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Software Requirements Specification

For

Statistical Visualizer Library

10th November, 2022

Prepared by

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1. INTRODUCTION

Data visualization is the process of graphical representation of data in the form of charts, infographics, statistical graphs.

Data presented through visual elements is easy to understand and analyze, enabling the effective extraction of actionable insights from the data. Relevant stakeholders can then use the findings to make more efficient real-time decisions.

In the globalized world, there has been the need for displaying massive amounts of data, in a way that it is easily accessible and understandable not only to the data analyser, but also to every user who goes through it and because the use of analytics is no longer limited to big companies with deep pockets also since data is the fuel for many industries as a result of which the amount of data available on the Web has increased drastically so it is difficult for many users to visualize, explore, and use this enormous amount of data.

Today, computers can be used to process large amounts of data. Data visualization is concerned with the design, development, and application of computer-generated graphical representation of the data. It provides effective data representation of data originating from different sources. This enables decision makers to see analytics in visual form and makes it easy for them to make sense of the data. It helps them discover patterns, comprehend information, and form an opinion. A variety of data visualization software packages are important to those who plan to work in the current business environment and also the students who are enrolled in the programming field and are often exposed to some form of statistical and data analysis, due to the growing number of employment opportunities which require these specialized skills. These software packages are also highly researched and maintain a high amount of relevance in academia, as well as corporate worldwide.

1.1 Purpose of the Project

Since the beginner level programmers or the school students are not much exposed to the programming so to give students and other relevant stakeholder a visualization of statistics contents so that it becomes easier and effective way for the extraction of actionable insights from the data and can then use the findings to make more efficient real-time decisions.

1.2 Target Beneficiary

The target beneficiaries of the proposed methodology are the beginner programmers, school students who are new to the coding world and are not aware about the visualizations performed through coding.

1.3 Project Scope

The library will ease the coding experience and difficulties for the programmers in field of graph visualization as most of the graphs would be available to them at one place. It will be user friendly and will also reduce the time to represent data in various graphs and shapes.

1.4 References

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2. PROJECT DESCRIPTION

2.1 Introduction to java/javafx

- Java

It is a simple programming language. Java makes writing, compiling, and debugging programming easy. It helps to create reusable code and modular programs. Java is a class-based, object-oriented programming language and is designed to have as few implementation dependencies as possible. A general-purpose programming language made for developers to write once run anywhere that is compiled Java code can run on all platforms that support Java. Java applications are compiled to byte code that can run on any Java Virtual Machine.

- Javafx

JavaFX is a library for building rich client applications with Java. It provides an API for designing GUI applications that run on almost every device with Java. The applications developed using JavaFX can run on various devices such as Desktop Computers, Mobile Phones, TVs, Tablets, etc.

2.2 SWOT Analysis

- Strength:
  - Time efficient
  - Fast analysis
  - Easily accessible
  - Contains a lot of options for different types of data.
  - Friendly for new programmers.

- Weakness: Doesn't have every data visualization graph

- Opportunities: Creating a platform where users get an easy access to the visualisation world instead of getting into the complexities

- Threats: User needs to have basic knowledge of programming

2.3 Project Features

The main function of our project is to see analytics in visual form and makes it easy for them to make sense of the data. Also to help the user to discover patterns, comprehend information, and form an opinion.

2.4 Design and Implementation Constraints

- Not importing the library properly.
- Not having JavaFX setup.

3. SYSTEM REQUIREMENTS

3.1 User Interface

Our project requires a user interface so that it is easier for the users to get their respective data. For this, we have used java programming language to design our statistical library which will allow the users to see their data in graphical form and extract meaningful insight accordingly. For the design and implementation of the User Interface, we needed: Visual Studio Code.

The following are the four basic requirements needed:

- Software Requirements

  Operating System: Windows 10/8/7 (32-bit or 64-bit)

  Software: Eclipse

  Compiler: Microsoft C++ Compiler

- Hardware Requirements

  Processor: Dual Core 2.7 GHz or better

  RAM: 512 MB or higher

  Disk Space: 512 MB

- Library features updates

4. NON-FUNCTIONAL REQUIREMENTS

4.1 Performance requirements

The following are the four basic requirements needed:

- Performance and scalability
- Portability and compatibility.
- Reliability, maintainability, availability
- Security, Localization, Usability

4.2 Software Quality Attributes

Availability: Our statistical library will be available to all to.

Portability: Our project is easily portable since it will be available on github. So anyone from around the world can access it.

Usability: Techopedia defines usability as the degree of ease with which products such as software and web applications can be used to achieve required goals effectively and efficiently. Usability assesses the level of difficulty involved in using a user interface. Our project provides a simple and friendly user interface keeping ease-of-use for users.

Testability: Our project can be easily broken down into sub-components based on the requirement. Each sub-components or module can be individually tested and verified for use.