Software Requirements Specification

for

College Invaders

Version 1.0 approved

Prepared by Cassidy McAllister, Sharrar Wasit, Giovanni Toxqui, Wei Xiong

Brooklyn College

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# **1.** **Introduction**

## **1.1** **Purpose**

The purpose of this SRS (Software Requirements Specification) is to provide a description of College Invaders. It will go into detail about the grounds for this software, the features of the software, the interfaces of the software, and what the software does. This SRS is designed for users of the software and potential developers.

## **1.2** **Document Conventions**

This Document was created based on the IEEE template for System Requirement Specification Documents.

## **1.3** **Intended Audience and Reading Suggestions**

This document is intended for general users, people who want to play video games or find some form of entertainment. Another party it is intended for is upper management, which allows them to see the project in full without the product. Lastly, programmers who would be interested in optimizing or building upon this project. The recommended sequence to read this SRS would be to read the introduction sections closely, followed by the overall description for readers looking to understand the purpose and goal of the game. Readers who are more interested in how to play the game can read the introduction, then jump to External Interface Requirements to know what’s required to play.

## **1.4** **Product Scope**

College Invaders is a reimplementation of the 1978 video game Space Invaders by Taito. Space Invaders is an arcade style shooter video game where a player controls a spaceship and is faced off against waves of enemy spaceships. The player scores points by defeating enemy spaceships contributing to their score. The object of the game is to set the highest score possible with the allotted amount of lives. College Invaders will take these core mechanics and theme it around Brooklyn College. Our business goals are to create more awareness of Brooklyn College, by having people all around the globe play this game. This may bring notoriety to Brooklyn College and put it higher up on the radar, bringing the college more opportunities.

## **1.5** **References**

Template:

<https://web.cs.dal.ca/~hawkey/3130/srs_template-ieee.doc>

Sample:

<https://gephi.org/users/gephi_srs_document.pdf>

Space Invaders Website:

<https://spaceinvaders.square-enix-games.com/legacy>

# **2.** **Overall Description**

## **2.1** **Product Perspective**

This software is a student made spin off of the arcade game Space Invaders. It was assigned to us by Professor Gross. The product is made up of this SRS, as well as the code for the project, and lastly the assets/graphics for the project.

## **2.2** **Product Functions**

The major function of this project is for the user to be able to play a functioning game. The user will be able to use their mouse and keyboard as a controller. The monitor and speakers will be used as output devices.

## **2.3** **User Classes and Characteristics**

The main user class would be Professor Gross. He is the main user this software is being produced for. He will be using it as many times as he likes to ensure it works and deem an appropriate grade for the work displayed. He will also understand this project on the highest level as he is the one who set the requirements for the project.

## **2.4** **Operating Environment**

The software will operate on any browser that supports HTML. It will also work on any machine that is able to support the latest browsers that support HTML.

## **2.5** **Design and Implementation Constraints**

A developer must know how to use SVN to access the code from the repository as well as have access to the SVN repository created for this project.

## **2.6** **User Documentation**

This SRS is the only User Documentation to be provided along with the software.

## **2.7** **Assumptions and Dependencies**

It is assumed the user has an audio output device, a display output device, a mouse and keyboard.

# **3.** **External Interface Requirements**

## **3.1** **User Interfaces**

The game is designed for the user to interact with the game’s menus. They are simple clickable buttons. While the game portion is meant to be interacted with via the keyboard as a controller. The player is given indicators of what is going on the screen by the indicated Score key on the menu. As well when a game over occurs they are notified by a screen saying so. There are no keyboard shortcuts and universal functions in the program. The user is restrained from doing anything else than what is to be done on screen.

## **3.2** **Hardware Interfaces**

College Invaders uses the arrow keys to move the player. The left key and right key specifically are the only arrow keys to be used. They allow the player to move left to right respectively. The other key used is the spacebar. The spacebar is used to shoot. The mouse is used to navigate the game’s menus to select the menu options. A display is used to display the game itself onto the computer. Lastly speakers are used as an output device for the sound effects to be played to.

