Software Requirements Specification

for

Burger Breakout

**Version 1.0 approved**

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**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason for Changes** | **Version** |
| David Sincyr/  Michael Rumohr | 02/25/20 | Initial Creation | 1.0 |
| Michael Rumohr | 03/08/20 | Revisions from Initial Creation | 1.1 |

# Introduction

## Purpose

The purpose of this Software Requirements Specification (SRS) document is to specify the software requirements of Burger Breakout version 1.0, a gaming application playable on a computer. Burger Breakout plans to allow users to play a fun burger-and-fries-themed gaming application on their personal computer and this is a standalone system described in this Software Requirements Specifications document.

## Document Conventions

Bold text is representative of significant importance. Requirements are assumed to have their own priority unless specified otherwise.

## Intended Audience and Reading Suggestions

This intended Audience is intended for marketing staff, investors, and Dr. Ghanavati of COS 420. The SRS is organized in compliance with IEEE Recommended Practice for Software Requirements Specifications with this introduction, descriptions and features, followed by interfaces and requirements, and appendices can be found at the end of this document. It is suggested to read through the first three sections which are most pertinent to marketing staff and investors.

## Product Scope

Burger Breakout is a standalone gaming application on a personal computer designed for all. The aim of the project is to develop a gaming application for children but can be enjoyed by all ages that is centered around a Five Guys® theme. The 2-D levels would be designed around different environments of the restaurant, such as the tables where patrons eat and the kitchen where the food is prepared. The user will guide the playable character through various levels by running, jumping, fighting, and climbing. There will also be other non-playable characters that will act as allies or enemies towards the playable character. Some levels may culminate in a boss fight or even encounter mini-bosses’ in the middle of them. These non-player characters will have increased stats as well as move sets that will add a challenge for the user.

## References

* COPPA: <https://www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/childrens-online-privacy-protection-rule>
* Unity Scripting API: <https://docs.unity3d.com/ScriptReference/>
* IEEE Recommended Practice for Software Requirements Specifications: <https://standards.ieee.org/standard/830-1998.html>
* https://bb.courses.maine.edu/bbcswebdav/pid-6227278-dt-content-rid-17503191\_2/courses/2020.UMS05-C.0017.1/IEEE%20Recommended%20Practice%20for%20Software%20Requirements%20Specifications.pdf

# Overall Description

## Product Perspective

Burger Breakout is a new, self-contained, standalone gaming application and is designed to run on personal computers. The only requirements for the user are to have a personal and functional keyboard.

## Product Functions

* Burger Breakout shall be designed as a two-dimensional side scroller personal computer gaming application.
* Burger Breakout shall have the user navigate linearly through different levels of difficulty.
* Burger Breakout shall allow the user to guide the game character using the arrow keys or WASD keys.

## User Classes and Characteristics

The class of users for Burger Breakout is children. This class of children has been divided into two subclasses of novice and frequent players. The novice players do not have little to no experience and will require more guidance than the frequent players with hints and suggestions. The frequent players will have more insight and experience into gameplay. It is important to satisfy the novice user class so that they are more likely to continue playing Burger Breakout if they get frustrated during a certain part of the game.

## Operating Environment

The environment which the software will operate in is Windows OS. Specifically, the software will target Windows 10, but alternate versions and platforms will be researched.

## Design and Implementation Constraints

There are currently no design or implementation restraints.

## User Documentation

User documentation will include a help section for the user providing complete instructions of Burger Breakout gameplay and suggestions and hints for beating certain bosses at the end of levels.

## Assumptions and Dependencies

Burger Breakout assumes and depends on the existence and reliability of a functioning Windows OS and functioning keyboard attached to that OS.

# External Interface Requirements

## User Interfaces

Burger Breakout will utilize Unity for the creation of user interface between the software product and user. See “Unity Scripting API” in the References section of the SRS for more details.

|  |  |
| --- | --- |
| **ID** | UI – 01 |
| **Statement** | The system shall create a new game |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 02 |
| **Statement** | The system shall exit a game |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 03 |
| **Statement** | The system shall save a game |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 04 |
| **Statement** | The system shall load a game |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 05 |
| **Statement** | The system shall pause a game |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 06 |
| **Statement** | The system shall unpause a game |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 07 |
| **Statement** | The system shall move a character |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 08 |
| **Statement** | The system shall |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 09 |
| **Statement** | The system shall |
| **Notes** |  |

|  |  |
| --- | --- |
| **ID** | UI – 10 |
| **Statement** | The system shall |
| **Notes** |  |

<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>

## Hardware Interfaces

Burger Breakout is a computer-based gaming application and will run on any platform running Windows OS that has an attached functional keyboard (see section 2.4).

|  |  |
| --- | --- |
| **ID** | HI – 01 |
| **Statement** | The system shall |
| **Notes** |  |

<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used.>

## Software Interfaces

Burger Breakout will be written with Unity 2018.4.16f1 software. Unity is a closed-source, cross-platform game development application. Users of Burger Breakout will not need to interface with Unity once it has been created.

|  |  |
| --- | --- |
| **ID** | SI – 01 |
| **Statement** | The system shall |
| **Notes** |  |

<Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint.>

## Communications Interfaces

Burger Breakout does not require any communication interface functions since it is a standalone product that does not communicate with any other systems.

|  |  |
| --- | --- |
| **ID** | CI – 01 |
| **Statement** | The system shall |
| **Notes** |  |

<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>

# System Features

## Burger-themed gameplay

**4.1.1 Description and Priority**

**Priority: High**

Burger-themed gameplay is essential to Burger Breakout since it is based on Five Guys®. This feature is compiled from the characters, obstacles, weapons, and environments are created around the burger theme.

