student[key], list):
            # converting key to list type
            student[key] = [student[key]]
 # Append the key's value in list
            student[key].append(value)
# calling the function to append values
val_append(student, 'skills', 'python')
print('after adding value to dictionary =\n',student)
keys_list=list(student.keys())
print(keys_list)
values_list=list(student.values())
print(values_list)
```

Output:

```
C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question2.py
{'name': 'Charlie', 'color': 'brown', 'breed': 'Labrador', 'legs': 4, 'age': 2}
{'first_name': 'Prudhvi Mahesh', 'last_name': 'Meka', 'Gender': 'Male', 'Age': 26, 'marital status': 'Single', 'skills':
'CAD', 'Country': 'INDIA', 'City': 'Palacole', 'Address': '3-64, Near Panchayathi Ofc, West Godavari Dist, Andhra
Pradesh-534268'}
9
Value : CAD
<class 'str'>
after adding value to dictionary =
 {'first_name': 'Prudhvi Mahesh', 'last_name': 'Meka', 'Gender': 'Male', 'Age': 26, 'marital status': 'Single', 'skills':
['CAD', 'python'], 'Country': 'INDIA', 'City': 'Palacole', 'Address': '3-64, Near Panchayathi Ofc, West Godavari Dist,
Andhra Pradesh-534268'}
['first_name', 'last_name', 'Gender', 'Age', 'marital status', 'skills', 'Country', 'City', 'Address']
['Prudhvi Mahesh', 'Meka', 'Male', 26, 'Single', ['CAD', 'python'], 'INDIA', 'Palacole', '3-64, Near Panchayathi Ofc, West
Godavari Dist, Andhra Pradesh-534268']

Process finished with exit code 0
```



QUESTION-3:

- Create a tuple containing names of your sisters and your brothers (imaginary siblings are fine)
- Join brothers and sisters tuples and assign it to siblings
- How many siblings do you have?
- Modify the siblings tuple and add the name of your father and mother and assign it to family members.

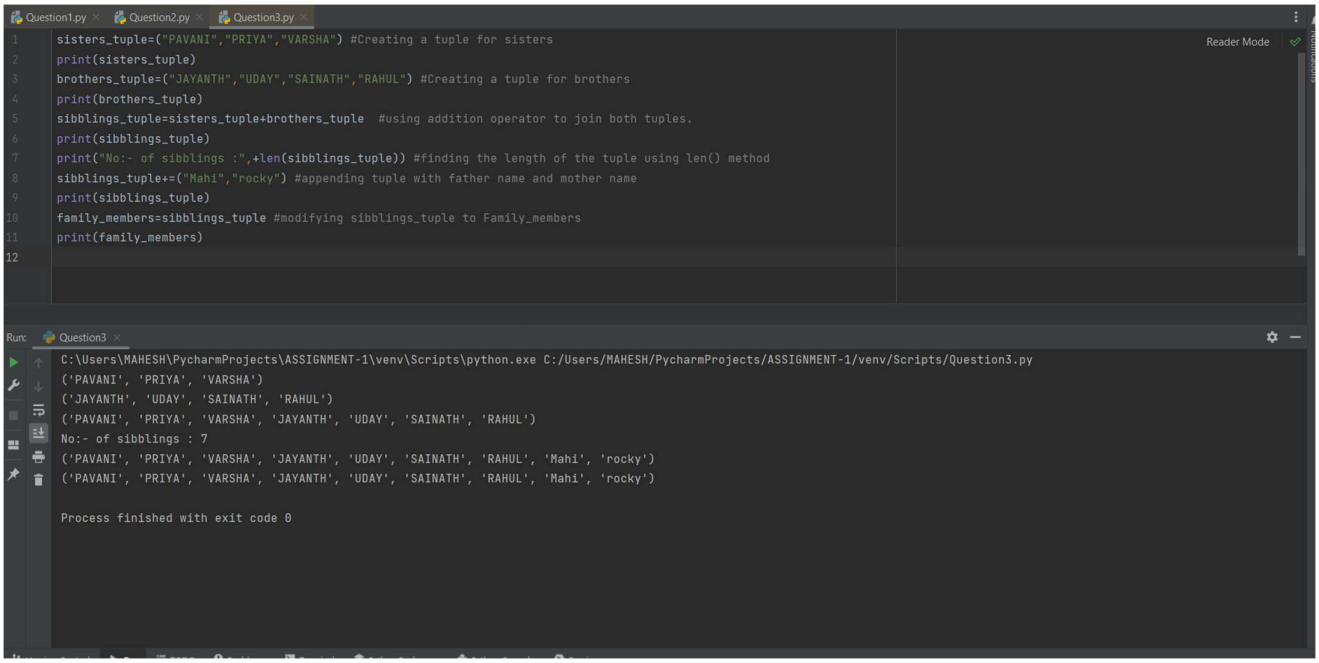
SOURCE CODE:

```
sisters_tuple=("PAVANI","PRIYA","VARSHA") #Creating a tuple for sisters
print(sisters_tuple)
brothers_tuple=("JAYANTH","UDAY","SAINATH","RAHUL") #Creating a tuple for brothers
print(brothers_tuple)
sibblings_tuple=sisters_tuple+brothers_tuple  #using addition operator to join both
tuples.
