GRAPH PLOTTING

SOFTWARE

A Mini Project Report Submitted

In Partial Fulfillment of the Requirements

For the degree of

BACHELOR OF TECHNOLOGY

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CERTIFICATE

It is certified that the work contained in the project report titled Graph Plotting Software has been carried out under my supervision and that this work has not been submitted elsewhere for any other degree.

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ABSTRACT

The project is about Graph plotting software suite. It is a collection of software programs, that runs on a GUI interface and can perform various operation like Plotting graph , manipulating Data Table and determining Value of a function in a graph.

"Graph plotting software suite" fully supports a .CSV file format which stands for (Comma Separated Values) and can generate various graphs according to its content data.

There is a Parser in Graph plotting software suite that reads and extract Table from .CSV file to 2D Array (displayed on Data Table in Import Window).

"Graph plotting software suite" uses uniVocity parser which is considered to be fasted of its kind.

"Graph plotting software suite" supports various kind of Chart that can be drawn from .CSV files , some of them are Column Chart , Line Chart , Point Chart and Bubble Chart .

All of these graphs are graphically represented on a Graph sheet.

"Graph plotting software suite" also have some pre-defined function library to plot and analyze them all . Some of them are Trigonometric functions (sin() ,cos(),tan(), sin2() and Log functions (log()) .

"Graph plotting software suite" supports Linear Interpolation on the set of Data.

ACKNOWLEDGEMENT

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D E C L A R A T I O N

We hereby declare that the Project Work Report entitled "Graph Plotting Software Suite" which is being submitted to Shri Ramswaroop Memorial University, Lucknow for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a bonafide report of the work carried out by us. The material contained in this report has not been submitted to any university or Institution for the award of any degree.

Signature:

Date:

CONTENTS

INTRODUCTION

The project is about Graph plotting software suite. It is a collection of software programs, that runs on a GUI interface and can perform various operation like Plotting graph , manipulating Data Table and determining Value of a function in a graph.

 "Graph plotting software suite" fully supports a .CSV file format which stands for (Comma Separated Values) and can generate various graphs according to its content data.

There is a Parser in Graph plotting software suite that reads and extract Table from .CSV file to 2D Array (displayed on Data Table in Import Window).

"Graph plotting software suite" uses uniVocity parser which is considered to be fasted .CSV parser of its type .

"Graph plotting software suite" supports Bar graph, Line graph, Point Graph and Histograms. All of these graphs are graphically represented on a Graph sheet.

"Graph plotting software suite" also have some pre-defined function library to plot and analyze them all . Some of them are Trigonometric functions (sin() ,cos(),tan(), sin2() and many more) , Logarithmic functions (log()) .

"Graph plotting software suite" have various data manipulation capabilities like Linear Interpolation and highlighting value at curve by mouse cursor.

OBJECTIVE OF THE PROJECT

- ➤ The main objective of this project is to provide easy to use and flexible software that can easily plot graph of various kind and for various purposes .
- ➤ The project focuses on the Requirements of educational institutes , that needs to compare large database of students and employees . Those database are easily available in .CSV format , hence the software "Graph Plotting Software " comes handy and quick.

