Software Requirements Specification

for

KoP

**Version 3.0**

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**Villanova University**

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**Revision History**

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| **Name** | **Date** | **Reason For Changes** | **Version** |
| Team Stitch | 03/21/2019 | Initial draft of KoP Requirements | 1.0 |
| Team Stitch | 04/04/2019 | Second draft of KoP Requirements | 2.0 |
| Team Stitch | 04/25/2019 | Final version of KoP Requirements | 3.0 |

# Introduction

## Purpose

The purpose of this Software Requirements Specification is to outline the specifications for KoP, an online version of an existing board game. The document is intended to cover the entire scope of KoP, as requested by Team JSIMPS. Team Stitch will leverage the document as living specifications for KoP. This is the first draft of the specifications. Specifications will be reviewed by Team JSIMPS.

## Intended Audience and Reading Suggestions

This Software Requirements Specification is intended for all members of Team JSIMPS, the client, in addition to all members of Team Stitch, the contracting team. The document should be read in order. Section 2 contains an overall description and breakdowns of the product’s features. Section 3 contains system features. Section 4 contains external interface requirements, as well as nonfunctional requirements. Lastly, section 5 contains the remaining requirements not covered in the previous sections. Appendix A gives a list of terms frequently used in the document and a brief description of each.

## Project Scope

KoP is the online game to be specified in this document. KoP is a strategic board game for two to four players. Each player launches attacks upon the others, working toward the goal of being either the last player remaining on the board, or the first to reach a winning number of points. KoP is developed primarily for adults, though can also be played as an entertaining game for younger audiences. For additional details on scope, please reference Project Charter.

# Overall Description

## Product Perspective

This document will provide the rules and behavior for the system that will make the product, an online version of the board game, KoP, accessible. KoP has various levels of difficulty. This specification will focus exclusively on the simpler version of the board game.

## User Classes and Characteristics

* UC-1: Guest Player
  + Players can opt to start playing immediately as a guest. Scores and game results cannot be stored for these players.
* UC-2: Registered Player
  + Players can create an account and log in each time they play. Scores and win-loss counts are stored and publicly displayed for these players.

## Operating Environment

* OE-1: The KoP online game shall operate on Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge
* OE-2: The KoP online game shall allow any user with internet access and a supported browser to create an account or play as a guest.
* OE-3: The KoP online game will utilize geo-location technology to allow users the option to play with others logged on within 50 feet of their position.

## Design and Implementation Constraints

* CO-1: The design and implementation of the KoP prototype shall be limited within the time constraint presented by the Villanova University Spring 2019 semester.
* CO-2: The design and implementation of the KoP prototype shall be limited in scope to a Microsoft PowerPoint presentation.
* CO-3: The KoP prototype will never go live, and therefore will not be able to be fully tested by potential users.

## User Documentation

* UD-1: The system shall provide an option for users to engage in an online tutorial, which plays simulated scenario of a typical game of KoP for the viewer.
* UD-2: The system shall provide a downloadable PDF copy of the rules of KoP. The rulebook shall be versioned and take user feedback into consideration.

## Assumptions and Dependencies

Team Stitch is working on the assumption that all external interface and design is left up to the careful discretion of Team Stitch, unless directly specified by Team JSIMPS or a member of Team JSIMPS within the course of product development. It is of Team Stitch’s assumption that Team JSIMPS will extend corrections or notes on the content of this document regarding the specifications for the product, if the occasion is to arise. Additionally, Team Stitch is working under the assumption that the database system for KoP has already been designed and developed as a separate effort and is out of scope for this SRS.

# System Features

The system shall have the following features: Game begins, Player rolls dice, Player attacks, Player wins, and Player loses. Each feature is an integral part of the system. It specifies the setup for the game, player behaviors, how a player wins, and how a player loses.

## Create user account

* + 1. Description and Priority

This feature describes the creation of a user account. User account consists of a username when opening the KoP game for the first time. The system provides the ability to enter a username, password, email, and full name. The system will alert the user if the email or username is already in use.

