**Software Requirements Specification**

For

Mendeleev’s Marvel

<**Date**>

Prepared by

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**Revision History**

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| **Date** | **Change** | **Reason for Changes** | **Mentor Signature** |
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1. Introduction

1.1 Purpose of the Project

* Scope of the Project:

The purpose of this project is to create an educational and engaging game, "Mendeleev's Marvel," aimed at enhancing users' understanding of the periodic table and its periodicity. This project seeks to address the problem of uninspiring and challenging traditional methods of learning the periodic table, making it more accessible and enjoyable for students and learners of all ages.

* Problem Statement:

The problem lies in the difficulty of making the periodic table an engaging subject for learners. The abstract nature of the subject often leads to rote memorization, which can be both boring and ineffective. The challenge is to provide a more exciting and interactive way to learn the periodic table.

* Justification:

The motivation to execute this project is driven by several factors:

* Enhancing Engagement: Traditional approaches to learning the periodic table can be uninspiring. This project aims to engage learners by transforming the learning process into a fun and interactive game.
* Effective Learning: Gamification has been shown to improve the retention of information. "Mendeleev's Marvel" seeks to increase the effectiveness of teaching the periodic table.
* Accessible Learning: The game is designed to be accessible to a broad audience, from students to anyone interested in chemistry. Its interactive nature makes learning inclusive and enjoyable for all.
* Educational Innovation: The project showcases innovation in education by utilizing technology to offer an exciting approach to learning complex scientific concepts.
* Positive Reinforcement: Through scoring and feedback mechanisms, the project reinforces learning, motivating users to achieve mastery of the periodic table.

The project's purpose is to create an engaging and effective learning tool that can make the periodic table more accessible and enjoyable for a diverse audience, ultimately contributing to a better understanding of this fundamental concept in chemistry.

1.2 Target Beneficiary

The prime beneficiaries of the "Mendeleev's Marvel" project include:

* Students: Particularly those studying chemistry, who can use the game to reinforce their knowledge of the periodic table in an engaging way.
* Educators: Chemistry teachers can use the game as a supplementary teaching tool to make learning more enjoyable for their students.
* Learners of All Ages: Anyone interested in chemistry can benefit from a gamified approach to learning the periodic table.

1.3 Project Scope

Area of Application:

The software, "Mendeleev's Marvel," is designed for educational purposes, with a focus on teaching the periodic table and its periodicity. Its application includes the following:

Benefits, Objectives, and Goals:

Benefit: To provide an interactive and enjoyable method for learning the periodic table, enhancing users' understanding and retention of this fundamental chemistry concept.

Objectives:

Develop a game with intuitive controls and an engaging interface.

Implement a scoring system to reward correct choices and provide constructive feedback.

Encourage users to learn the periodic table while having fun.

Goals:

Increase user engagement and motivation to learn.

Improve users' knowledge and memory of the periodic table.

Offer an educational tool that is accessible to a wide range of learners.

Requirements and Deliverables:

The project's requirements include the development of the "Mendeleev's Marvel" game, comprising interactive elements, a scoring system, and an educational user interface. The deliverables are:

A fully functional and well-tested game application.

User manuals and in-game tutorials to assist players in understanding the game mechanics.

A report detailing the development process and educational effectiveness.

1.4 References

The Software Requirements Specification (SRS) refers to the following documents and resources:

"Mendeleev's Marvel" project proposal and design documents.

Online resources and APIs used for graphics and game development, including relevant OpenGL documentation.

User feedback and playtesting results.

Any other project-related documentation and reference materials used during the development process.

General Instructions:

1. Font should be Time new Roman 12
2. Main heading should be All Capital with Times New Roman 14
3. Sub-Heading should be Times new roman 12 , Underline
4. Line gap should be 1.15
5. Justified alignment should be used for all text
6. Content inside a table should be Times New Roman 10
7. Caption for both Table and Figure should be Times New Roman 11
8. Add Source for all Images used.

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| 1 | INTRODUCTION | |
|  | 1.1 Purpose of the Project | Describe the scope of this project by stating and justifying the problem statement of the project. Present will clear motivation to execute the project. |
|  | 1.2 Target Beneficiary | Identify the prime beneficiaries of the project. |
|  | 1.3 Project Scope | Provide a short description of area of application of the software, include relevant benefits, objectives, and goals. State clearly the requirement and deliverables of the project. |
|  | 1.4 References | List all documents or Web addresses to which this SRS refers. |
| 2 | PROJECT DESCRIPTION | |
|  | 2.1 Reference Algorithm | State the reference algorithm for the project and identify the required data structure (**Mandatory for Minor1**) Or/Add design algorithm justifying the methodology of the project |
|  | 2.2 Characteristic of Data | Present with the characteristic of the dataset used for the project. Provide the primary and secondary source of the data, along with sampling techniques. Explain the statistical method used for data processing (**if any**). |
|  | 2.3 SWOT Analysis | Present with a justification to support your project. |
|  | 2.4 Project Features | Summarize the major features the product contains or the significant functions that it performs or lets the user perform. (Level 2 USE Case diagram) |
|  | 2.5 User Classes and Characteristics | Identify the various user classes that you anticipate will use this product. |
|  | 2.6 Design and Implementation Constraints | Present hardware boundary conditions (timing requirements, memory requirements); interfaces to other applications; specific technologies, and tools to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards. |
|  | 2.7 Design diagrams | Present all the required Diagram (USE –Case, Class Diagram, Activity, Sequence, Data Flow diagram and State Diagram. (Major project should include Collaboration and Deployment Diagram too) |
|  | 2.8 Assumption and Dependencies | List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. Also identify any dependencies the project has on external factors. |
| 3 | SYSTEM REQUIREMENTS | |
|  | 3.1 User Interface | Define the software components for which a user interface is needed. |
|  | 3.2 Software Interface | Describe the connections between modules. Describe the services needed and the nature of communications. Describe detailed application programming interface protocols. |
|  | 3.3 Database Interface | Explain the Database management system used |
|  | 3.4 Protocols | Describe the requirements associated with any protocol deployed in the project. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms |
| 4 | NON-FUNCTIONAL REQUIREMENTS | |
|  | 4.1 Performance requirements | If there are performance requirements for the product under various circumstances, state them. Specify the timing relationships for real time systems. State performance requirements for individual functional requirements or features |
|  | 4.2 Security requirements | Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define authentication, verification and validation of the system. Refer to any external policies or regulations containing security issues that affect the product. |
|  | 4.3 Software Quality Attributes | Explain: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. |
| 5 | Other Requirements | Define any other requirements not covered elsewhere in the SRS. |
| Appendix A: Glossary | | Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. |
| Appendix B: Analysis Model | | Pertinent analysis models used for this project |
| Appendix C: Issues List | | This is a dynamic list of the open requirements issues. |