MACHINE LEARNING ASSIGNMENT README FILE.

Screen+voice recording link :

https://drive.google.com/file/d/1v4P5GTCkxtykkAqWOV2BWXisfG3icBfT/view?usp=sharing

1) a)

Here they have given a list of 10 student's ages. And then they asked to find the minimum value and maximum value of the list ages which we did with min max functions.

b)

Here they have asked to add minimum age and maximum age to the list again. For that we have used the append function and added minimum and maximum values to the list.

c)

To find the median we have imported a library called statistics which contains all the statics related functions. In that we have called the median as "statistics.median()" and printed the median value.

d)

To find the average we have used the above imported library called statistics and called "statistics.mean" which is also known as average and printed the average value.

e)

To find the range of the given list we have used minimum and maximum function and found min and max values and then did maximum-minimum which gives the range. Then we printed the statement.

```
ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24]
sorted ages = [19, 19, 20, 22, 24, 24, 24, 25, 25, 26]
maximum= 26
minimum= 19
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26, 26]
[19, 19, 20, 22, 24, 24, 24, 25, 25, 26, 26, 19]
median= 24.0
average= 22.75
range= 7
```

2)

a)

Here they have asked to create the empty dictionary called dog and we did it my doing this dog={}.

b)

Then we are asked to add the name, color, breed, legs, age to the dictionary. We have done that they gave a random values to the given keys and printed the dictionary using print statement.

c)

Here they have asked to create another dictionary and add the following keys : add first_name, last_name, gender, age, marital status, skills, country, city and address. For that we have added these keys and gave some random values to the keys and printed the Statement.

d)

Here they have asked us to print the length of the dictionary student for that we have a length function and calculated the length and then printed it with a print statement.

e)

Here they have asked us to find the data type of skills key in the students dictionary. For that we have used type function and printed the data type. And also given that it should be a list. So we go back to the student dictionary initialization and change the skills key value as the list form and 2-3 items in that.

f)

they have asked to add the 2 items to the skills list. So we have used the append function and added it to the list. And then printed it with a print statement.

g)

To get student keys we just write a print statement and call the student.keys() and Then we print the statement.

h)

To get student values we just write a print statement and call the student.values() and Then we print the statement.

```
{}
{'name': 'doggy', 'color': 'black', 'breed': 'german', 'legs': 2, 'age': 5}
{'first_name': 'spandana', 'last_name': 'vegi', 'gender': 'female', 'age': 21, 'marital status': 'single', 'skills': ['JavaScri
pt', 'r', 'clay art', 'Python'], 'country': 'USA', 'city': 'kansas', 'address': 'leawood'}
length : 9
['JavaScript', 'r', 'clay art', 'Python']
<class 'list'>
{'first_name': 'spandana', 'last_name': 'vegi', 'gender': 'female', 'age': 21, 'marital status': 'single', 'skills': ['JavaScri
pt', 'r', 'clay art', 'Python', 'reading'], 'country': 'USA', 'city': 'kansas', 'address': 'leawood'}
student_keys= dict_keys(['first_name', 'last_name', 'gender', 'age', 'marital status', 'skills', 'country', 'city', 'address'])
student_values= dict_values(['spandana', 'vegi', 'female', 21, 'single', ['JavaScript', 'r', 'clay art', 'Python', 'reading'],
'USA', 'kansas', 'leawood'])
```

3)

a)

Here they have asked us to create a tuple which contains names of our siblings. So we

have created two tuples one with name brothers and other with names sisters.

b)

Then they have asked us to join the two tuples and make a single tuple with names with name siblings. For that we have used + operator and added the two tuples.

c)

To find no.of siblings we have to use the len function and print the length with a print Statement.

d)

Here to modify the tuple we created another tuple which contains father and mother names and named as parents.and merged it with siblings and created a new tuple name family.

```
brothers = ('kowshik', 'kumar', 'mani')
sisters= ('alekhya', 'shaithi', 'mounika')
sibilings= ('kowshik', 'kumar', 'mani', 'alekhya', 'shaithi', 'mounika')
length= 6
lst_sibilings= ('kowshik', 'kumar', 'mani', 'alekhya', 'shaithi', 'mounika')
family_members= ('kowshik', 'kumar', 'mani', 'alekhya', 'shaithi', 'mounika', 'mother', 'father')
```

4)

a)

Here to calculate the length of the it_companies set we used the len function and printed the value using printf statement.

b)

