***SOFTWARE REQUIREMENTS SPECIFICATION***

**1.0 Introduction**

This section provides an overview of the entire requirement document. This document describes all data, functional and behavioral requirements for software.

**1.1 Goals and objectives**

Overall goals and software objectives are described.

**1.2 Statement of scope**

A description of the software is presented. Major inputs, processing functionality and outputs are described without regard to implementation detail.

**1.3 Software context**

The software is placed in a business or product line context. Strategic issues relevant to context are discussed. The intent is for the reader to understand the 'big picture'.

**1.4 Major constraints**

Any business or product line constraints that will impact the manner in which the software is to be specified, designed, implemented or tested are noted here.

**2.0 Usage scenario**

This section provides a usage scenario for the software. It organized information collected during requirements elicitation into use-cases.

**2.1 User profiles**

The profiles of all user categories are described here.

**2.2 Use-cases**

All use-cases for the software are presented.

**2.3 Special usage considerations**

Special requirements associated with the use of the software are presented.

**3.0 Data Model and Description**

This section describes information domain for the software

**3.1 Data Description**

Data objects that will be managed/manipulated by the software are described in this section.

**3.1.1 Data objects**

Data objects and their major attributes are described.

**3.1.2 Relationships**

Relationships among data objects are described using an ERD- like form. No attempt is made to provide detail at this stage.

**3.1.3 Complete data model**

An ERD for the software is developed

**3.1.4 Data dictionary**

A reference to the data dictionary is provided. The dictionary is maintained in electronic form.

**4.0 Functional Model and Description**

A description of each major software function, along with data flow or class hierarchy (OO) is presented.

**4.1 Description for Function n**

A detailed description of each software function is presented. Section 4.1 is repeated for each of n functions.

**4.1.1 Processing narrative (PSPEC) for function n**

A processing narrative for function n is presented.

**4.1.2 Function n flow diagram**

A diagram showing the flow of information through the function and the transformation it undergoes is presented.

**4.1.3 Function n interface description**

A detailed description of the input and output interfaces for the function is presented.

**4.1.4 Function n transforms**

A detailed description for each transform (subfunction) for function n is presented. Section 4.1.4 is repeated for each of k transforms.

**4.1.4.1 Transform k description (processing narrative, PSPEC)**

**4.1.4.2 Transform k interface description**

**4.1.4.3 Transform k lower level flow diagrams**

**4.1.4.4 Transform k interface description**

**4.1.5 Performance Issues**

Special performance required for the subsystem is specified.

**4.1.6 Design Constraints**

Any design constraints that will impact the subsystem are noted.

**4.2 Software Interface Description**

The software interface(s)to the outside world is(are) described.

**4.2.1 External machine interfaces**

Interfaces to other machines (computers or devices) are described.

**4.2.2 External system interfaces**

Interfaces to other systems, products or networks are described.

**4.2.3 Human interface**

An overview of any human interfaces to be designed for the software is presented.

**4.3 Control flow description**

The control flow for the system is presented with reference to Section 5.0 of this document.

**5.0 Behavioral Model and Description**

A description of the behavior of the software is presented.

**5.1 Description for software behavior**

A detailed description of major events and states is presented in this section.

**5.1.1 Events**

A listing of events (control, items) that will cause behavioral change within the system is presented.

Menu – This will display a graphical menu to the user, and will display all of the options contained in the system.

New Game – This option will be selected from the menu, and will create a new game session for the user with all values set at default.

Pause Game – This option will be selected from the menu, and will allow the user to pause their current game session. As there will be no data persistance, the game will only be paused for as long as the user’s computer is running.

Resume Game – This option will be selected from the menu, and will allow the user to resume a previously paused game with game settings as they were at the time the pause occurred.

Quit Game – This option will be selected from the menu, and will allow the user to exit from the game. This will cause all game-related processes running on the computer to terminate.

Sound On/Off – This option will be selected from the menu, and will allow the user to turn the game sounds on or off. The game will not be sound dependant, so this will not affect the playability of the game.

Jump – This event will be initiated by pushing the up arrow on the computer’s keyboard. Jump will cause the playable game character to jump in the 2d space of the game.

Move Right – This event will be initiated by pushing and holding the right arrow on the computer’s keyboard. Move Right will cause the playable game character to move to the right in the 2d space of the game for the duration of the key being held down by the user.

Move Left – This event will be initiated by pushing and holding the left arrow on the computer’s keyboard. Move Left will cause the playable game character to move to the left in the 2d space of the game for the duration of the key being held down by the user.

Duck – This event will be initiated by pushing and holding the down arrow on the computer’s keyboard. Duck will cause the playable game character to crouch, or duck, under other objects in game play. The character will remained crouched for as long as the button is pressed by the user.

Throw Item – This event will be initiated by pushing the spacebar on the computer’s keyboard. If the playable game character is in possession of throw-able items, pressing the space bar will throw the items when the space bar is pressed for the duration of the possession of said items.

Collect Item – Items will be collected throughout game play. There will be a variety of different items, which will cause different events to happen. Those items are:

* Mushroom This item will cause the playable game character to grow in size, increase health, and will allow special items to be collected.
* Coins These items will be collected for points as well as extra lives. Collecting 100 of them will grant the user an extra life in the game.
* Fireballs
* Extra Lives

Touch Enemy character – Coming in contact of an enemy character other than when jumping on top of them will result in a loss of health and items from the playable character. Depending on the health status of the character, the contact may cause the playable character to die.

Fall Off World – Falling off of the world happens when the playable character falls down a hole off of the screen. This results in the death of the character.

**5.1.2 States**

A listing of states (modes of behavior) that will result as a consequence of events is presented.

This section describes the main states of behavior that will result from an action being presented.

Main Menu – Allows the user to choose what they would like to do. The option are: New Game, Pause Game, Resume Game, Quit Game, and Sound Options.

* New Game – Selecting the New Game option from the Menu allows the user to start a new game session with default values.
* Pause Game – Selecting the Pause Game option from the Menu allows the user to pause their current game session for an undetermined length of time. If the user turns their computer off, the game will no longer be paused, nor will it persist any data from the game session.
* Resume Game – Selecting the Resume Game option from the Menu allows the user to start their game from the point at which they hit pause. There must be a game currently paused in order to resume it.
* Quit Game – Selecting the Quit Game option from the Menu allows the user to exit from the game system. The user will be prompted with a question to make sure they wish to exit, if they confirm that they wish to exit, then the system will be exited.
* Sound On/Off – Selecting the Sound On/Off option from the Menu allows the user to turn the sound on or off in their current game session. The default value for sound will be On.
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**5.2 State Transition Diagrams**

Depict the overall behavior of the system.

**5.3 Control specification (CSPEC)**

Depict the manner in which control is managed by the software.

**6.0 Restrictions, Limitations, and Constraints**

Special issues which impact the specification, design, or implementation of the software are noted here.

**7.0 Validation Criteria**

The approach to software validation is described.

**7.1 Classes of tests**

The types of tests to be conducted are specified, including as much detail as is possible at this stage. Emphasis here is on black- box testing.

**7.2 Expected software response**

The expected results from testing are specified.

**7.3 Performance bounds**

Special performance requirements are specified.

**8.0 Appendices**

Presents information that supplements the Requirements Specification

**8.1 System traceability matrix**

A matrix that traces stated software requirements back to the system specification.

**8.2 Product Strategies**

If the specification is developed for a product, a description of relevant product strategy is presented here.

**8.3 Analysis metrics to be used**

A description of all analysis metrics to be used during the analysis activity is noted here.

**8.4 Supplementary information (as required)**