print(sibblings_tuple)
print("No:- of sibblings :",+len(sibblings_tuple)) #finding the length of the tuple
using len() method
sibblings_tuple+=("KNVD","Bala") #appending tuple with father name and mother name
print(sibblings_tuple)
family_members=sibblings_tuple #modifying sibblings_tuple to Family_members
print(family_members)
```

Output:

C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question3.py
('PAVANI', 'PRIYA', 'VARSHA')
('JAYANTH', 'UDAY', 'SAINATH', 'RAHUL')
('PAVANI', 'PRIYA', 'VARSHA', 'JAYANTH', 'UDAY', 'SAINATH', 'RAHUL')
No:- of sibblings : 7
('PAVANI', 'PRIYA', 'VARSHA', 'JAYANTH', 'UDAY', 'SAINATH', 'RAHUL', 'Mahi', 'rocky')
('PAVANI', 'PRIYA', 'VARSHA', 'JAYANTH', 'UDAY', 'SAINATH', 'RAHUL', 'Mahi', 'rocky')

Process finished with exit code 0



Question-4:

it_companies = {'Facebook', 'Google', 'Microsoft', 'Apple', 'IBM', 'Oracle', 'Amazon'} A = {19, 22, 24, 20, 25, 26} B = {19, 22, 20, 25, 26, 24, 28, 27} age = [22, 19, 24, 25, 26, 24, 25, 24]

- Find the length of the set it_companies
- Add 'Twitter' to it_companies
- Insert multiple IT companies at once to the set it_companies
- Remove one of the companies from the set it_companies
- What is the difference between remove and discard
- Join A and B • Find A intersection B • Is A subset of B • Are A and B disjoint sets • Join A with B and B with A
- What is the symmetric difference between A and B
- Delete the sets completely
- Convert the ages to a set and compare the length of the list and the set.

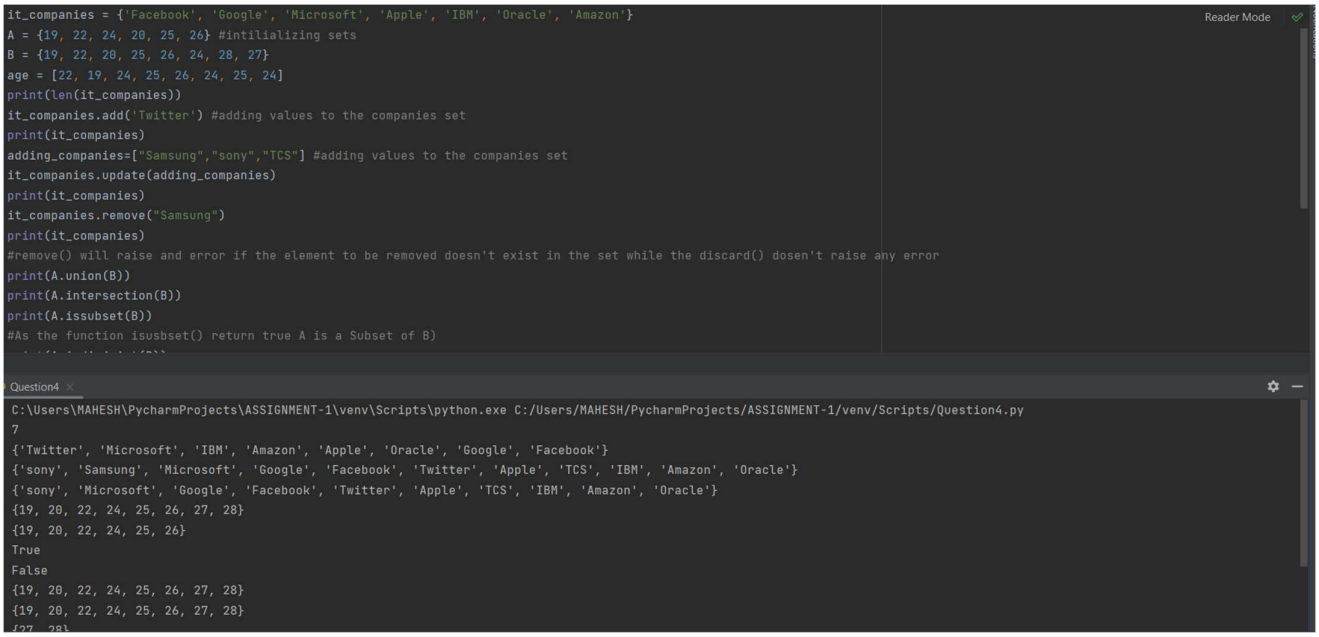
SOURCE CODE:

```
it_companies = {'Facebook', 'Google', 'Microsoft', 'Apple', 'IBM', 'Oracle', 'Amazon'}
A = {19, 22, 24, 20, 25, 26} #intilializing sets
