MINI PROJECT (IT-WORKSHOP - 1)

GROUP 16 - REPORT

Group Members :

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Problem Statement:

Analysis of User Data on Codeforces (a coding platform), and graphical representation of data by observing various parameters.
The project also can compare the Rating Change of two users in contests, and depict it graphically.

Description of Important Libraries and GUI used:

In this Data Analysis project in Python, we have used the following important libraries and GUI:

Tkinter :

- The standard GUI library for Python.
- Python when combined with Tkinter provides a fast and easy way to create GUI applications.
- Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit.

NumPy & Matplotlib:

- Matplotlib is used along with NumPy data to plot any type of graph. From matplotlib we use the specific function i.e. pyplot(), which is used to plot two-dimensional data.

Pandas:

- Pandas is a software library written for data manipulation and analysis.

Easygui:

- A module for very simple and easy GUI programming in Python

Mplcursors:

- Provides interactive data selection cursors for Matplotlib

Some important functions used:

In this Data Analysis project in Python, some of the important functions used are listed below:

File handling

- open()
- close()
- read()
- write()

Exception handling

- try
- except

Tkinter

- Button()
- Canvas()
- Label()
- Menu()
- Text()

Numpy

- array()

Matplotlib

- plt.title()
- plt.plot()
- plt.xlabel(), plt.ylabel()
- plt.bar(), plt.pie()
- plt.show()
- plt.subplots()

Pandas

- read_csv()
- df.dropna(inplace = true) {for cleaning data}
- df.at[]

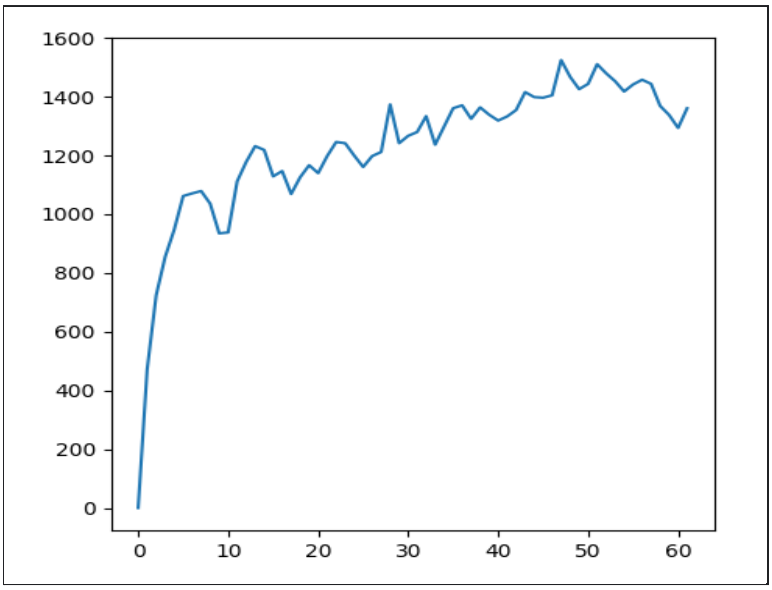
Datasets Used:

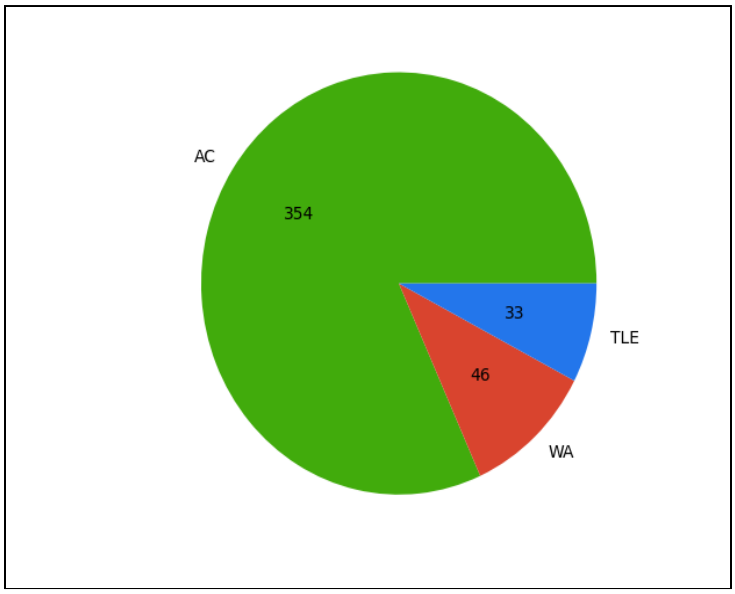
For our Project, we have used two types of data sets:

