Seminar 1 (Week 1)

Q1. Please create a google colab file and try to write code for the following.

I. Please declare a list to store the Australian state names: New South Wales, Victoria, Queensland, Western Australia, South Australia, and Tasmania and print the list.
II. Please create a list of tuples with numbers and their squares. Examples: Our input list is [1, 3, 5, 7, 9] after the operation the output would be [(1, 1), (3, 9), (5, 25), (7, 49), (9, 81)]. Hint: please use for loop
III. Please declare a tuple containing 1, 9, 25, ‘a’, ‘b’ and determine its length.
IV. Please declare a dictionary with student final marks and print the dictionary items using keys and for loop. Example: student-names = [john, eve, alice, bob, mercy] and grades = [80, 50, 60, 65, 82].
V. Please write a python function to calculate the factorial of a number.

Q2. Please write the code for the following NumPy related exercises.

I. Create a 5x5 identity matrix and print it.
II. Create a 12x12 matrix, in which the elements on the borders will be equal to 1, and inside 0
III. Please multiply two matrix of same size. num1=[[10, 20, 30],[4, 8, 9]] ; num2 = [[14, 26, 3],[2, 3, 10]]

Q3. Please write the code for the following Pandas dataframe related exercises.

I. Please create a pandas dataframe for the student unit marks. Bob = 80, 97, 85, 67, 80; Alice = 82, 67, 85, 62, 80; Eve = 89, 90, 85, 77, 80
II. Please print the first 2 rows of the previously created dataframe.
III. Please import the following dictionary to pandas dataframe:
exam_data = {'name': ['Alice', 'Dee', 'Kathy', 'Homes', 'Boris', 'Hanson', 'Bourne', 'Matt', 'Jason', 'Jarvis'],
'score': [115, 7, 15.5, np.nan, 9, 19, 15.5, np.nan, 8.5, 19.5],
'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
   - ➔ Change ‘Dee’ name with ‘Eve’. [Please use replace()]
   - ➔ Find the rows with missing values.
   - ➔ Print the rows where the number of attempts in the examination is less than 2 and score is greater than 15.
   - ➔ Replace the nan values with 10.