Software Requirements Specification for ProgName: subtitle describing software

Team #25, The Crazy Four

Ruida Chen
Ammar Sharbat
Alvin Qian
Jiaming Li

30.09.2025

Contents

1 Purpose of the Project **vi**
- 1.1 User Business . . . vi
- 1.2 Goals of the Project . . . vi

2 Stakeholders **vii**
- 2.1 Client . . . vii
- 2.2 Customer . . . vii
- 2.3 Other Stakeholders . . . vii
- 2.4 Hands-On Users of the Project . . . vii
- 2.5 Personas . . . vii
- 2.6 Priorities Assigned to Users . . . vii
- 2.7 User Participation . . . vii
- 2.8 Maintenance Users and Service Technicians . . . vii

3 Mandated Constraints **viii**
- 3.1 Solution Constraints . . . viii
- 3.2 Implementation Environment of the Current System . . . viii
- 3.3 Partner or Collaborative Applications . . . viii
- 3.4 Off-the-Shelf Software . . . viii
- 3.5 Anticipated Workplace Environment . . . viii
- 3.6 Schedule Constraints . . . viii
- 3.7 Budget Constraints . . . viii
- 3.8 Enterprise Constraints . . . viii

4 Naming Conventions and Terminology **ix**
- 4.1 Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project . . . ix

5 Relevant Facts And Assumptions **ix**
- 5.1 Relevant Facts . . . ix
- 5.2 Business Rules . . . ix
- 5.3 Assumptions . . . ix

6 The Scope of the Work **ix**
- 6.1 The Current Situation . . . ix
- 6.2 The Context of the Work . . . ix
- 6.3 Work Partitioning . . . ix

6.4 Specifying a Business Use Case (BUC) ix

7 Business Data Model and Data Dictionary **x**
7.1 Business Data Model x
7.2 Data Dictionary x

8 The Scope of the Product **x**
8.1 Product Boundary x
8.2 Product Use Case Table x
8.3 Individual Product Use Cases (PUC's) x

9 Functional Requirements **x**
9.1 Functional Requirements x

10 Look and Feel Requirements **x**
10.1 Appearance Requirements x
10.2 Style Requirements xi

11 Usability and Humanity Requirements **xi**
11.1 Ease of Use Requirements xi
11.2 Personalization and Internationalization Requirements xi
11.3 Learning Requirements xi
11.4 Understandability and Politeness Requirements xi
11.5 Accessibility Requirements xi

12 Performance Requirements **xi**
12.1 Speed and Latency Requirements xi
12.2 Safety-Critical Requirements xi
12.3 Precision or Accuracy Requirements xii
12.4 Robustness or Fault-Tolerance Requirements xii
12.5 Capacity Requirements xii
12.6 Scalability or Extensibility Requirements xii
12.7 Longevity Requirements xii

13 Operational and Environmental Requirements **xii**
13.1 Expected Physical Environment xii
13.2 Wider Environment Requirements xii
13.3 Requirements for Interfacing with Adjacent Systems xii
13.4 Productization Requirements xiii

13.5 Release Requirements xiii

14 Maintainability and Support Requirements **xiii**
14.1 Maintenance Requirements xiii
14.2 Supportability Requirements xiii
14.3 Adaptability Requirements xiii

15 Security Requirements **xiii**
15.1 Access Requirements xiii
15.2 Integrity Requirements xiii
15.3 Privacy Requirements xiii
15.4 Audit Requirements xiv
15.5 Immunity Requirements xiv

16 Cultural Requirements **xiv**
16.1 Cultural Requirements xiv

17 Compliance Requirements **xiv**
17.1 Legal Requirements xiv
17.2 Standards Compliance Requirements xiv

18 Open Issues **xiv**

19 Off-the-Shelf Solutions **xiv**
19.1 Ready-Made Products xiv
19.2 Reusable Components xiv
19.3 Products That Can Be Copied xv