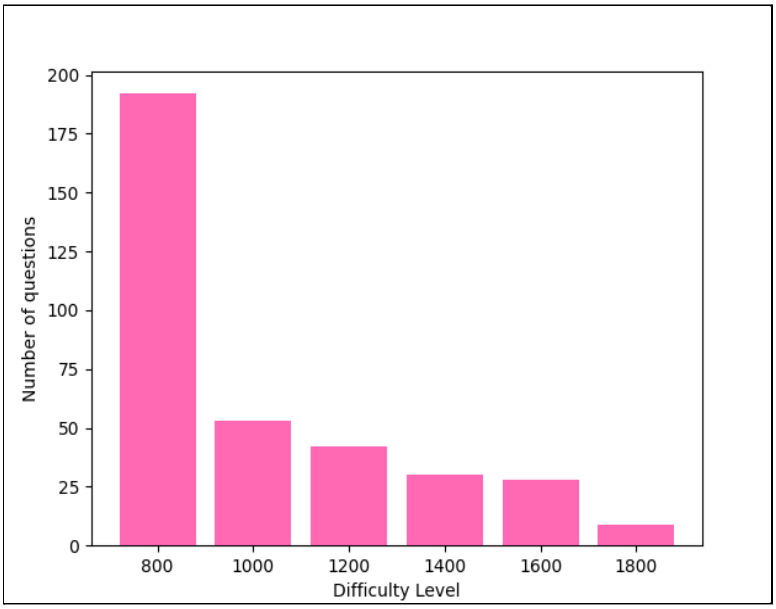
- We have taken data from Codeforces API for user information such as Username, Name, Country, City, Rating, Contribution, and Rating Change of participated contests by performing API calls.
- We have created our own dataset which stores the outcome of submissions and also the number of problems solved based on problem rating on Codeforces.

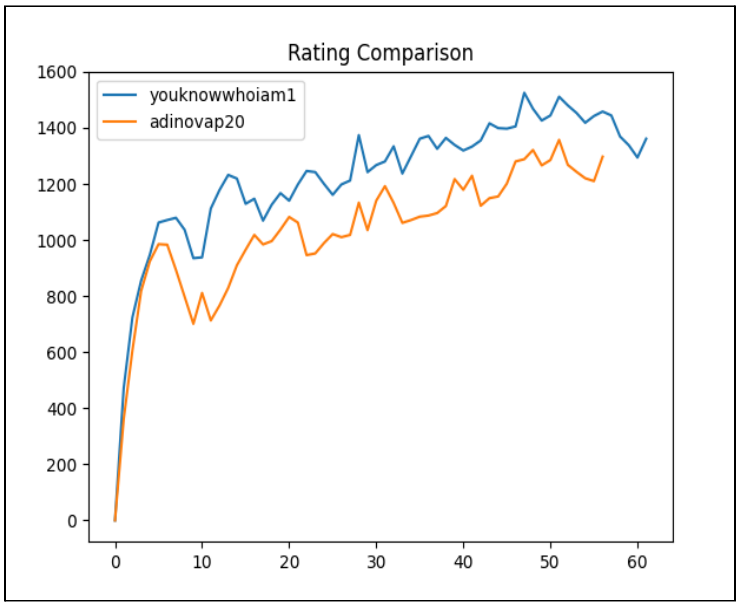
Plots:

Following are some of the plots generated while executing the project :









Results:

- ❖ We have successfully analysed the User Data on Codeforces, by considering various parameters, and depicted the observations graphically.

- ❖ We were also able to compare the Rating Change curve of two users and represent it graphically.

Conclusion:

Through this Data Analysis Project,

- ❖ We have learnt the concepts of File Handling, Object Oriented Programming and Exception Handling in Python among many others.

- ❖ We have learnt the usage of various libraries and GUI like Tkinter, Easygui, NumPy, Pandas, Matplotlib, and Mplcursors.

- ❖ We have successfully represented the collected data graphically, using the Rating Change curve, along with Bar Graphs and Pie Charts.