MACHINE LEARNING

ASSIGNMENT : 1

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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)

```
ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24]
# Student ages as given in problem
print(ages)

# Displaying the ages

ages.sort()
# performing sort operation on ages
print(ages)
# Displaying the ages after sorting (sorting order)
x = min(ages)
# Finding the minimum age from the list and storing it in a variable "x"
y = max(ages)
# Finding the maximum age from the list and storing it in a variable "y"
print(x)
# Displaying the minimum age (value stored in x)
print(y)
#  Displaying the maximum age (value stored in y)
ages.append(x)
# Adding the minimum value (value of x) to the list
print(ages)
# Displaying ages list
ages.append(y)
# Adding the maximum value (value of y) to the list
print(ages)
# Displaying ages list
z = len(ages)
# Finding the length of the  ages list
print(z)
```

```
# Displaying the length
p = (z-1)//2

# Performing the floor division

print(p)
# Displaying the value of floor division (value stored in p)
median_x = (ages[p] + ages[p+1])/2
# Performing the median
print(median_x)
# Displaying median
sum_1 = sum(ages)

# Performing sum for the addition of ages
print(sum_1)

# Displaying the sum of ages

avg = sum_1/z
# Performing  the average
print(avg)

# Displaying average
range_1 = y-x
# Finding the range
print(range_1)
# Displaying range
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question1.py
[19, 22, 19, 24, 20, 25, 26, 24, 25, 24]
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26]
19
26
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26, 19]
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26, 19, 26]
12
5
24.0
273
22.75
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

```
dog = dict()                                    # Created a dog dictionary
dog["name"] = "MOMO"
# Giving name of the dog
dog["color"] = "white"                          # Giving color of the dog
dog["breed"] = " chow chow"
# Giving Breed of the dog
dog["legs"] = 4
# Giving no of legs of the dog
dog["age"] = 3                                  # Giving age of the dog
print(dog)                                      # Displaying the dog dictionary

student = dict()                                        # Creating a student dictionary
student["first_name"] = "SRI SNIGDHA"                           # Giving firstname to the
student dictionary
student["last_name"] = "MADISETTY"                              # Giving lastname to the student
dictionary
student["gender"] = "Female"                            # Giving gender to the student
dictionary
student["age"] = 22                                     # Giving age to the student dictionary
student["marital status"] = "Single"                    # Giving marital status to the student
dictionary
student["skills"] = ["C", "Python"]                     # Giving skills to the student dictionary
student["country"] = "INDIA"                            # Giving country to the student
dictionary
student["city"] = "KHAMMAM"                             # Giving city to the student dictionary
student["address"] = "Gandhichowk khammam 507003"       # Giving address to the student
```

```
dictionary
print(student)                                  # Displaying student dictionary
len_1 = len(student)                            # Finding the length of the student dictionary
print(len_1)                                    # Length of the student dictionary
print(student["skills"])                        # skills in the list format
print(type(student["skills"]))                  # Displaying the type of the student skills
student["skills"].extend(["Machine Learning", "DBMS"])    # Modifying the skills values of
the student dictionary
print(student["skills"])                        # Displaying the skills of the student
dictionary
print(student.keys())                           # Displaying the student dictionary keys as a
list
print(student.values())                         # Displaying the student dictionary values as
a list
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question2.py
{'name': 'MOMO', 'color': 'white', 'breed': ' chow chow', 'legs': 4, 'age': 3}
{'first_name': 'SRI SNIGDHA', 'last_name': 'MADISETTY', 'gender': 'Female', 'age': 22, 'marital status': 'Single', 'skills': ['C', 'Python'], 'country':
9
['C', 'Python']
<class 'list'>
['C', 'Python', 'Machine Learning', 'DBMS']
dict_keys(['first_name', 'last_name', 'gender', 'age', 'marital status', 'skills', 'country', 'city', 'address'])
dict_values(['SRI SNIGDHA', 'MADISETTY', 'Female', 22, 'Single', ['C', 'Python', 'Machine Learning', 'DBMS'], 'INDIA', 'KHAMMAM', 'Gandhichowk khammam 5

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

```
sisters = ("Soundrya", "Nikitha", "Asma", "Vaishnavi")  # Tuple with names of sisters
brothers = ("Vijay", "Nikhil", "Uday",)                 # Tuple with names of brothers
siblings = sisters + brothers                           # Joined two tuples into a siblings
tuple
print(siblings)                                 # Displaying the siblings tuple
len1 = len(siblings)                            # Counting the number of siblings
```

```
print(len1)                                    # Printing the number of siblings
family_members = siblings + ("sharath madisetty", "prabhavathi madisetty",)
# Modifying & Adding parents names
print(family_members)                          # Printing the family_members tuple
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question3.py
('Soundrya', 'Nikitha', 'Asma', 'Vaishnavi', 'Vijay', 'Nikhil', 'Uday')
7
('Soundrya', 'Nikitha', 'Asma', 'Vaishnavi', 'Vijay', 'Nikhil', 'Uday', 'sharath madisetty', 'prabhavathi madisetty')

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

```
it_companies = {'Facebook', 'Google', 'Microsoft', 'Apple', 'IBM', 'Oracle', 'Amazon'}
# Created a set of it companies
A = {19, 22, 24, 20, 25, 26}                   # allocated set of numbers
to a
```

