Proposal: Analysis of Extreme Weather Conditions in Tehran Over the Last Year

Mona Hejazi **Student ID: 201996350**

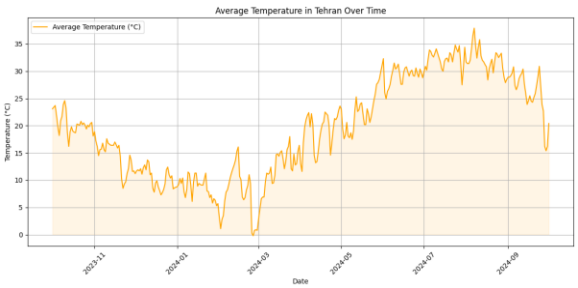

Figure 1 Average Temperature in Tehran Over Time

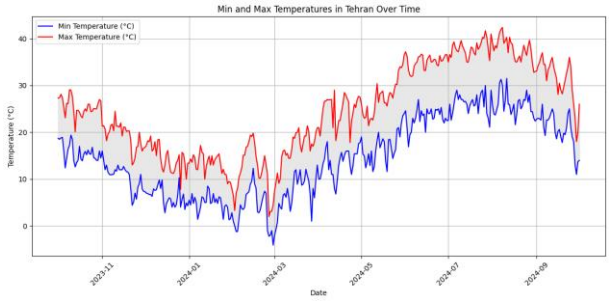

Figure 2 Min and Max Temperatures in Tehran Over Time

Introduction

This project aims to analyze a dataset containing one year of weather records for Tehran, focusing on identifying extreme values in temperature and precipitation.

Objectives

1. Analyze daily average, minimum, maximum temperatures, and precipitation over a year.
2. Identify and visualize extreme temperature and precipitation values using statistical methods.
3. Understand the implications of extreme weather events in Tehran.

Data Overview

The dataset includes daily records of the following parameters from ***1 October 2023 to 30 September 2024***: Average Temperature (tag), Minimum Temperature (min), Maximum Temperature (tmax), and Precipitation (prep). (Source:https://meteostat.net/en/place/ir/tehran?s=40754&t=2023-10-01/2024-09-30)

Questions

- How will we ensure the dataset is consistent and free of missing values?
- What summary statistics (min, max, mean, median, standard deviation) will we calculate for temperature and precipitation?
- How will we identify extreme values in the dataset, and which statistical methods (e.g., z-scores, interquartile range) will we use?
- What types of time series plots will we create for visualizing temperature and precipitation trends?
- How will we use box plots to display data distributions and detect outliers (e.g., based on std)?
- How will we investigate trends in extreme weather events throughout the year?

Expected Outcomes

- Identification of extreme weather days (both hot and cold) in Tehran, alongside associated precipitation events.
- Visual representations of temperature and precipitation trends for effective communication of findings.

Conclusion

By analyzing extreme weather conditions in Tehran over the past year, this project will contribute valuable knowledge about local climate patterns and their implications.

Timeline

- Data Cleaning and Preparation: October 21 | Statistical Analysis and Visualization: November 1 |Report Writing and Final Submission: November 28