**Assignment 2**

1. Create a new notebook in your python environment and name it assign1\_YOURSTUDENT#. ipynb
2. Complete the following coding tasks. Each task should be done in its own code cell. There should be no loop used in any coding cell
   1. Generate a two-dimensional integer array with the shape of (20,5) and name its “data”. Fill “data” with random integers from -100 to 100. Display “data” at the end. [1 mark]
   2. Display the average value of the third column in “data” [1 mark]
   3. Display the average value of the first 5 rows in “data” [1 mark]
   4. Display the average value of the first 3 rows and the 4th column in “data”. [2 marks]
   5. Create a new NumPy array which contains the last 4 elements of the second row of “data”. Display the new array at the end. [1 mark]
   6. Reshape “data” int to 10 x 10 matrix. Display the matrix at the end. [1 mark]
   7. Calculate the std deviation of “data” [1 mark]
   8. Replace the largest number of each row in “data” with the average of the corresponding row. Display “data” at the end. [2 marks]
   9. Create a new NumPy array which contains random 2 rows in “data”. Display the new array at the end. [2 marks]
   10. Create a new NumPy array which contains random 3 columns in “data”. Display the new array at the end. [2 marks]
   11. Create a new NumPy array which contains 100 random doubles drawn from a normal (Gaussian) distribution. Display the new array at the end. [2 marks]
   12. Convert the data to a Panda Data Frame with the header “a” – “e” and name it “dataframe”. Describe the “dataframe” at the end. [1 mark]
   13. Save the “dataframe” into assign1.xlsx. [1 mark]
   14. Save the “dataframe” into assign1.csv. [1 mark]
   15. Replace all the negative numbers in “dataframe” to 0. Describe the “dataframe” at the end. [1 mark]
   16. Replace all the zeros in the “dataframe” to 1. Describe the “dataframe” at the end. [1 mark]
3. Submit your notebook file into bright space.