MNNIT ALLAHABAD, PRAYAGRAJ
B. Tech 6th Semester, **Computer Science and Engineering**
CS-1606 Software Engineering

Chart Generator Tool

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Group - 6

1 INTRODUCTION

Charts are an excellent way to condense large amounts of information into easy-to-understand formats that clearly highlight the points you'd like to make. Humans are visual creatures and it is much easier for humans to infer meaning from pictures than from text. Texts in a chart are generally used only to annotate the data.

Charts are often used to ease understanding of large quantities of data and the relationships between parts of the data. Charts can usually be read more quickly than the raw data.

This is why in project management visual aids like charts are invaluable to the planning of a project. Many different forms of visualisation and charts are used during project management which help in letting members know what to do or when the subtask should be handled.

2 PROBLEM STATEMENT

Any group or organisation making and maintaining a project seeks to complete the task at hand in the shortest possible time and as efficiently as possible. For this, it is necessary for team members to know when and how they should accomplish their task.

However, there are very few softwares that will help generate all the necessary charts that are necessary for project management. Most of them require making spreadsheets and don't have proper and simple input options for generating the charts.

In response to this problem, our team has decided to create a tool that will generate different charts for project management. This will help teams create

visualisations quickly and without much hassle. Some of the charts to be implemented in the project include:

1. **Gantt Chart** - A type of bar chart that demonstrates the project schedule. It is best used in tracking progress. Moreover, project managers can plan, work out the practical aspects and potential problems, segregate the work to team members, and minimize the delivery time using this graphic.

2. **PERT Chart** - Program Evaluation Review Technique (PERT) Chart is known as the network diagram. PERT charts are used after a project has been planned and broken into smaller pieces, called tasks. They show how much time is needed to complete each task and they help project managers visualize which tasks must be completed before others can begin. PERT charts also illustrate what tasks are critical (critical path) and which ones are less important. They portray more complex project tasks and analyze the tasks encompassed in the completion of the project. PERT charts also analyze the time needed to accomplish the task and recognize the minimum time required. They generally showcase he parallel activities.

3. **Work Breakdown Structure** - Work Breakdown Structure (WBS) is a project management diagram that illustrates an entire project broken down into components and then into smaller sub components. They are used to arrange a project team's work into manageable pieces and for estimating costs and time associated with each piece of work. This provides you the hierarchy of tasks that is part of the project. The manager can easily envision the components and their relation to execute the best planning.

3 MODULES

1. **Initial user interface -** This module will have the GUI for the start up page. The initial starting page will provide the first impression of the software and hence needs to be implemented with utmost care
2. **Chart choosing -** The user must be given the option of which chart to implement. The details of each of the charts should be presented in brief.
3. **Data entry module -** Once the chart is chosen, the user needs to be given an user interface to input the data for each of the charts. Each chart will need to include a different form of data entry because not all charts will require the same inputs.

4. **Chart generating modules -** Each chart option will have a separate module to process the input data and generate the chart.
5. **Visualisation -** The output obtained will then be required to be visualised. Each charting module will need to visualise the output in a different way.

4 ESTIMATED LOC

1. **Initial user interface -** 1500 LoC
2. **Chart choosing -** 1000 LoC
3. **Data entry module -** 1500 LoC
4. **Chart generating modules -** 5000 LoC
5. **Visualisation -** 3000 LoC

5 SPECIFICATIONS

5.1 Software Requirements

For best performance, the following software requirements must be met:

1. ***Operating System:***

1.1 Windows

- Microsoft Windows 7, 64-bit
- Microsoft Windows 8.1, 64-bit
- Microsoft Windows 10, 64-bit (8u51 or later)

1.2 Mac OS

- macOS 10.13 High Sierra (and above)

1.3 Linux

- Oracle Linux 6.x (32-bit), 6.x (64-bit)
- Oracle Linux 7.x (64-bit) (8u20 and above)
- Red Hat Enterprise Linux 5.5+, 6.x (32-bit), 6.x (64-bit)
- Red Hat Enterprise Linux 7.x (64-bit) (8u20 and above)
- Suse Linux Enterprise Server 10 SP2+, 11.x
- Suse Linux Enterprise Server 12.x (64-bit) (8u31 and above)

