Lab Exercise 4

**Task 1:** Write a Numpy program to test whether none of the elements of a given array is zero.

**Task 2:** There are two arrays. The first array, array1 contains the values 45, 67, 23 and array2 contains the values 56, 23, and 89. Write a Numpy program to create an element-wise comparison (greater, greater_equal, less and less_equal) of those two arrays.

**Task3** Write a Numpy program to create an array of 8 zeros, 5 ones, 10 fives.

**Task4:** Write a Numpy program to add a vector **v** with values 2, 0, 2 to each row of a matrix **m** with values:

[23 45 11]
[12 23 54]
[29 19 34]
[1 23 10]

**Task 5:** Write a NumPy program to create a 5x5 2d array with 1 on the border and 25 inside.

**Task 6:** Write a NumPy program to find common values between two arrays.

| Array1 | Array2 |
|---|---|
| [23, 45, 11, 5] | [23, 5, 1] |

**Task 7:** Perform the following manipulation of the two arrays below: horizontal stacking, vertical stacking; divide the individual array horizontally and vertically.

| Array1 | Array2 |
|---|---|
| [23, 45, 11] | [3, 5, 1] |
| [12, 23, 54] | [2, 3, 4] |
| [1, 23, 10] | [9, 1, 5] |

**Consider the following dataframe for the remaining tasks**

*Sample DataFrame*:
assessment_results = {'name': ['Anastasia', 'Paul', 'Kathe', 'Joseph', 'Linda', 'Michael', 'Matt', 'Laurentine', 'Chirstian', 'Jonas'],
'score': [12.5, 10, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],
'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']

**Task 8:** Write a Pandas program to get the first 3 rows of a given DataFrame.

**Task 9:** Write a Pandas program to select the rows where the number of attempts in the examination is greater than 2.

**Task 10:** Write a Pandas program to count the number of rows and columns of a DataFrame.

**Task 11:** Write a Pandas program to select the rows the score is between 14 and 20 (inclusive).

**Task 12:** Write a Pandas program to change the score in row 'c' to 11.5

**Task 13:** Write a Pandas program to calculate the mean score for each different student in DataFrame