**4.1.2 Stimulus/Response Sequences**

For the user to experience a burger themed game, they will need only to log into the game. From here the user will navigate through system menus to start a new game or load a previously saved state. After the use selects an option, they will move their burger character through a kitchen environment such as tabletops, grills and floors. As the user moves through the environment, they will be able to pick up food themed items such as French fries or lettuce to combat their opponent.

**4.1.3 Functional Requirements**

F-REQ-01: The system shall allow the game character to use different items of food like cheese, tomatoes, French fries, and milkshakes as weapons against game enemies

F-REQ-02: The system shall allow the game character to move through different levels so that the user can explore as much as they would like.

F-REQ-03: The system shall provide different levels that are all burger-themed so that the user feels like they are in a diner.

<Itemize the detailed functional requirements associated with this feature. These are the software capabilities that must be present in order for the user to carry out the services provided by the feature, or to execute the use case. Include how the product should respond to anticipated error conditions or invalid inputs. Requirements should be concise, complete, unambiguous, verifiable, and necessary. Use “TBD” as a placeholder to indicate when necessary information is not yet available.>

<Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.>

## Save/Load Feature

**4.2.1 Description and Priority**

**Priority: High**

Being able to save and load your game is an important part of Burger Breakout since we want users to have the ability to stop playing and resume later, without losing progress in the game.

**4.2.2 Stimulus/Response Sequences**

Whenever a user of Burger Breakout wants to save their progress because they cannot continue, the user needs only to click a button and select the save feature. They can now log out of the game. To continue a game the user needs only to start the game back up, select the menu option at the start menu to load previous saved state.

**4.2.3 Functional Requirements**

F-REQ-04: The system shall provide the user with an option to save their current game during any point so that they can continue playing later.

F-REQ-05: The system shall provide the user with an option to load their last saved game so that they can continue from their last saved point in the game.

<Itemize the detailed functional requirements associated with this feature. These are the software capabilities that must be present in order for the user to carry out the services provided by the feature, or to execute the use case. Include how the product should respond to anticipated error conditions or invalid inputs. Requirements should be concise, complete, unambiguous, verifiable, and necessary. Use “TBD” as a placeholder to indicate when necessary information is not yet available.>

<Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.>

# Other Nonfunctional Requirements

NF-REQ-01: The system shall provide the user with music and sound effects so that the game has a more realistic feel and the user can hear when they jump or throw a food item.

NF-REQ-02: The system shall save the high scores and achievements of the user so that they can compete against those scores and add to their achievements.

NF-REQ-03: The system shall provide visually appealing and unambiguous gameplay so that the user will feel the game is polished and complete.

## Performance Requirements

CPU: TBD

CPU Speed: TBD

RAM: TBD

OS: TBD

Video Card: TBD

Pixel Shader: TBD

Vertex Shader: TBD

Sound Card: TBD

Free Disk Space: TBD

Dedicated Video Ram: TBD

## Safety Requirements

SA-REQ-01: The system shall ensure the game does not produce any output that will trigger a user into an epileptic episode so that they are safe during gameplay.

SA-REQ-02: The system shall obtain a rating of “Everyone” from the ESRB so that users of all ages can play the game.

SA-REQ-03: The system shall follow regulation from COPPA so that users of a younger age are able to play the game without harm.

<Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product’s design or use. Define any safety certifications that must be satisfied.>

## Security Requirements

SE-REQ-01: The system shall allow not allow access to the user’s computer so that their information stored is safe from malicious attacks.

SE-REQ-02: The system shall monitor intrusion using a HIDS so that the user is safe from malicious attacks.

<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 any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>

## Software Quality Attributes

Burger Breakout shall be robust in the sense that the game will not need to be rebooted during gameplay. Burger Breakout shall be reusable, allowing a player to reset the game to the start to play again.

## Business Rules

A user and developer may access and play Burger Breakout. A developer may access code and other files used to create Burger Breakout.

# Other Requirements

Burger Breakout does not have any additional requirements and all requirements have been detailed in this SRS.

**Appendix A: Glossary**

COPPA – Children’s Online Privacy Protection Act

ESRB – Entertainment Software Rating Board

HIDS – Host-Based Intrusion Detection System

OS – Operating System

WASD – W, A, S, and D keys used to move up, left, down, and right respectively

**Appendix C: To Be Determined List**

1. Operating Environments (Section 2.4)
2. Performance Requirements (Section 4.4)