GitHub: <https://github.com/rxu95040/machinelearning>

Video Link: <https://drive.google.com/file/d/1niZu1lU8t9yNUcsx1yg1jKZMzA50Re2R/view?usp=drive_link>

**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)

# Sorting the list and find the min and max age

ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24]

ages.sort()

print(f'Sorted Array : {ages}')

minAge = min(ages)

maxAge = max(ages)

# min and max-age

print(f'Minimum val: {minAge}')

print(f'Maximum val: {maxAge}')

# Add the min age again to the list

ages.append(minAge)

print(ages)

# Add the max-age again to the list

ages.append(maxAge)

print(ages)

# Calculation of Median using statics library

import statistics

print(f'MedianAge : {statistics.median(ages)}')

# Calculation of Average value

average= sum(ages)/len(ages)

print(f'Average is {average}')

A screenshot of a computer

Description automatically generated

**Question 2**

* Create an empty dictionary called a dog.
* Add name, color, breed, legs, and 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

# Create an empty dictionary called dog.

dog = {}

# Add name, color, breed, legs, age to the dog dictionary

print('Adding name, color, breed, legs, age to the dog dictionary')

dog['name'] = 'Daisy'

dog['color'] = 'Black'

dog['breed'] = 'Labrador Retriever'

dog['legs'] = 4

dog['age'] = 14

# Create a student dictionary and add first\_name, last\_name, gender, age, marital status, skills, country, city and address as keys for the dictionary

print('Creating Empty Student Dictionary and Adding first\_name, last\_name, gender, age, marital status, skills, country, city and address as keys')

student = {}

student['first\_name'] = 'Sandeep'

student['last\_name'] = 'Yadav'

student['gender'] = 'Male'

student['age'] = 31

student['marital\_status'] = 'Single'

student['skills'] = ['Python', 'Java', 'DotNet', 'CSS']

student['country'] = 'USA'

student['city'] = 'Kansas'

student['address'] = '106th St'

# Get the length of the student dictionary

studentLen = len(student)

print(f'Student Dictionary Length is {studentLen}')

#Get the value of skills and check the data type, it should be a list

skills = student['skills']

print(f'value of skills {skills}')

print(f'Datatype of skills is {type(skills)}')

# Modify the skills values by adding one or two skills

skills.append('Angular')

skills.append('SQL')

print(f'Student Skills : {student["skills"]}')

#Get the dictionary keys as a list

keys = list(student)

print('Student Dictionary Keys:')

print(f'{keys}')

# Get the dictionary values as a list

values = list(student.values())

print('Student Dictionary Values:')

print(f'{values}')

A screenshot of a computer

Description automatically generated

**Question 3**

* Create a tuple containing the 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 sibling’s tuple and add the name of your father and mother and assign it to family\_members

#Create a tuple containing names of your sisters and your brothers (imaginary siblings are fine)

print('Creating typles for brothers and sisters')

sisters = ('Daisy', 'UdayShri', 'ArunaShri')

brothers = ('Sachin', 'Suresh')

# Join brothers and sisters tuples and assign it to siblings

print('Joining brothers and sisters tuples')

siblings = sisters + brothers

# How many siblings do you have?

print(f'Total Siblings : {len(siblings)}')

print(siblings)

# Family Members

family\_members = siblings + ('SRK', 'Vijaya')

print(f'Family Members Count : {len(family\_members)}')

print(family\_members)

A screenshot of a computer program

Description automatically generated

**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

#Find the length of the set it\_companies

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]

print(f'Length of the set it\_companies is {len(age)}')

#Add 'Twitter' to it\_companies

it\_companies.add('Twitter')

print("After adding Twitter company:\n", it\_companies)

#Insert multiple IT companies at once to the set it\_companies

it\_companies.update({'Infosys','Capgemini','Wipro','TCS'})

print("After adding multiple items:\n",it\_companies)

#Remove one of the companies from the set it\_companies

it\_companies.remove('Infosys')

print("After removing Infosys company:\n",it\_companies)