B = {19, 22, 20, 25, 26, 24, 28, 27}
age = [22, 19, 24, 25, 26, 24, 25, 24]
print(len(it_companies))
it_companies.add('Twitter') #adding values to the companies set
print(it_companies)
adding_companies=["Samsung","sony","TCS"] #adding values to the companies set
it_companies.update(adding_companies)
print(it_companies)
it_companies.remove("Samsung")
print(it_companies)
#remove() will raise and error if the element to be removed doesn't exist in the set
while the discard() dosen't raise any error
print(A.union(B))
print(A.intersection(B))
print(A.issubset(B))
#As the function isusbset() return true A is a Subset of B)
print(A.isdisjoint(B))
#As the function isdisjoint() returns false A and B are not disjoint sets
print(A.union(B))
print(B.union(A))
print(A.symmetric_difference(B))
A.clear() #cleared the set A
B.clear() #cleared the set B
print(A)
```

OUTPUT:

```
C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question4.py
7
{'Twitter', 'Microsoft', 'IBM', 'Amazon', 'Apple', 'Oracle', 'Google', 'Facebook'}
{'sony', 'Samsung', 'Microsoft', 'Google', 'Facebook', 'Twitter', 'Apple', 'TCS', 'IBM', 'Amazon', 'Oracle'}
{'sony', 'Microsoft', 'Google', 'Facebook', 'Twitter', 'Apple', 'TCS', 'IBM', 'Amazon', 'Oracle'}
{19, 20, 22, 24, 25, 26, 27, 28}
{19, 20, 22, 24, 25, 26}
True
False
{19, 20, 22, 24, 25, 26, 27, 28}
{19, 20, 22, 24, 25, 26, 27, 28}
{27, 28}
set()

Process finished with exit code 0
```



QUESTION-5:

The radius of a circle is 30 meters.

- Calculate the area of a circle and assign the value to a variable name of area of circle
- Calculate the circumference of a circle and assign the value to a variable name of circum of circle
- Take radius as user input and calculate the area.