```
B = {19, 22, 20, 25, 26, 24, 28, 27}                                    # allocated set of
numbers to b
age = [22, 19, 24, 25, 26, 24, 25, 24]                                  # created a set of ages
len1 = len(it_companies)                                  # for  finding the lenght of companies
set
print(len1)                                               # Print the lenghth of it_companies set
it_companies.add("Twitter")                                  # Append twitter to it_companies
set
print(it_companies)                                       # Printing the it_companies
it_companies1 = {"TCS", "Accenture", "Infosys", "Deloitte", "Wipro", "Cap Gemini"}
# Creating various it_companies1 set
it_companies.update(it_companies1)                        # Inserting various it_companies1 set
to it_companies
print(it_companies)                                          # Printing it_companies after
insertion
it_companies.remove("Accenture")                                    # deducting single company
from it_companies
print(it_companies)                                          # Printing after deduction

print(A.union(B))                                      # combine A and B
print(A.intersection(B))                                 # to find A intersection B
print(A.issubset(B))                                    # to find A is subset of B
print(A.isdisjoint(B))                                  # Finding whether A and B are disjoint sets
print(A.union(B))                                      # combine A with B
print(B.union(A))                                      # combine B with A
print(A.symmetric_difference(B))                             # to find the symmetric difference
between A and B
A.clear()                                           # Deleting the whole set A
print(A)                                           # verify whether it is deleted or not
B.clear()                                           # Deleting the whole set B
print(B)                                           # verify whether it is deleted or not
ageset = set(age)                                     # Changing the list to set
print(ageset)                                       # Printing the changed set
listlen = len(age)                                    # Find the length of the list
print(listlen)                                     # Print the length of the list
setlen = len(ageset)                                     # Find the length of the set
print(setlen)                                      # Print the length of the set

# length of the set is less than the length of the list since in set duplicate elements will be
removed
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question4.py
7
{'Facebook', 'Oracle', 'Apple', 'Microsoft', 'Twitter', 'Amazon', 'Google', 'IBM'}
{'Accenture', 'Cap Gemini', 'TCS', 'Microsoft', 'Twitter', 'Facebook', 'Amazon', 'IBM', 'Wipro', 'Deloitte', 'Oracle', 'Infosys', 'Apple', 'Google'}
{'Cap Gemini', 'TCS', 'Microsoft', 'Twitter', 'Facebook', 'Amazon', 'IBM', 'Wipro', 'Deloitte', 'Oracle', 'Infosys', 'Apple', 'Google'}
{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()
set()
{19, 22, 24, 25, 26}
8
5

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.

```
#Given radius of circle is 30
from math import pi                                  # import pi from math module
r = 30                                          # the radius given = 30
area_of_circle = pi*r*r                             # Find the area of circle
print("Area of circle the with radius 30 is " + str(area_of_circle))

# Displaying area of circle

circum_of_circle = 2*pi*r                                    #circumference of the circle
print("Circumference of circle the with radius 30 is " + str(circum_of_circle))

# Displaying circumference of the circle

radius = float(input("Enter the radius of circle"))      # considering the radius as input from the user
area_of_circle_new_radius = pi*radius*radius                # Find the area of circle using the radius from user input
print("Area of circle the with radius "+str(radius) + " is " + str(area_of_circle_new_radius))

# Displaying area of circle
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question5.py
Area of circle the with radius 30 is 2827.4333882308138
Circumference of circle the with radius 30 is 188.49555921538757
Enter the radius of circle 2
Area of circle the with radius 2.0 is 12.566370614359172

Process finished with exit code 0
```

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.

```
# String is “I am a teacher and I love to inspire and teach people”
# Storing string into abc
abc = "I am a teacher and I love to inspire and teach people"
# Performing split() function to split the string
abcd = abc.split()
# Displaying the spring after spliting
print(abcd)
# Removing duplicates by converting them into a set
answer = set(abcd)
# Displaying the set
print(answer)
# Calculating and Displaying number of unique words
print("The number of unique words in the given string is " + str(len(answer)))
```

OUTPUT :

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question6.py
['I', 'am', 'a', 'teacher', 'and', 'I', 'love', 'to', 'inspire', 'and', 'teach', 'people']
{'a', 'to', 'I', 'inspire', 'teach', 'am', 'people', 'love', 'and', 'teacher'}
The number of unique words in the given string 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**

```
#Using \t gives you the tab between the words and its proportional to number of \t
#Using the \n shifts you to the next line
#Storing the given data as required by using \t and \n

answer = "Name\t\tAge\t\tCountry\t\tCity\nAsabeneh\t250\t\tFinland\t\tHelsinki"
#Displaying the data as required
print(answer)
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question7.py
Name        Age     Country     City
Asabeneh    250     Finland     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.”

```
# Initializing the given radius=10
radius = 10
# Finding the area
area = 3.14 * radius * radius
# Displaying the answer
print("The area of a circle with radius {} is {} meters square.".format(radius, int(area)))
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question8.py
The area of a circle with radius 10 is 314 meters square.

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]

```
weights_in_lbs = list()
# Student weights list
N = int(input("Enter number of students "))
# Initializing the number of students from user
for i in range(N):
# Running a for loop
    studentweights = float(input("Enter the weight of Student of student " + str(i+1)+ " in lbs:
"))
# Asking the user to enter weights in lbs
    weights_in_lbs.append(studentweights*0.453592)                    # Converting
weights from lbs into kgs and appending them to the list
# Converting weight list to list with 2 decimal places
weights_in_kgs = ['%.2f' % elem for elem in weights_in_lbs]
# Displaying the weights in kgs with 2 decimal places
print("Weights of Students in kgs: \n\t\t\t\t\t\t\t" +str(weights_in_kgs))
```

OUTPUT:

```
C:\Users\srisn\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/srisn/PycharmProjects/pythonProject2/Question9.py
Enter number of students 3
Enter the weight of Student of student 1 in lbs: 100
Enter the weight of Student of student 2 in lbs: 362
Enter the weight of Student of student 3 in lbs: 526
Weights of Students in kgs:
                        ['45.36', '164.20', '238.59']

Process finished with exit code 0
```