#What is the difference between remove and discard

#Discard doesn't raise any error if any item is not present in the set

#Remove

it\_companies.remove('TCS')

print("After removing TCS:",it\_companies)

#Discard

it\_companies.discard('TCS')

print("After discarding TCS company which is not present:",it\_companies)

print("Discard does not throw error in case element not present in the set")

#Join A and B

A = {19, 22, 24, 20, 25, 26}

print(f'A : {A}')

B = {19, 22, 20, 25, 26, 24, 28, 27}

print(f'B : {B}')

print("Join A and B:", A.union(B))

#Find A intersection B

A = {19, 22, 24, 20, 25, 26}

print(f'A : {A}')

B = {19, 22, 20, 25, 26, 24, 28, 27}

print(f'B : {B}')

print("A intersection B:", A.intersection(B))

#Is A subset of B

A = {19, 22, 24, 20, 25, 26}

print(f'A : {A}')

B = {19, 22, 20, 25, 26, 24, 28, 27}

print(f'B : {B}')

print("Is A Subset of B:", A.issubset(B))

#Join A with B and B with A

A = {19, 22, 24, 20, 25, 26}

B = {19, 22, 20, 25, 26, 24, 28, 27}

A = A.union(B)

B = B.union(B)

print(f'A after joining with B: {A}')

print(f'B after joining with B: {B}')

#Disjoint

A = {19, 22, 24, 20, 25, 26}

print(f'A : {A}')

B = {19, 22, 20, 25, 26, 24, 28, 27}

print(f'B : {B}')

print("Disjoint : ", A.isdisjoint(B))

#What is the symmetric difference between A and B

print(f'A : {A}')

print(f'B : {B}')

print(f'Symmertic Difference between A and B: {A.symmetric\_difference(B)}')

#Delete the sets completely

print(f'A : {A}')

print(f'B : {B}')

A.clear()

B.clear()

print(f'A and B after deleting completely\n A: {A} \n B: {B}')

#Convert the ages to a set and compare the length of the list and the set

age = [22, 19, 24, 25, 26, 24, 25, 24]

print("Converting list to set:", set(age))

#Length of set(age)

print("Length of set:",len(set(age)))

#Length of list(age)

print("Length of list:",len(age))

print('Difference is because set does not allow duplicate values')

A screenshot of a computer

Description automatically generated

**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.

#Calculate the area of a circle and assign the value to a variable name of area\_of\_circle

import mathr = 30

radius = 30

\_area\_of\_circle\_ = math.pi \* (radius\*\*2)

print(f'Area of circle with radius {radius} is {\_area\_of\_circle\_}')

#Calculate the circumference of a circle and assign the value to a variable name of circum\_of\_circle

radius = 30

\_circum\_of\_circle\_ = 2 \* math.pi \* radius

print(f'Circumference of a circle with radius {radius} is {\_circum\_of\_circle\_}')

#Take radius as user input and calculate the area.

radius = float(input("Please enter radius :"))

\_area\_of\_circle\_ = math.pi \* (radius\*\*2)

print(f'Area of circle with radius {radius} is {\_area\_of\_circle\_}')

A screenshot of a computer program

Description automatically generated

**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.

#Unique word

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

resultSet = set()

for item in text.split(' '):

resultSet.add(item)

print(f'Unique words are : \n{resultSet}')

A screenshot of a computer program

Description automatically generated

**Question 7**

Use a tab escape sequence to get the following lines.

Name Age Country City

Asabeneh 250 Finland Helsinki

text = "Name\t Age\tCountry\tCity\t\nAsabeneh 250\tFinland\tHelsinki"

print(text)

A screenshot of a computer

Description automatically generated

**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.”

print(f'radius = 10')

print(f'area = 3.14\*radius\*\*2')

r = 10

print(f'"The area of circle with radius {r} is {int(3.14\*r\*r)} meters square"')

A screenshot of a computer

Description automatically generated

**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]

L1=[int(num) for num in input().split(" ")]

W\_kg=[]

for i in L1:

W\_kg.append(round(i / 2.205, 2))

print ("Values are:",W\_kg)

A screenshot of a computer

Description automatically generated