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Requirements, Part I

Software Requirements Document

1. Introduction

1.1. Purpose of this Document

This document will serve as a record of the software requirements for the Group 2 project for SWE 3313, Section W01, Spring semester 2020. All necessary requirements will be listed, described, and prioritized.

1.2. Scope of the Product

The scope of this project will be to create a desktop solitaire game using the Baker's Dozen rules. The project will also include all necessary project documentation as defined in the project assignment document (PAD). During the project several milestones will be achieved as defined in the project schedule (PS).

1.3. Definitions, Acronyms, and Abbreviations

- CPU – Central Processing Unit – The hardware component of a computer in which instructions are controlled and executed
- GUI – Graphical User Interface - User interface that includes graphical elements, such as windows, icons, and buttons
- PAD – Project Assignment Document – Document provided by customer outlining project instructions
- PS – Project Schedule – Document created by project team to define the project's work breakdown, milestones, and other schedule information
- RAM – Random Access Memory - Computer memory used for temporary storage in which data can be both read and written

1.4. References

- PAD – project assignment document – "SWE_3313_Term_Project_Apring2020.docx"

SWE_3313_Term_Pr
oject_Apring2020.dc

- PS – project schedule – "Group2_Project_Plan_PartII.pdf"

Group2_Project_Pla
n_PartII.pdf

1.5. Overview of Following Sections

The remaining sections of this document include:

- Section Two – General description: This section will provide high-level information about the project including product perspective, functions, user characteristics, constraints, assumptions, and dependencies
- Section Three – Specific Requirements: This section will list specific requirements of the project including functional and non-functional requirements

2. General Description

2.1. Product Perspective

This product will be a standalone desktop application for the Windows operating system. It will be playable only by a single player at a time and will offer no internet connectivity. The software will need to be downloaded in full to be used. There will be no patching mechanism, so if an update is necessary, a user will need to delete the old version and download the latest version.

2.2. Product Functions

This software will function as a desktop solitaire game for amusement. The game will serve to test user skill and provide a light challenge.

2.3. User Characteristics

The target users for this software application will be some combination of the following two personas:

1. Casual gamer – A person looking to pass time in an enjoyable way by playing a game that is not overly intense by comparison to other computer games available
2. Gamer seeking mental stimulation – A person (generally older) who is looking to engage in a casual game to aid in keeping their mind sharp

2.4. Constraints

This project is constrained in the following ways:

- Inexperienced project team – All team members are students and thus lack extensive software project experience
- Time constraints – A complex deliverable with a great deal of supporting documentation is needed in a brief time period. This time pressure will most likely lead to a final product that lacks certain optional features which could improve the user experience
- Limited target platform – The application is only targeted at Windows systems to be used as a standalone desktop application. No support will be offered for Macintosh or Linux systems and the software will need to be downloaded to the target system in order to be used.

2.5. Assumptions and Dependencies

This project makes the following assumptions:

- Users will be working with a recent version of the Windows operating system (Windows 10)

- Users will understand how the Baker's Dozen rules work. No help or instructions will be provided
- Users will have an internet connection to successfully download the necessary game files
- Project team can create a functional solitaire game in the provided time

3. Product Requirements

3.1. Functional Requirements

3.1.1. Graphical User Interface

3.1.1.1. Cards

Each of the 52 cards in the deck shall be represented by an image. Each card image shall feature the card's suit as well as its rank. Card ranks shall consist of numbers 2-10 as well as the ranks of Jack, Queen, King, and Ace.

3.1.1.2. Game Board

The game board shall consist of two areas of play: the tableaus and the foundations. In addition to these 2 main elements of play for the user, user interface elements such as a move counter, timer, or undo move button will exist on the game board as well. There should be buttons displayed on the user interface that will allow the player to undo a move or quit the game. The buttons and move counter should be labeled and placed in such a way that it is easy for the player to understand and use. There should be a move counter that counts the amount of moves a player has made since game start.

3.1.1.3. Tableaus

The tableaus area shall consist of thirteen piles of cards. Seven piles will be placed along the top of the game board and six piles will be placed along the bottom of the game board.

Each pile in the tableau area shall begin the game with four cards, each face up. Four of the piles shall have a king as the bottom-most card. All other cards in each of the piles will be randomized (shuffled).

3.1.1.4. Foundations

The foundations area shall consist of four landing areas for piles of cards. The foundations shall begin the game empty. The four landing areas shall be arranged vertically on the right side of the board

3.1.2. Game Rules

Baker's Dozen Solitaire is a one player game using a joker-less, four suit deck of 52 cards. In order to win the game, all 4 foundation piles must be filled in ascending order from ace to king using the cards spread out amongst the 13 tableaus. Only the top card of a tableau or foundation may be moved at one time and once a tableau is empty, it may not be filled. Unlike the foundation piles where rank and suit matter, the tableaus must be built down only by rank. In other words, a card may be stacked on another as long as the prior card is one rank higher.

3.2. Nonfunctional Requirements

3.2.1. Usability

The system will allow for a single player to play a single game of Baker's Dozen Solitaire. Upon launching the application, the game will immediately set up the game and ready play for the user. At any moment during play, the user will be able to resize window of the game. Also, the player can start up and quit the game as they wish.

3.2.2. Performance

The application runs smoothly with minimal load times under 15 seconds on modern hardware. The application requires minimal system resources including necessary RAM and minimal load on CPU.

4. Prototype