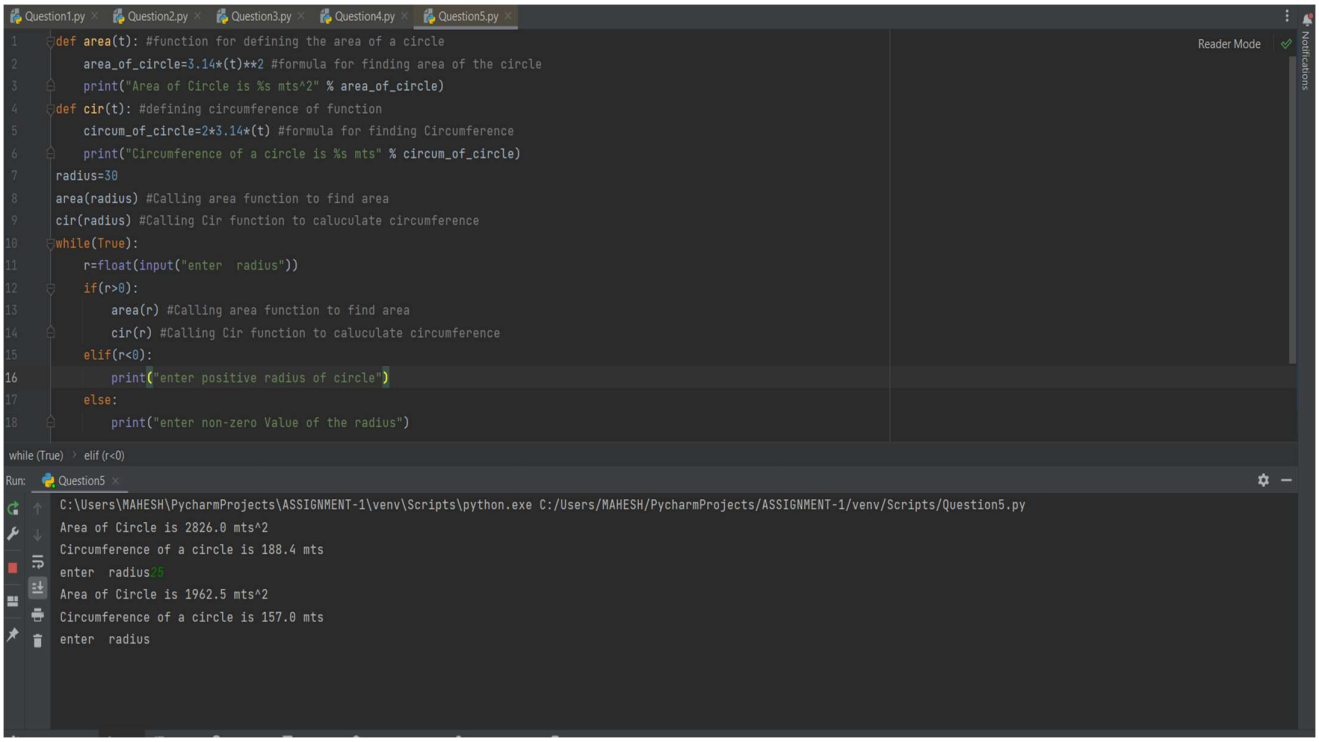
SOURCE CODE:

```
def area(t): #function for defining the area of a circle
    area_of_circle=3.14*(t)**2 #formula for finding area of the circle
    print("Area of Circle is %s mts^2" % area_of_circle)
def cir(t): #defining circumference of function
    circum_of_circle=2*3.14*(t) #formula for finding Circumference
    print("Circumference of a circle is %s mts" % circum_of_circle)
radius=30
area(radius) #Calling area function to find area
cir(radius) #Calling Cir function to caluculate circumference
while(True):
    r=float(input("enter  radius"))
    if(r>0):
```

```
        area(r) #Calling area function to find area
        cir(r) #Calling Cir function to caluculate circumference
    elif(r<0):
        print("enter positive radius of circle")
    else:
        print("enter non-zero Value of the radius")
```

OUTPUT:

C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question5.py
Area of Circle is 2826.0 mts^2
Circumference of a circle is 188.4 mts
enter radius25
Area of Circle is 1962.5 mts^2
Circumference of a circle is 157.0 mts
enter radius



QUESTION-6:

"I am a teacher and I love to inspire and teach people"

• How many unique words have been used in the sentence? Use the split methods and set to get the unique words.