FLOW CHART

2.1 FLOW DIAGRAM

```
┌──────────┐   Select ".csv" file   ┌─────────────────┐        ╭──────────────╮
│          │   from Device          │ Selected .CSV   │        │ Import Data  │
│   USER   │ ─────────────────────▶ │ file            │ ─────▶ │ From .CSV    │
│          │                        │ (from device)   │        │ file to      │
└──────────┘                        └─────────────────┘        │ TableModel   │
     │                                                         ╰──────────────╯
     │ Select row                                                     │
     │ and column                          ╭──────────────╮           │ Preview
     ▼                                     │ Add          │           │
┌──────────────┐                           │ TableModel   │ ◀─────────┘
│ Selected Rows│                           │ to JTable    │
│ and Column to│                           ╰──────────────╯
│ Display on   │                                  │ Done
│ Chart        │                                  ▼
└──────────────┘                           ╭──────────────╮   Draw   ╭──────────────╮
        │                                  │ 2D Array     │ ───────▶ │ Class "Chart"│
        └────────────────────────────────▶ │ (double type)│          │ reads this   │
                                           │ is created   │          │ Array to     │
                                           │ from JTable  │          │ data[][],head│
                                           ╰──────────────╯          │ er           │
                                                                     │ [],rowheader[]│
                                                                     ╰──────────────╯
```
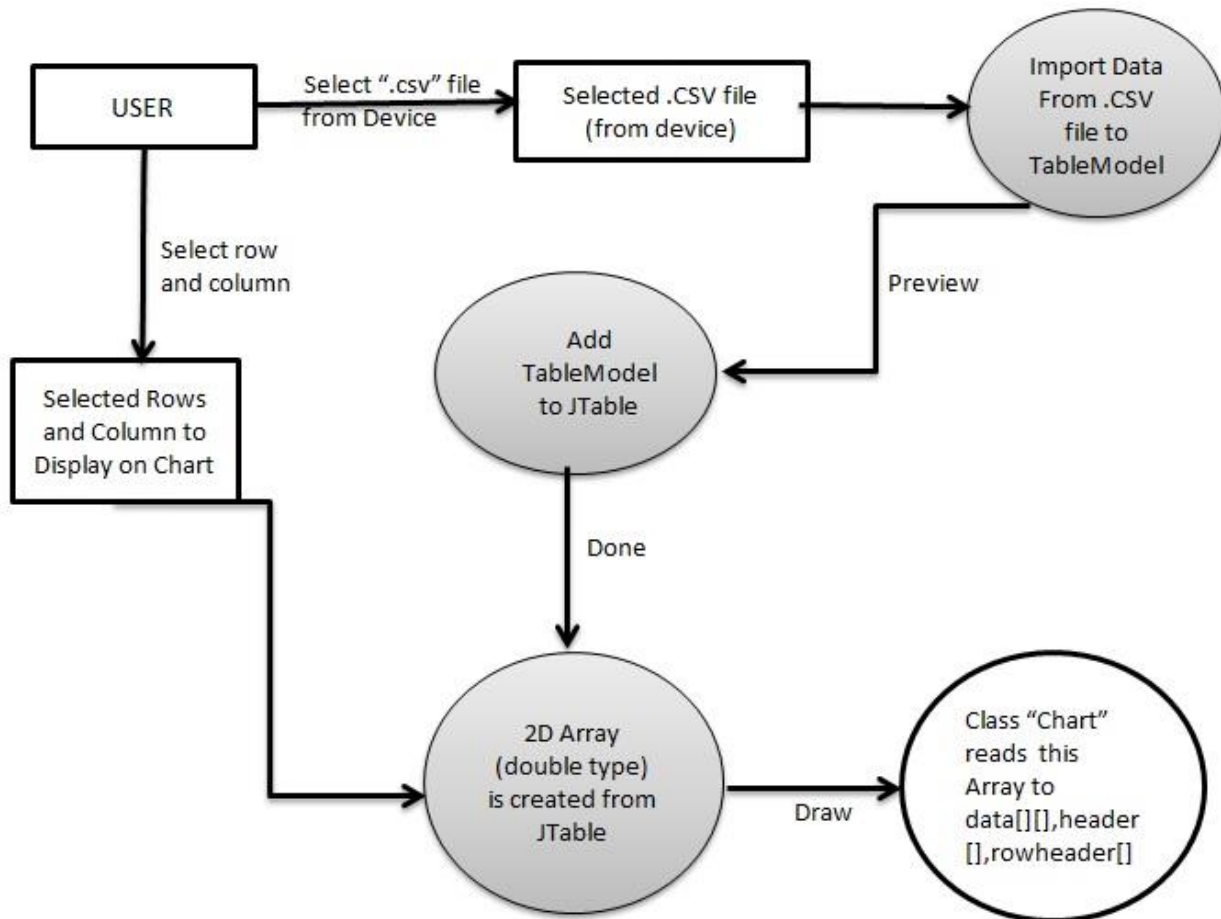
SOFTWARE AND HARDWARE REQUIREMENTS

- Windows , Linux .