## **3.3** **Software Interfaces**

The input devices send messages to the program on what to do in relation to the players movement or menu selection. The program outputs moving graphics to the screen and sound effects to an audio output device. The graphics are automated and done on their own, while the sound is only sent when called upon.

## **3.4** **Communications Interfaces**

The game is coded using html and javascript, for it to be run the user must have a compatible browser and internet connection.

# **4.** **System Features**

## **4.1** **System Feature 1**

4.1.1 Description and Priority

1) **Research**. This is a really important part. This helps us find out what type of games this is going to be. What the game is going to be about and what is the goal of this game.(High priority 9)

**Work On A Design Document.** This is the second most important thing in the game. It helps us to find out what the game is going to look like. What the character is going to look like. How the graphics of the game is going to be. (Medium priority 7)

**Start Programming.** This has to be one of the most important parts of the game. It defines how the game will work. How the player is going to interact with the game. It is building the whole game from the bottom up. (High priority 9)

**Test Your Game**. Last step has to be testing your game to decrease the chance of having bugs. It is as important as creating the game. This part will test whether the programming logically works or not. It will test if the game works like you had planned and if it is user friendly. (High priority 8)

4.1.2 Stimulus/Response Sequences

If user press the right arrow key the player will move to the right

If user presses the left arrow key the player will move to the left

If user presses the space button it will shoot missle.

4.1.3 Functional Requirements

REQ-1: Keyboard

REQ-2: Display 224×256 resolution or higher

## **4.2** **System Feature 2 (and so on)**

# **5.** **Other Nonfunctional Requirements**

## **5.1** **Performance Requirements**

Recommendations for optimal performance:

• OS: Windows 7 64-Bit / Windows 8 64-Bit / Mac OS/ Linux

• Intel® Core 2 Duo E8200 2.66 GHZ / AMD Phenom X3 8750 2.4 GHZ or better Recommended: Intel® Core i5 – 680 @ 3.6GHz

• RAM: 4 GB RAM Recommended: 8 GB RAM

• HDD: 1GB HD space

• Sound: DirectX Compatible Sound Card

Response time will never exceed 2 seconds in real time systems for those using the recommended hardware for optimal performance, and on average has a response time of 5 seconds for those with even the most robust hardware.

## **5.2** **Safety Requirements**

Space Invaders will not affect any other application on the user’s personal device, nor will it cause any harm to the device itself. The safety protocols of the game do not allow it to overheat the system, which could cause potential harm. Due to its simplistic nature, Space Invaders can be played at any time without posing a potential threat to a system. However, due to the flashing lights and sounds that come from the shooting, anyone prone to seizures or suffering from epilepsy can switch off the sounds and lights in our game options.

## **5.3** **Security Requirements**

Space Invaders does not ask for any private or personal information, except a name that can be anything for logging scores into our database. This database only relates to the game to display scores and thus will never compromise any information to outside sources. There is also no authentication required to play this game, which allows for users to play without having to log in to anything. However, it should be noted that because there’s no authentication, anyone with access to the device with Space Invaders on it can play on behalf of the device owner.

## **5.4** **Software Quality Attributes**

Space Invaders can ensure that anyone using the optimal hardware (as seen in Section 5.1 Performance Requirements) will have a response time of no longer than 2 seconds. Such as if a player presses play, they will be directed to the game screen within 2 seconds of clicking it. However, anyone running even the most basic hardware will not see dramatically different response times. The average response time for those without optimal hardware is close to 5 seconds. Looking at usability now, Space Invaders gives users a very easy to follow interface, one that has easy to understand controls and directions on what to do. A note on reliability- a player who fails to enter a name for their score will automatically have it saved under the default name ‘Player’. This goes to show how Space Invaders are forgiving if a player accidentally fails to log their high score. In terms of maintainability, Space Invaders will be updated every two weeks based on any reports of bugs or troubles with the game.

## **5.5** **Business Rules**

Given the linear scope that Space Invaders follows, there are no functions that can only be performed by certain individuals or roles. Each player starts the same way, and each player logs their scores in the same way. With that being said, if a player is able to complete the first level, that player moves on the second level, and they keep moving on until they cannot beat the level. Players cannot jump to new levels without completing the previous level. After a player restarts the game, they start from the first level.