SOURCE CODE:

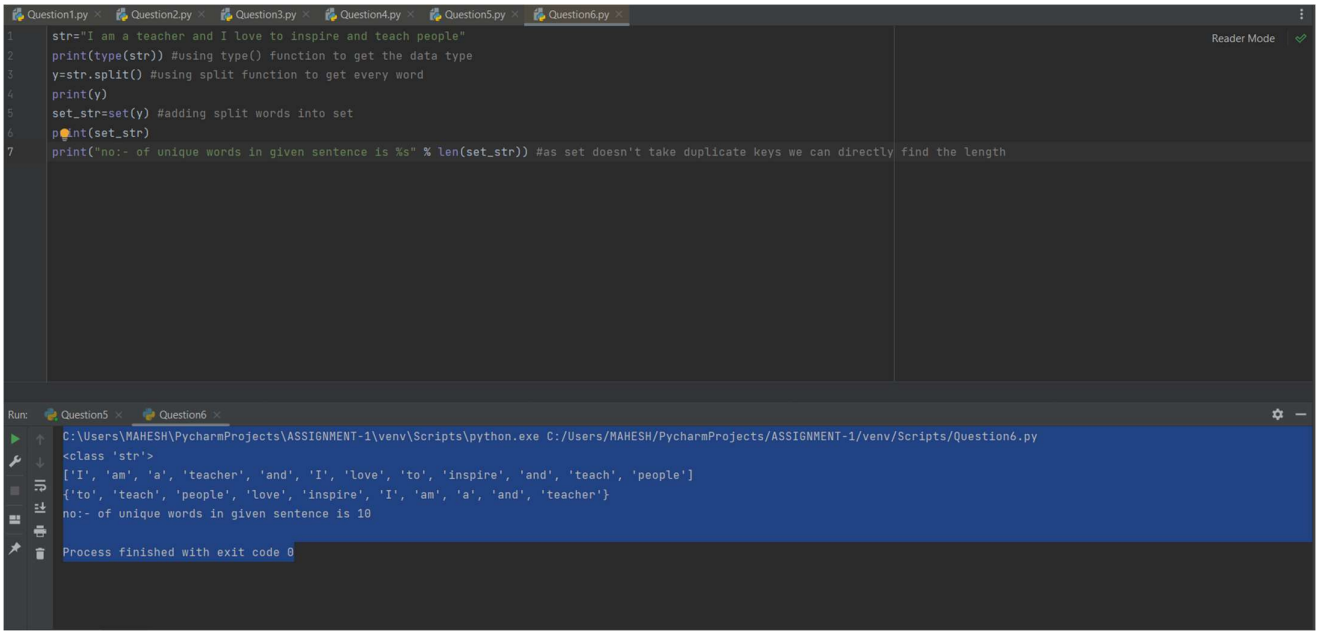
```
str="I am a teacher and I love to inspire and teach people"
print(type(str)) #using type() function to get the data type
y=str.split() #using split function to get every word
print(y)
set_str=set(y) #adding split words into set
print(set_str)
print("no:- of unique words in given sentence is %s" % len(set_str)) #as set doesn't
take duplicate keys we can directly find the length
```

OUTPUT:

C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question6.py

<class 'str'>
['I', 'am', 'a', 'teacher', 'and', 'I', 'love', 'to', 'inspire', 'and', 'teach', 'people']
{'to', 'teach', 'people', 'love', 'inspire', 'I', 'am', 'a', 'and', 'teacher'}
no:- of unique words in given sentence is 10

Process finished with exit code 0



QUESTION-7:

Use a tab escape sequence to get the following lines.

Name	Age	Country	City
Asabeneh	250	Finland	Helsinki

SOURCE CODE:

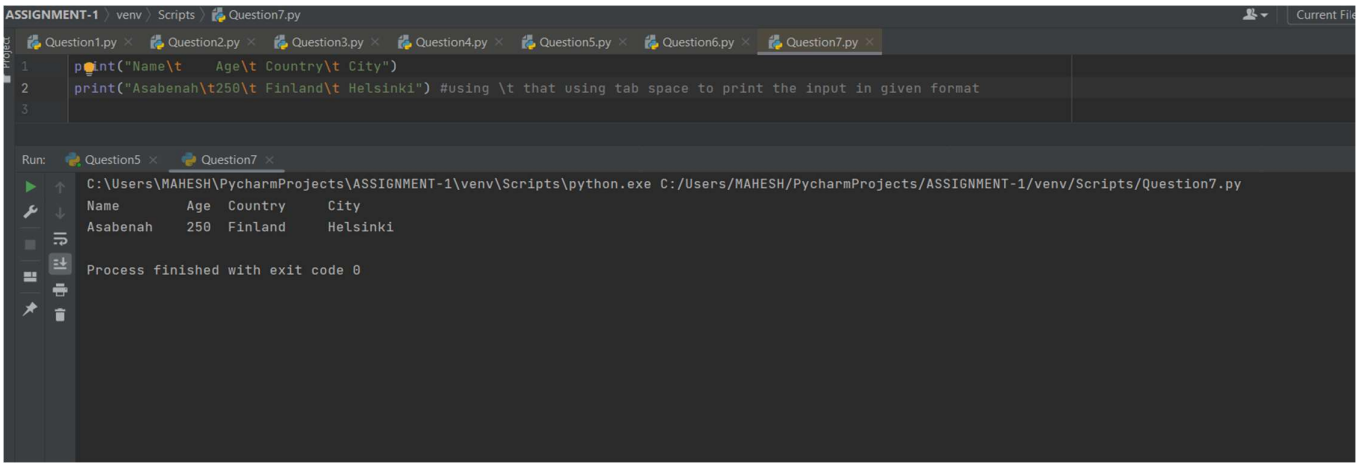
```
print("Name\t    Age\t Country\t City")
print("Asabenah\t250\t Finland\t Helsinki") #using \t that using tab space to print the input in given format
```

OUTPUT:

C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question7.py

Name	Age	Country	City
Asabenah	250	Finlan	Helsinki

Process finished with exit code 0



QUESTION-8:

Use the string formatting method to display the following: radius = 10 area = 3.14 * radius ** 2 “The area of a circle with radius 10 is 314 meters square.”