* + 1. Stimulus/Response Sequences

Stimulus: Unregistered user opens KoP.

Response: KoP prompts to enter username, password, email, and full name.

Stimulus: Unregistered user enters username already registered to another user.

Response: KoP prompts to enter a new username.

Stimulus: Unregistered user enters an email already registered to another user.

Response: KoP prompts to enter an unregistered email.

Stimulus: Unregistered user enters a password that does not satisfy all password requirements.

Response: KoP alerts of the missing password requirement(s).

Stimulus: Unregistered user does not complete all input fields.

Response: KoP rejects registration.

Stimulus: Unregistered user submits completed input fields.

Response-1: KoP creates user profile.

Response-2: KoP grants user permission to open a game.

* + 1. Functional Requirements

REQ-1: The system prompts unregistered user for username.

REQ-2: The system prompts unregistered user for password.

REQ-3: The system prompts unregistered user for email.

REQ-4: The system prompts unregistered user for full name (first name and last name).

REQ-5: The system rejects registration and notifies the user when username entered is already registered with an existing account.

REQ-6: The system rejects registration and notifies the user when username entered is already registered with an existing account.

REQ-7: The system notifies the user of an incomplete input field, if necessary, and rejects registration.

REQ-8: The system allows unregistered user to submit the completed form.

REQ-8.5: The system stores information inputted on the page to the database server.

REQ-9: The system permits the registered user to start a game through the steps in Section 3.2.

## Open KoP game

* + 1. Description and Priority

This feature describes the rules for opening the KoP game. The system provides the ability to either login or enter as a guest. When logging in the user is prompted for their username and password. When entering as a guest the user is prompted for their name. This feature is a high priority as it is needed to begin a game.

3.2.2 Stimulus/Response Sequences

Stimulus: User opens KoP game on a web browser

Response: KoP prompts user to enter as a guest or login

Stimulus: User enters as a guest

Response: KoP prompts guest to enter their name

Stimulus: User logs in

Response: KoP prompts guest to enter their username and password

Stimulus: User enters username and password

Response: KoP authenticates user

Stimulus: User selects to join a game

Response: KoP assigns user to a game with room for another player

Stimulus: User who created the game is able to start the new game when there are at least two players

Response: KoP begins a new game

Stimulus: Fourth user joins a game

Response: KoP automatically begins a new game

* + 1. Functional requirements

REQ-1: The system allows user to enter as a guest.

REQ-2: The system solicits for a name when the player is a guest.

REQ-3: The system allows user to login.

REQ-4: The system prompts user to enter username and password.

REQ-5: The system authenticates that the username and password are valid.

REQ-6: The system allows user to create a new game.

REQ-7: The system allows user to join a game that has not begun.

REQ-8: The system allows user to begin game once there are two players.

REQ-9: The system automatically begins a new game once there are four players.

## Game begins

3.3.1 Description and Priority

This feature describes the rules for beginning a game of KoP. In order to begin a game there must be between two to four players. This is of high priority, as all subsequent features will build upon it.

3.3.2 Stimulus/Response Sequences

Stimulus: Player initiates a game of KoP.

Response: KoP prompts player to input game settings.

Stimulus: Player begins game.

Response: KoP sets up board game.

3.3.3 Functional Requirements

REQ-1: The system prompts user to enter the number of players to begin a game, where there must be between two to four players.

REQ-2: The system prompts user to selects a monster figure.

REQ-3: The system creates one area referencing the city.

REQ-4: The system creates one area referencing outside the city.

REQ-5: The system places all monster figures assigned to a player to the start point on the board game, which is outside the city.

REQ-6: The system assigns 0 energy cubes to each player.

REQ-7: The system assigns 10 hearts to each player.

REQ-8: The system assigns 0 victory points to each player.

REQ-9: The system creates 6 6-sided black dice.

REQ-10: The system creates each die with 3 sides containing a numeric value: 1,2, and 3.

REQ-11: The system creates each die with 3 sides containing a symbolic figure: heart, thunder bolt, and monster.