- Ubuntu Linux 18.04 LTS Bionic Beaver (and above)

NOTE: *Must have* ***Java (Version 8 Update 201)*** *or later installed*

5.2 Hardware Requirements

To maximize performance, the following hardware requirements must be met:

1. ***Processor:***
   Intel® Core i5 4th generation (or an equivalent AMD processor) or greater.
   Intel® Celeron, Pentium, Atom or Core i3 processor not recommended.

2. ***RAM:***
   4 GB is sufficient for proper functionality of the software. This amount of RAM will allow the user to run the software without any lag. It would be beneficial for the user to have RAM greater than that specified in the requirements for better overall experience and enhanced multitasking.

3. ***Graphics Card:***
   NVIDIA GeForce GTX 650 (or equivalent AMD Radeon HD 5770) or better recommended
   Use of an integrated Intel HD Graphics GPU embedded within at least 5th generation Core i7 or Core i5 may be enough. In this case, True Color (32 bit) mode required.

4. ***Storage:***
   SSD (Solid State Drive) at least 120GB preferred
   Hard Disk (5400 RPM or better)
   The storage space of the computer should also be sufficient enough for proper functionality of the application along with the other already installed softwares.

6 ROLE OF EACH MEMBER

Name	Task and responsibilities	Signature
Rahul Kumar 20164164	**Project manager** ● Planning and defining scope ● Activity planning and sequencing ● Resource planning ● Developing schedules ● Time estimating ● Documentation ● Creating charts and schedules ● Risk analysis ● Managing risks and issues ● Keep team motivated towards work ● Monitoring and reporting progress ● Team leadership	
Rahul Singh Adhikari 20164121	**Tester** ● Defining the testing activities for subordinates – testers or test engineers ● All responsibilities of test planning ● To check if the team has all the necessary resources to execute the testing activities ● To check if testing is going hand in hand with the software development in all phases ● Prepare the status report of testing activities ● Required interactions with customers ● Updating project manager regularly about the progress of testing activities	
Rajat Dipta Biswas 20164114	**Developer** ● Reviewing current system ● Presenting ideas for system improvement ● Working closely with analysts, designer and staff ● Producing detailed specifications and writing the program codes ● Testing the product in controlled, real situations before going live preparation of training manuals for users ● Maintaining the system once they are up and running	

Rakesh Singh 20164111	**Technical lead** ● Collaboration ● Team debugging ● Technical debt management ● Task management ● Mentorship	
Raman Sehgal 20164130	**Designer** ● Design, develop and execute unit test plans, test design, test cases and test strategies ● Design, develop and execute subsystem test plans, procedures and processes ● Document all test plans, test cases and strategies procedures and issues ● Design and implement test scripts on test tools and scripting language ● Design, develop and implement program and process improvement ● Design and develop coding, code reviews, unit testing and release management ● Develop design specifications in accordance with business requirements and issues ● Recommend strategic improvements to optimize performance ● Perform analyses and interpretations of strategies and software application	

7 REFERENCES

1. **Microsoft Excel** - Has a wide range of charting tools that we used to understand the requirements.
2. **JFreeChart** - The most widely used charting library among Java developers.
3. **Bright Hub PM, brighthubpm.com** - Overview of charts used in project management.
4. **GraphStream** - A Java library for the modeling and analysis of dynamic graphs. Can be used to generate, import, export, measure and layout the graphs.
5. **JGraphX** - A Java Swing diagramming (graph visualisation) library.
6. **graphviz** - Java wrapper around the Ecmascripten Javascript compile of graphviz.
7. **Office TIMELINE, officetimeline.com** - Project management charts and other visualisation tools for project managers.
8. **Google Charts** - JavaScript based charting library meant to enhance web applications by adding interactive charting capability.
9. **Stackoverflow** - Question and answer site for professional and enthusiast programmers.