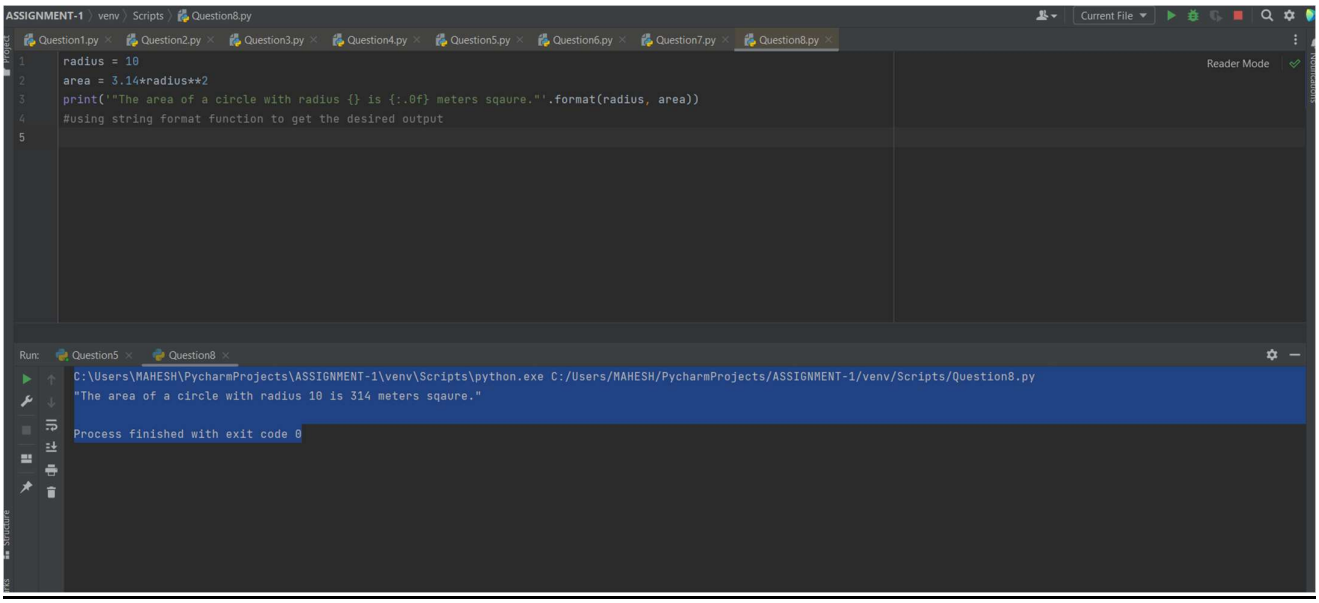
SOURCE CODE:

```
radius = 10
area = 3.14*radius**2
print('"The area of a circle with radius {} is {:.0f} meters sqaure."'.format(radius,
area))
#using string format function to get the desired output
```

OUTPUT:

C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question8.py
"The area of a circle with radius 10 is 314 meters sqaure."

