SPRING 2022: CS5710 – Machine Learning

Assignment-1

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GIT-HUB LINK: https://github.com/Jayanthsrisaidulla1998/ML-Assignment-1

VIDEO LINK: https://drive.google.com/file/d/1VnL2GXDu4olbZzA57R2D28ZHbi86H7L6/view?usp=sharing

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).

Graphical user interface, text, application

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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

Graphical user interface, text

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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

Graphical user interface, text, application, email

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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.

Text

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.

Graphical user interface, text, application

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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.

Graphical user interface, text, application, email

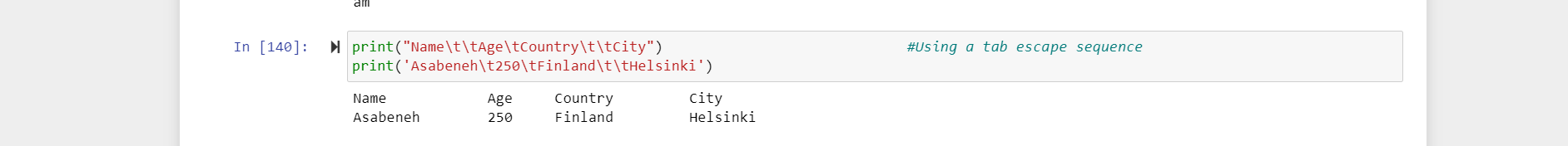
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Question 7

Use a tab escape sequence to get the following lines.

Name Age Country City

Asabeneh 250 Finland Helsinki



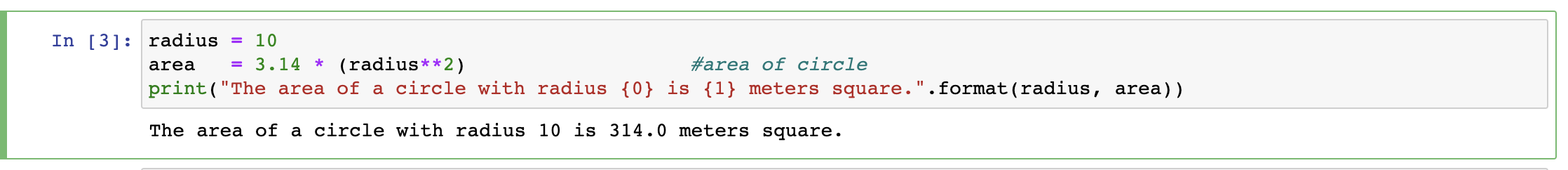
Question 8

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.”



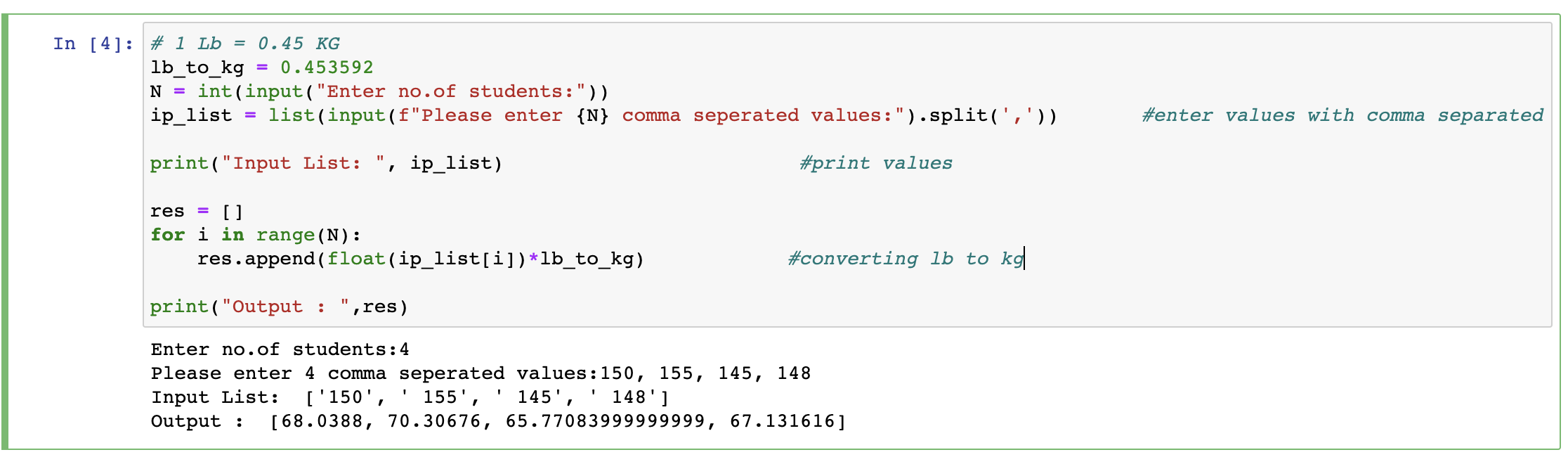
Question 9

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]