- Latest JRE(Java Run-time Environment).

- Any Intel or AMD x86-64 processor

- No specific graphics card is required.

IMPLEMENTATION

- Graph plotting Software Suite , is implemented in JAVA 8 .
- It provides Graphical user interface and is beginner friendly.
- Javax.swing and Java.awt are some of the major packages used within program.
- Package name is Graph.

List of Class Created:

1. SplashG
2. Paper
3. Paperf
4. TableView
5. CSVfolder
6. Chart
7. ChartMake
8. Imgpanel

❖ *SplashG:*

- This class extends JWindow , it is the only class having main method .
- This Class serves various purposes:
- It displays the name of software running .
- Internet connectivity status.(IP adress)
- Creates a some Directories in Drive of the system .
  - GraphPlottingSuite
  - DataCSV
  - Screenshot

It creates an instance of class "Paperf".

❖ *Paper :*

- This class extends JPanel .
- Paper class is actually the main graph sheet, on which Graphs and Charts are drawn.

Paper
- grid : Color
- paper : Color
- curve : Color
- serialVersionUID : long
- invert : boolean
- highlightCursor : boolean
- canDrawAxis : boolean
- gi : Graphics2D
- func : int
- zoom : double
- posx : int
- posy : int
- paperH : int
- paperW : int
- Paper()
  - new MouseMotionAdapter() {...}
- Paper(int)
- resetPaper() : void
- highlightCursor(Graphics2D) : void
- sine(double, double, Graphics2D) : void
- cos(double, double, Graphics2D) : void
- tan(double, double, Graphics2D) : void
- log(double, double, Graphics2D) : void
- sin2(double, double, Graphics2D) : void
- drawGrid() : void
- paintComponent(Graphics) : void
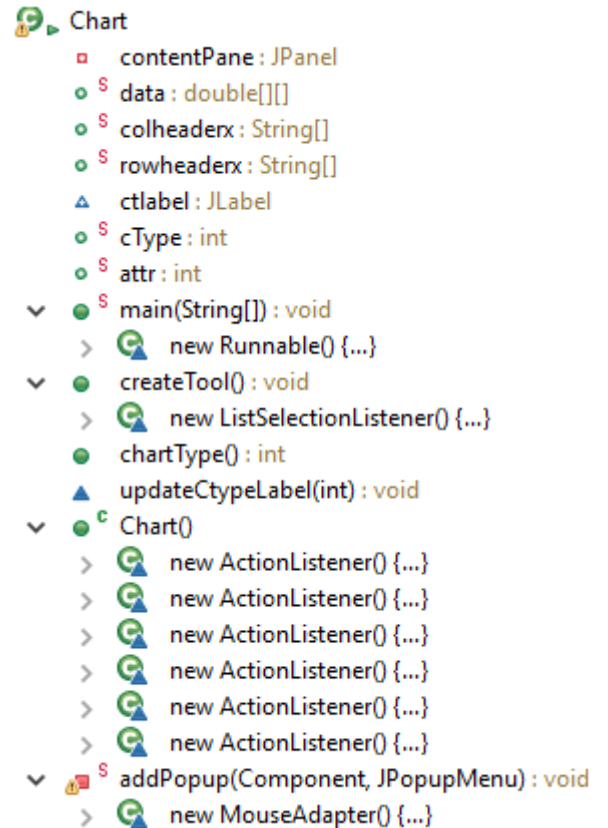
13

❖ *Chart :*

This class extends JFrame.

And contains static variables like

data , colheaderx,rowheaderx,ctlabel,cType,attr.