Process finished with exit code 0



QUESTION-9:

Write a program, which reads weights (lbs.) of N students into a list and convert these weights to kilograms in a separate list using Loop. N: No of students (Read input from user)
Ex: L1: [150, 155, 145, 148] Output: [68.03, 70.3, 65.77, 67.13]

SOURCE CODE:

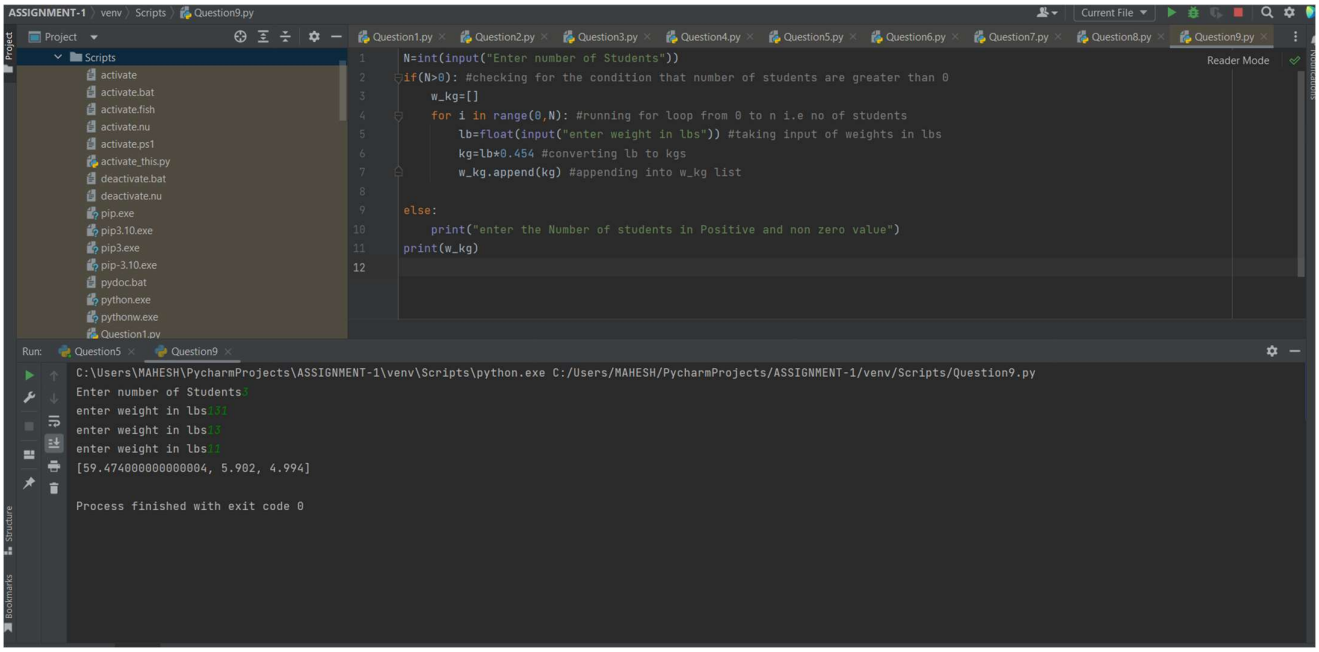
```
N=int(input("Enter number of Students"))
if(N>0): #checking for the condition that number of students are greater than 0
    w_kg=[]
    for i in range(0,N): #running for loop from 0 to n i.e no of students
        lb=float(input("enter weight in lbs")) #taking input of weights in lbs
        kg=lb*0.454 #converting lb to kgs
        w_kg.append(kg) #appending into w_kg list

else:
    print("enter the Number of students in Positive and non zero value")
print(w_kg)
```

OUTPUT:

C:\Users\MAHESH\PycharmProjects\ASSIGNMENT-1\venv\Scripts\python.exe
C:/Users/MAHESH/PycharmProjects/ASSIGNMENT-1/venv/Scripts/Question9.py
Enter number of Students3
enter weight in lbs131
enter weight in lbs13
enter weight in lbs11
[59.474000000000004, 5.902, 4.994]

Process finished with exit code 0



QUESTION-10:

The diagram below shows a dataset with 2 classes and 8 data points, each with only one feature value, labeled f. Note that there are two data points with the same feature value of 6. These are shown as two x's one above the other.

1. Divide this data equally into two parts. Use first part as training and second part as testing. Using KNN classifier, for K=3, what would be the predicted outputs for the test samples? Show how you arrived at your answer. 2. Compute the confusion matrix for this and calculate accuracy, sensitivity and specificity values.