TASK SHEET

1. Write a program to find and replace outliers in a pandas DataFrame with the median value of the respective column.
2. Implement a function to calculate the weighted moving average of a column in a pandas DataFrame.
3. Create a program to identify and remove rows in a pandas DataFrame with duplicate values in specific columns.
4. Write a function to calculate the cumulative sum of a column in a pandas DataFrame, resetting the sum when encountering a new value in another column.
5. Implement a program to calculate the percentage change of a column in a pandas DataFrame compared to its previous value.
6. Create a function to perform a two-sample t-test on two groups defined by a categorical variable in a pandas DataFrame.
7. Write a program to apply a custom function to each group in a pandas DataFrame and aggregate the results.
8. Implement a function to compute the covariance matrix for selected columns in a pandas DataFrame.
9. Create a program to calculate the exponentially weighted moving standard deviation of a column in a pandas DataFrame.
10. Write a function to calculate the geometric mean of a column in a pandas DataFrame.
11. Implement a program to calculate the cross-sectional correlation between columns in a pandas DataFrame.
12. Create a function to calculate the rolling quantiles (e.g., 25th, 50th, 75th percentiles) of a column in a pandas DataFrame.
13. Write a program to apply a specified function to each element of a pandas Series and return a new Series with the transformed values.
14. Implement a function to convert timestamps in a pandas DataFrame to a specific timezone.
15. Create a program to compute the harmonic mean of a column in a pandas DataFrame.