These static variables are updated for updated
JTable ,and are accessed by Other classes like
Paper , ChartMake.

Chart
- contentPane : JPanel
- data : double[][]
- colheaderx : String[]
- rowheaderx : String[]
- ctlabel : JLabel
- cType : int
- attr : int
- main(String[]) : void
  - new Runnable() {...}
- createTool() : void
  - new ListSelectionListener() {...}
- chartType() : int
- updateCtypeLabel(int) : void
- Chart()
  - new ActionListener() {...}
  - new ActionListener() {...}
  - new ActionListener() {...}
  - new ActionListener() {...}
  - new ActionListener() {...}
  - new ActionListener() {...}
- addPopup(Component, JPopupMenu) : void
  - new MouseAdapter() {...}

❖ *ChartMake :*

This class draws charts like Column , line and Point chart .

Constructor is

Chartmake(**int** type,**double** data[][],**int** attr)

this class is instantiated in "Paper" class .
And draws on Paper(JPanel) using static Graphics2D object defined in class "Paper".

Its Methods are :

Chartmake(int, double[][], int);
Column(double[][], int, int, int);
Line(double[][], int, int, int);
Bubble(double[][], int, int, int);

APPLICATIONS

- Useful for Students and Teachers in the field of Statistics and Economics to draw precise graphs .

- Easily generated .csv file format is fully supported to draw Graphs and Charts.

- Software can determine and represent it graphically whether a given point lies on a given curve .

- Represents a Data Table on Table which ccan be modified and represented graphically side by side.

LIMITATIONS

- There is a limit to Zooming into the Graph , negative zoom is not allowed.
- Number of rows should not exceed 500.
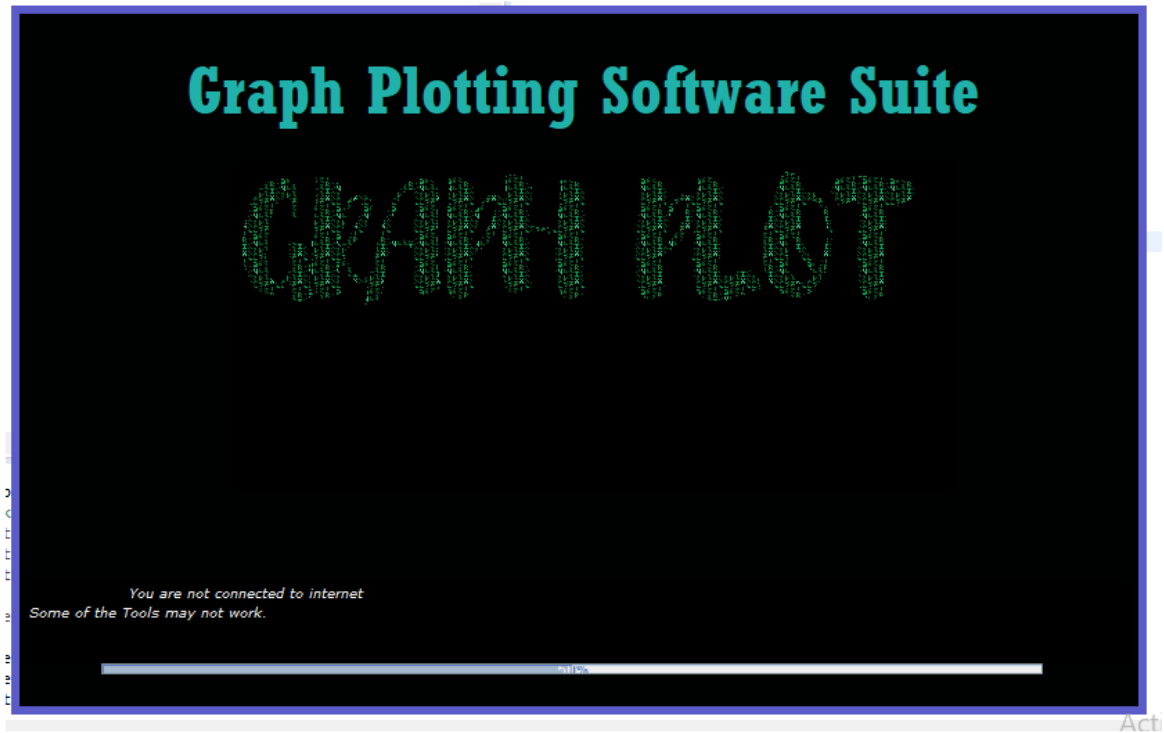- Only numeric values can be plotted to graph.

