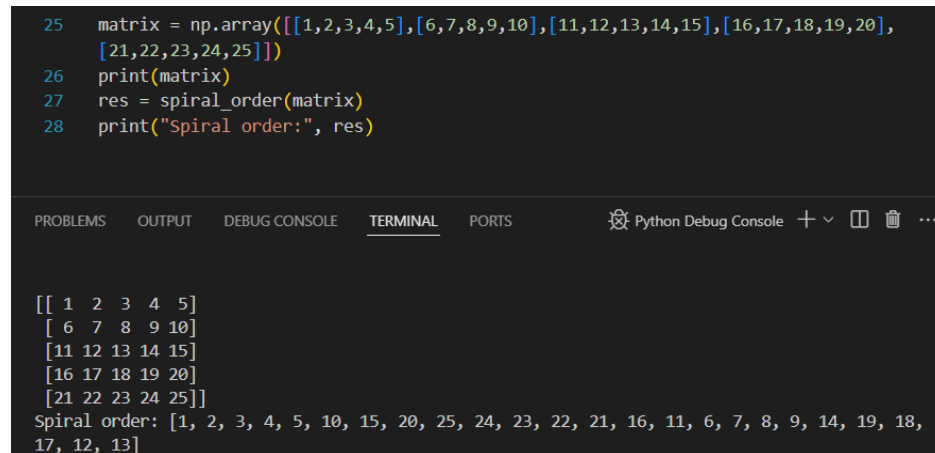# Learner's Space: Python for Data Science
ASSIGNMENT_Week 1

Hello, we hope you had a good time watching the tutorials for the course and have learned a lot from them. Let's try out the following questions!

1. Create and print a 2-dimensional NumPy array of shape (5, 5) filled with random* integers between 1 and 100. Perform the following tasks:
   a. Extract and print the middle element of the array using NumPy indexing.
   b. Calculate and print the mean of each row of the array.
   c. Create a new array that contains only the elements from the original array that are greater than the overall mean of the array.
   d. Write a Python function numpy_spiral_order(matrix) that takes a NumPy matrix and returns a list containing the elements visited in a spiral order.

   Example:

   ```
   25    matrix = np.array([[1,2,3,4,5],[6,7,8,9,10],[11,12,13,14,15],[16,17,18,19,20],
         [21,22,23,24,25]])
   26    print(matrix)
   27    res = spiral_order(matrix)
   28    print("Spiral order:", res)
   ```

   | PROBLEMS | OUTPUT | DEBUG CONSOLE | **TERMINAL** | PORTS | | Python Debug Console |

   ```
   [[ 1  2  3  4  5]
    [ 6  7  8  9 10]
    [11 12 13 14 15]
    [16 17 18 19 20]
    [21 22 23 24 25]]
   Spiral order: [1, 2, 3, 4, 5, 10, 15, 20, 25, 24, 23, 22, 21, 16, 11, 6, 7, 8, 9, 14, 19, 18, 17, 12, 13]
   ```

   Hints:
   ● Use np.random.randint() to create the initial array arr.
   ● Use NumPy functions like np.mean() and boolean indexing to perform calculations and extract elements.

   Now let's try to apply Python libraries on a dataset of Video Game Sales!
2. Create a Jupyter Notebook or a Google Colab Notebook, download the dataset in the drive link, and solve the following questions using the required Python libraries:
   a. Add a column of 'global_sales' showing the total sales of all the different regions to the data frame and sort (highest first) and print the DataFrame according to it.
   b. Display a plot of the total number of copies sold of each genre globally.
   c. Filter out only the games containing 'Grand Theft Auto' in their name and display the following as a DataFrame:
      i. their name
      ii. the platform they were released on
      iii. the year they were released in
      iv. the sum of sales in only Europe and Japan
   d. Display a pie chart of the total sales of all Grand Theft Auto games combined in North America, Europe, Japan, and other sales.