Problem Definition Document

Project Title:

Advanced Graphics Editor Software

Problem Statement:

In many professional and educational settings, users require robust software to create and manipulate geometric drawings. Existing solutions often lack user-friendly features for advanced operations such as resizing, rotation, and grouping of objects. Additionally, features for saving, loading, and undoing actions are sometimes either absent or insufficiently implemented. Moreover, most tools that are available, have huge prerequisite learning to use it, which might be inconvenient for small tasks.

Project Objectives:

- **A User-Friendly Product:** To develop a Software Product to bridge the gap in the Market for user-friendly platforms to create or modify the Graphical elements of a Project. It should be easy to use and not require much overhead expertise.
- **Basic Functionalities:** It should have atleast the basic functionalities needed to create new Drawings or Modify existing ones.
- **Advanced Functionalities:** Additional advanced features can be considered further into the Project to ease the process or Graphics creation for more complex Drawings or while working with multiple components.

Preliminary Ideas Discussion with the User or Past Experience Discussion with Users:

- **Preliminary Ideas:**
  - **Basic Drawing Needs:** Users require the ability to easily draw and manipulate basic geometric shapes, which are commonly used in diagrams and illustrations.
  - **Advanced Features:** Users often need to resize and rotate shapes for better layout management, and group objects to perform operations on multiple items simultaneously.
  - **File Management:** The ability to save and load drawings is crucial for maintaining work and sharing designs.
  - **Error Handling:** Users expect to be able to undo mistakes and redo actions, enhancing the usability of the editor.
- **Past Experience:**
  From previous projects and user feedback, it is evident that:
  - **Intuitive UI:** Users benefit from a clean and intuitive interface that simplifies complex tasks like object manipulation and file operations.
  - **Performance:** Efficient performance is essential, especially when dealing with a large number of shapes or complex drawings.

- **Cross-Platform:** Compatibility across different operating systems enhances accessibility and usability.

Project Scope

- **Inclusions:**
  - **Shape Drawing:** Support for creating ellipses, rectangles, and lines.
  - **Selection and Highlighting:** Ability to select and highlight shapes with visual feedback.
  - **Manipulation:** Tools for resizing, rotating, and grouping shapes.
  - **File Operations:** Features to save and load drawings.
  - **Undo/Redo:** Implementation of undo and redo functionalities.
- **Exclusions:**
  - **3D Drawing:** The editor will focus solely on 2D shapes and operations.
  - **Advanced Graphics Features:** Excludes advanced features like gradient fills, texture mapping, or complex path editing.
  - **Collaboration Tools:** Real-time collaborative features or cloud-based sharing will not be included.

Feasibility Study:

- **Technical Feasibility:**
  - **Programming Language:** Language is to be chosen for Cross-platform feasibility and seamless implementation.

- **Operational Feasibility:**
  - **User Interface:** The design will be focused on usability, with clear navigation and tool accessibility.
  - **Performance:** The application will be optimized to handle a reasonable number of shapes without significant performance degradation.

- **Financial Feasibility:**
  - **Development Costs:** Initial development will involve labor costs for programming and design. The use of Java and existing libraries minimizes additional costs.
  - **Maintenance Costs:** Ongoing maintenance will include bug fixes, updates, and user support, which will be manageable within standard operational budgets.

- **Schedule Feasibility:**
  - **Development Timeline:** The project is expected to follow a structured timeline including design, implementation, testing, and deployment phases. An estimated timeline is provided in the project plan.

Conclusion:

The proposed Graphics Editor Software is to ease and assist the seamless creation and modifications of new or existing Graphical elements of a Project.