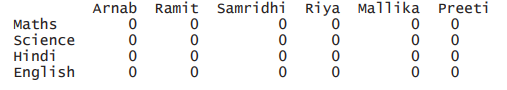
IT31L-Knowledge Representation, Artificial Intelligence, Machine Learning and Deep Learning Lab

**Assignment-1**

**Date:23/07/2024 Last Date of Submission: 27/07/2024**

1. Create a NumPy array of shape (3, 4) with values ranging from 1 to 12. Reshape it to a (4, 3) array and print the result.
2. Create a NumPy array of shape (5, 5) with random integers ranging from 1 to 10. Find the maximum value in the array and its corresponding index.
3. Create a NumPy array of shape (6, 6) with random integers ranging from 0 to 9. Find the even numbers in the array and replace them with -1. Print the modified array.
4. Create a NumPy array of shape (5, 5) with random floats ranging from 0 to 1. Normalize the array so that the values range from 0 to 1. Print the normalized array.
5. Create two NumPy arrays of shape (3, 3) with random integers ranging from 1 to 10. Perform element-wise multiplication and addition of the two arrays. Print the results.
6. Create a 2-dimensional array of shape (5, 5) with random integers ranging from 1 to 100. Find the sum of each row and store the results in a 1-dimensional array. Print the sum array.
7. Create a 3-dimensional array of shape (3, 4, 5) with random integers ranging from 1 to 100. Find the minimum value along the axis 0 and store the result in a 2-dimensional array of shape (4, 5). Print the minimum array.
8. Write a program to count the number of rows and columns in a DataFrame?

DataFrame: “ResultDF”



**Note: You may include marks other than 0**

1. Using the DataFrame ResultDF, write the statement to access Marks of Arnab in Maths.
2. Using the DataFrame ResultDF, write the statement to access subjects of Arnab in which he scored less than 60 marks.
3. Calculate the percentage of all students
4. Print the subjects whose average marks are more than 70 marks
5. Lab Exercise on Analyzing Sales Data

Dataset: The dataset is stored in a CSV file named "sales\_data.csv" and has the following columns:

* Date: Date of the sale
* Product: Name of the product sold
* Price: Price of the product
* Units: Number of units sold
* Customer: Customer name
* Country: Country of the customer

Tasks:

1. Import the necessary libraries and load the dataset into a Pandas DataFrame.
2. Display the first 5 rows of the DataFrame.
3. Calculate the total sales for each product.
4. Calculate the average price of each product.
5. Determine the country with the highest sales.
6. Calculate the total revenue (price \* units) for each sale and add it as a new column to the DataFrame.
7. Sort the DataFrame by the total revenue column in descending order.
8. Save the updated DataFrame to a new CSV file named "sales\_data\_updated.csv".