To add 'Twitter' to the set it_companies we used the add function and then printed the set with a print statement.

c)

To add multiple no.of companies at the same time we use a function called update and we add multiple no.of companies at the same time and then print the set.

d)

To remove the particular company name from the set we use remove() function and remove the item and then print the list.

e)Difference between Remove And Discard is Discard method is different from the remove method, because the remove method will throw an error if the specified item is not present in list, whereas the discard method will not throw any error if item doesn't exist in the list.

f)

To join a and b we use a union b

g)

We find A intersection B as A.intersection(B)

h)

To check whether a is a subset of b all the elements in a must be there in b. We check it as A.issubset(B)

i)

To check whether A and B are disjoint sets or not we use A.isdisjoint(B). If it is true then disjoint sets are not disjoint sets.

j)

if Join A with B and B with A then we do union and both of them give the same Values.

k)

To find symmetric difference between A and B we use the symmetric function symmetric_difference(B) and print the values.

l)

To delete sets completely we use the delete function.

m)

To convert the ages to a set we use set function and write it as set(age). And to compare length we use len function and write an if loop. If length is equal then true else false.

```
length of it_companies= 7
{'Apple', 'IBM', 'Google', 'Amazon', 'Microsoft', 'Facebook', 'Oracle', 'Twitter'}
{'Google', 'Microsoft', 'Twitter', 'Amazon', 'Facebook', 'goldflex', 'IBM', 'cresn', 'Oracle', 'matriczs', 'Apple'}
{'Google', 'Microsoft', 'Twitter', 'Facebook', 'goldflex', 'IBM', 'cresn', 'Oracle', 'matriczs', 'Apple'}
Difference between Remove() and Discard():
Discard() method is different from the remove() method, because the remove() method will throw an error if the specified item i
s not present in list, whereasthe discard() method will not throw any error if item doesn't exist in list
join {19, 20, 22, 24, 25, 26, 27, 28}
intersection {19, 20, 22, 24, 25, 26}
subset= True
disjoint_sets= False
joina&b {19, 20, 22, 24, 25, 26, 27, 28}
joinb&a {19, 20, 22, 24, 25, 26, 27, 28}
symmetric_difference {27, 28}
age of list is  8
age_set {19, 22, 24, 25, 26}
length_set 5
false
```

5)

To calculate the area of circle we use the formula 3.14*r*r and given r=10 and then assign it to _area_of_circle_. Then for circumference we use 2*3.14*r and assign that value to _circum_of_circle_ . Then we give radius as a user input in this way int(input("Enter your value of radius: ")) and calculate the area and circumference again.

```
area = 2826.0
circumference= 188.88
Enter your value of radius: 5
radius = 5
area= 78.5
```

6)

To count no.of unique words that have been used in the sentence we use a set function and find the no.of unique words and length of them.

```
['am', 'a', 'teacher', 'I', 'love', 'to', 'inspire', 'and', 'teach', 'people']
10
```

7) refer to code : /t is used to give double spacing.

```
Name     Age    Country City
Asabench 250    Finland Helsinki
```

8)

refer to code : we use “” to write the printing statement and in the same way here we write "The area of a circle with radius",radius,"is %.0f" %area, "m" to print the required statement.

```
The area of a circle with radius 10 is 314 m
```

9)

Here first we input no.of students and their weights in lbs as user defined one in the form of list. Then we convert that lbs weights to kgs weight with the measure 1lb = 0.453592kg

```
Enter number of students: 4
140
145
150
155
[140, 145, 150, 155]
[63.50288, 65.77083999999999, 68.0388, 70.30676]
```

10)

So firstly we have imported all the necessary libraries and then given the data points which are in the number line manually. Then find the length of the data points which means no.of data points and then split in test and train Using split function and random size.

Then by using knn algo with n value 3, we found the predicted values of the given data set. Then I tried to print the confusion matrix and get accuracy, specificity,sensitivity with formulas and printed them using print statements.

```
Class label for the datasetX Y: [0 0 1 1 1 0 0 0]

Training Data X:
 [[ 2  0]
 [11  0]
 [ 6  0]
 [ 1  0]
 [ 7  0]
 [ 6  0]]

Training Data label Y: [0 0 1 0 0 1]

Predicted Classs labels for testing data Y: [0 0]

Confusion Matrix
 [[1 0]
 [1 0]]

Accuracy :  1
Sensitivity :  0.0
Specificity :  1.0
```