20 New Problems **xv**
20.1 Effects on the Current Environment xv
20.2 Effects on the Installed Systems xv
20.3 Potential User Problems xv
20.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product xv
20.5 Follow-Up Problems xv

21 Tasks **xv**
21.1 Project Planning xv
21.2 Planning of the Development Phases xv

22 Migration to the New Product **xvi**
22.1 Requirements for Migration to the New Product xvi
22.2 Data That Has to be Modified or Translated for the New System xvi

23 Costs **xvi**

24 User Documentation and Training **xvi**
24.1 User Documentation Requirements xvi
24.2 Training Requirements xvi

25 Waiting Room **xvi**

26 Ideas for Solution **xvi**

Revision History

Date	Version	Notes
Date 1	1.0	Notes
Date 2	1.1	Notes

1 Purpose of the Project

1.1 User Business

The purpose of this project is to design and implement an educational card game based on the traditional *Crazy 8s* rule set, but adapted to integrate the **Dozenal (base-12) number system**.

- This project addresses the lack of accessible and engaging tools that introduce alternative number systems in a playful and intuitive way.
- By combining a familiar card game mechanic with Dozenal representations and operations, users can gradually build comfort and intuition with the base-12 system.
- The primary business value lies in providing a lightweight, fun, and interactive educational tool for students, hobbyists, and anyone interested in number systems beyond decimal.

Additionally, the game offers an opportunity to evaluate how gamification can support mathematical learning, and whether abstract concepts (such as base conversions or divisibility in Dozenal) can be effectively taught through play.

1.2 Goals of the Project

The goals of this project are:

- Educational Integration: Seamlessly incorporate Dozenal concepts (symbols 0–B, factorization, arithmetic) into the gameplay, ensuring that players learn by playing without requiring formal prior knowledge.
- Gameplay Design: Deliver a working digital version of *Crazy 8s* that is intuitive, responsive, and enjoyable, while maintaining the familiar flow of the original game and introducing Dozenal-specific mechanics (e.g., matching rules, scoring, or special cards).
- Accessibility and Engagement: Create a user-friendly interface that lowers the barrier to learning, accessible for casual users while offering depth for learners who want to explore Dozenal further.

- Scalability / Stretch Goals: Explore the potential for extending the system to other educational card or board games, and investigate how different number bases can be taught through similar game mechanics.

2 Stakeholders

2.1 Client

Insert your content here.

2.2 Customer

Insert your content here.

2.3 Other Stakeholders

Insert your content here.

2.4 Hands-On Users of the Project

Insert your content here.

2.5 Personas

Insert your content here.

2.6 Priorities Assigned to Users

Insert your content here.

2.7 User Participation

Insert your content here.

2.8 Maintenance Users and Service Technicians

Insert your content here.

3 Mandated Constraints

3.1 Solution Constraints

Insert your content here.

3.2 Implementation Environment of the Current System

Insert your content here.

3.3 Partner or Collaborative Applications

Insert your content here.

3.4 Off-the-Shelf Software

Insert your content here.

3.5 Anticipated Workplace Environment

Insert your content here.

3.6 Schedule Constraints

Insert your content here.

3.7 Budget Constraints

Insert your content here.

3.8 Enterprise Constraints

Insert your content here.

4 Naming Conventions and Terminology

4.1 Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project

Insert your content here.

5 Relevant Facts And Assumptions

5.1 Relevant Facts

Insert your content here.

5.2 Business Rules

Insert your content here.

5.3 Assumptions

Insert your content here.

6 The Scope of the Work

6.1 The Current Situation

Insert your content here.

6.2 The Context of the Work

Insert your content here.

6.3 Work Partitioning

Insert your content here.

6.4 Specifying a Business Use Case (BUC)

Insert your content here.

7 Business Data Model and Data Dictionary

7.1 Business Data Model

Insert your content here.

7.2 Data Dictionary

Insert your content here.

8 The Scope of the Product

8.1 Product Boundary

Insert your content here.

8.2 Product Use Case Table

Insert your content here.

8.3 Individual Product Use Cases (PUC's)

Insert your content here.