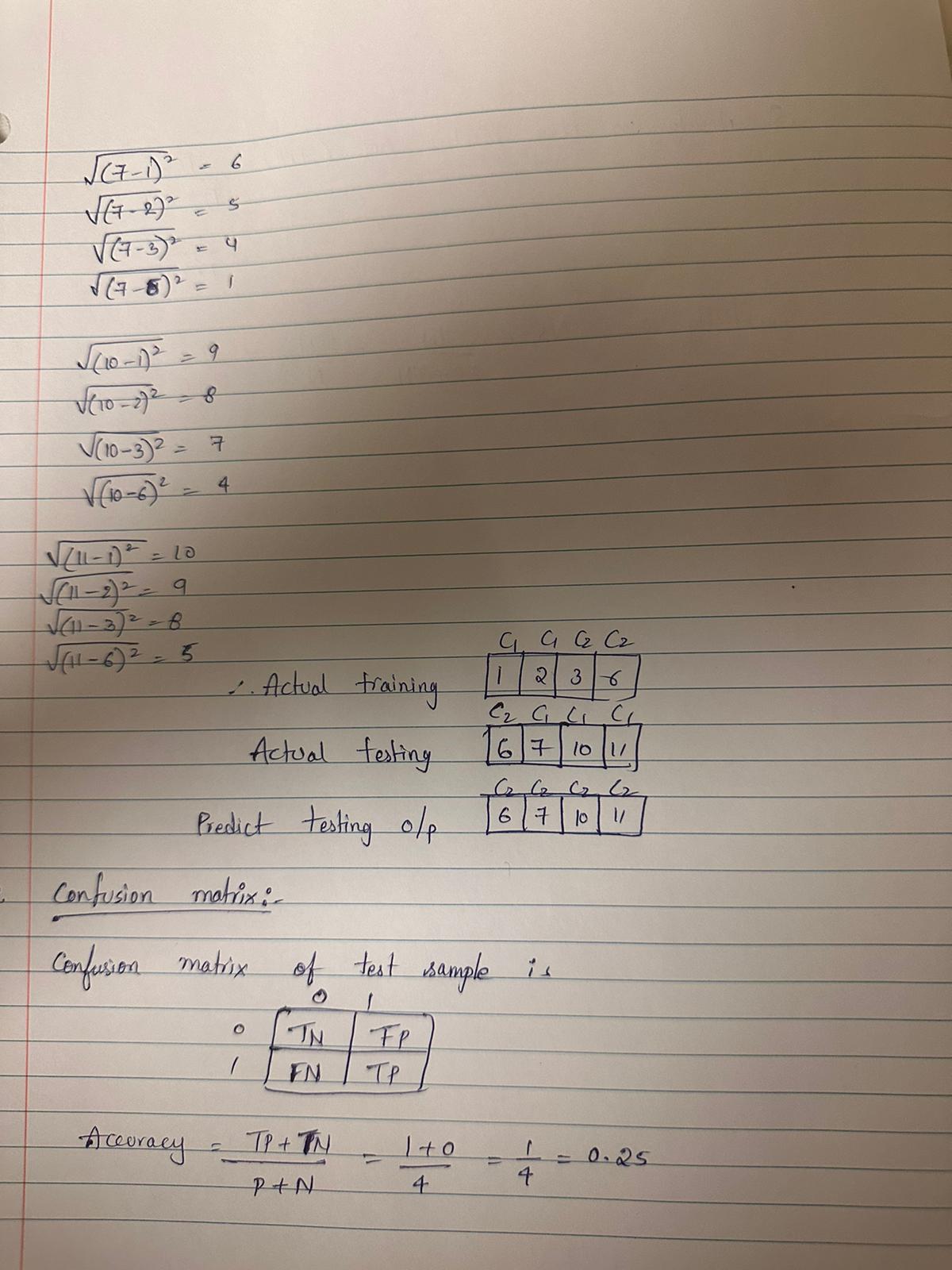


Question 10

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. Provide stepwise mathematical solution, do not write code for it. 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.

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