ADVANTAGES

- It is an easy to use software , it does not need any tutorials to start with it.
- It is best for users who require quick data comparison and analysis.
- It supports a widely used file format "comma delimited" .CSV format.
- It can easily display wide range of numeric values of Datasheets.
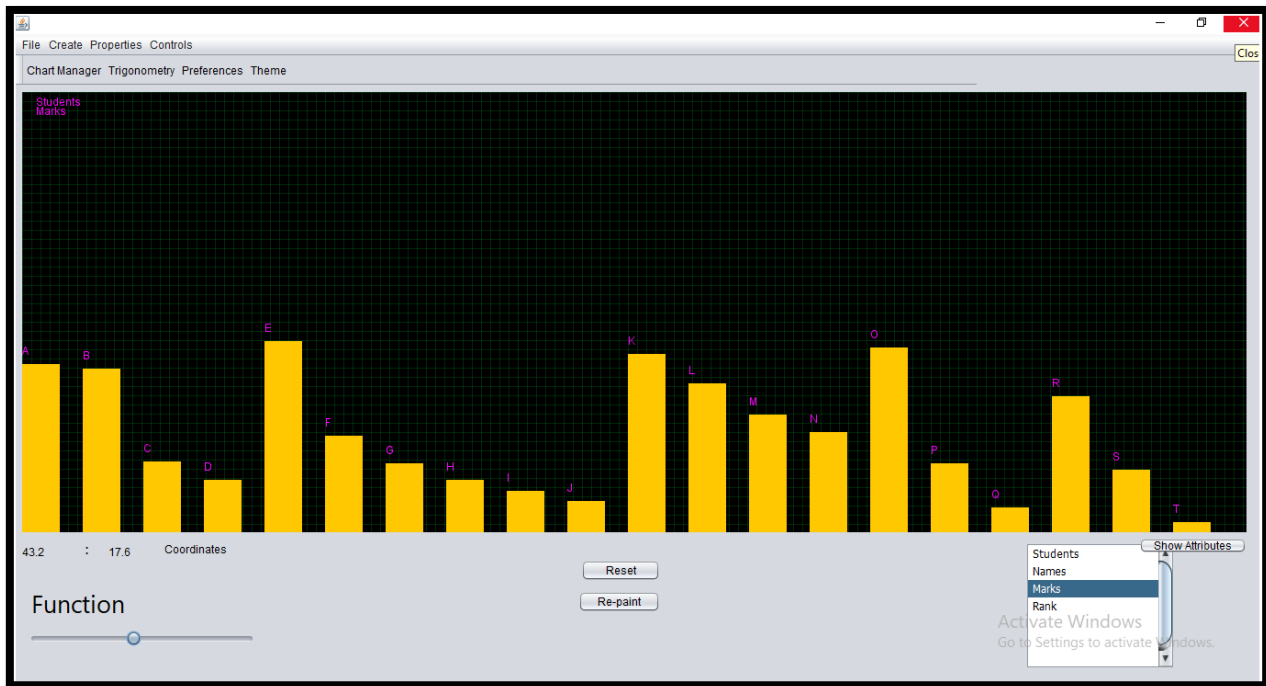- Graphs and Charts are drawn with best possible Look and Feel.

Screenshot and Previews

1 Splash screen

2. Main Window

3. Table View