9 Functional Requirements

9.1 Functional Requirements

Insert your content here.

10 Look and Feel Requirements

10.1 Appearance Requirements

Insert your content here.

10.2 Style Requirements

Insert your content here.

11 Usability and Humanity Requirements

11.1 Ease of Use Requirements

Insert your content here.

11.2 Personalization and Internationalization Requirements

Insert your content here.

11.3 Learning Requirements

Insert your content here.

11.4 Understandability and Politeness Requirements

Insert your content here.

11.5 Accessibility Requirements

Insert your content here.

12 Performance Requirements

12.1 Speed and Latency Requirements

Insert your content here.

12.2 Safety-Critical Requirements

Insert your content here.

12.3 Precision or Accuracy Requirements

Insert your content here.

12.4 Robustness or Fault-Tolerance Requirements

Insert your content here.

12.5 Capacity Requirements

Insert your content here.

12.6 Scalability or Extensibility Requirements

Insert your content here.

12.7 Longevity Requirements

Insert your content here.

13 Operational and Environmental Requirements

13.1 Expected Physical Environment

Insert your content here.

13.2 Wider Environment Requirements

Insert your content here.

13.3 Requirements for Interfacing with Adjacent Systems

Insert your content here.

13.4 Productization Requirements

Insert your content here.

13.5 Release Requirements

Insert your content here.

14 Maintainability and Support Requirements

14.1 Maintenance Requirements

Insert your content here.

14.2 Supportability Requirements

Insert your content here.

14.3 Adaptability Requirements

Insert your content here.

15 Security Requirements

15.1 Access Requirements

Insert your content here.

15.2 Integrity Requirements

Insert your content here.

15.3 Privacy Requirements

Insert your content here.

15.4 Audit Requirements

Insert your content here.

15.5 Immunity Requirements

Insert your content here.

16 Cultural Requirements

16.1 Cultural Requirements

Insert your content here.

17 Compliance Requirements

17.1 Legal Requirements

Insert your content here.

17.2 Standards Compliance Requirements

Insert your content here.

18 Open Issues

Insert your content here.

19 Off-the-Shelf Solutions

19.1 Ready-Made Products

Insert your content here.

19.2 Reusable Components

Insert your content here.

19.3 Products That Can Be Copied

Insert your content here.

20 New Problems

20.1 Effects on the Current Environment

Insert your content here.

20.2 Effects on the Installed Systems

Insert your content here.

20.3 Potential User Problems

Insert your content here.

20.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product

Insert your content here.

20.5 Follow-Up Problems

Insert your content here.

21 Tasks

21.1 Project Planning

Insert your content here.

21.2 Planning of the Development Phases

Insert your content here.

22 Migration to the New Product

22.1 Requirements for Migration to the New Product

Insert your content here.

22.2 Data That Has to be Modified or Translated for the New System

Insert your content here.

23 Costs

Insert your content here.

24 User Documentation and Training

24.1 User Documentation Requirements

Insert your content here.

24.2 Training Requirements

Insert your content here.

25 Waiting Room

Insert your content here.

26 Ideas for Solution

Insert your content here.

Appendix — Reflection

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. What went well while writing this deliverable?

2. What pain points did you experience during this deliverable, and how did you resolve them?

3. How many of your requirements were inspired by speaking to your client(s) or their proxies (e.g. your peers, stakeholders, potential users)?

4. Which of the courses you have taken, or are currently taking, will help your team to be successful with your capstone project.

5. What knowledge and skills will the team collectively need to acquire to successfully complete this capstone project? Examples of possible knowledge to acquire include domain specific knowledge from the domain of your application, or software engineering knowledge, mechatronics knowledge or computer science knowledge. Skills may be related to technology, or writing, or presentation, or team management, etc. You should look to identify at least one item for each team member.

6. For each of the knowledge areas and skills identified in the previous question, what are at least two approaches to acquiring the knowledge or mastering the skill? Of the identified approaches, which will each team member pursue, and why did they make this choice?