REQ-12: The system randomly selects a player to play first.

REQ-13: The system prompts first player to roll all 6 dice.

## Player rolls dice

* + 1. Description and Priority

This feature describes the rules for when a player rolls the dice on their turn. This is a high priority feature as it enables the ability to play the game.

* + 1. Stimulus/Response Sequences

Stimulus: Player begins a turn and the city is unoccupied.

Response: KoP moves player to the city.

Stimulus: Player begins a turn.

Response: KoP provides ability to roll 6 dice.

Stimulus: Player rolls dice.

Response: KoP reserves the dice.

Stimulus: Player reserves 6 dice.

Response: KoP resolves the dice.

Stimulus: Player begins a turn.

Response: KoP sets a 30 second timer to track idle time.

Stimulus: Player takes longer than 30 seconds to roll or resolve dice.

Response: KoP completes the turn for the player.

* + 1. Functional Requirements

REQ-1: The system moves the player to the city if the city is unoccupied.

REQ-2: The system enables the current player to roll 6 dice.

REQ-3: The system sets a timer to track when a player has been idle for more than 30 seconds after a roll.

REQ-4: The system will roll and resolve dice if the player is idle for more than 30 seconds.

REQ-5: The system allows the player to reserve dice after each roll.

REQ-6: The system will allow the player to roll the unreserved dice for a maximum of 3 times.

REQ-7: The system will resolve the final 6 dice selected by the player.

REQ-8: The system resolves numeric values of the dice by aggregating three of a kind numeric values to the victory points that the player has, but only once and not three times.

REQ-9: The system resolves the thunderbolt by aggregating it to the number of energy cubes the player has.

REQ-10: The system resolves the heart by aggregating it to the number of life points that the player has.

REQ-11: The system automatically assigns one life point to a player when the player accumulates ten energy cubes.

REQ-12: The system reassigns 0 energy cubes at the time when REQ-11 is fulfilled.

## Player attacks

* + 1. Description and Priority

This feature describes the rules of a player to attack another player given their position on the board. This is high priority as this directly aligns to how a player can win the game.

* + 1. Stimulus/Response Sequences

Stimulus: Player makes an attack.

Response: KoP enables player to attack other player(s).

* + 1. Functional Requirements

REQ-1: The system provides the player the ability to attack when the player rolls one or more monsters.

REQ-2: The system provides the ability to attack the player in the city, when the attacking player is outside the city.

REQ-3: The system provides the ability to attack all the player(s) outside the city at the same time, when the attacking player is inside the city.

REQ-4: The system subtracts one life point from the attacked player(s) for each monster rolled by the attacker.

REQ-5: If a player is attacked while in the city, the system relocates that player outside of the city.

REQ-6: If the city becomes vacant, the system moves the next player to start a turn to the inside of the city.

## Winning Criteria

* + 1. Description and Priority

This feature describes the rules for a player to win KoP. There are two ways to win the game. The first method of winning occurs when the player is the last player on the board with life points. The second method of winning occurs when a player gains a total of 20 victory points. This is of high priority as this defines how the game ends.

* + 1. Stimulus/Response Sequences

Stimulus: Penultimate player loses last life point.

Response: The system declares the last remaining player the winner.

Stimulus: Player reaches 20 victory points.

Response: The system declares the player the winner.

* + 1. Functional Requirements

REQ-1: The system declares the first player that reaches 20 victory points to be the winner.

REQ-2: If all players but one lose all of their life points, the last player standing is declared the winner.

## Player loses

* + 1. Description and Priority

This feature describes the rules for when a player loses. There are two ways to lose. The first method of losing is for a player to lose all life points. The second method of losing is for another player to reach 20 victory points.

* + 1. Stimulus/Response Sequences

Stimulus: Player loses last life point.

Response: Player is eliminated.

Stimulus: A player reaches 20 victory points.

Response: All remaining player(s) have lost.

* + 1. Functional Requirements

REQ-1: The system notes all players that have not reached 20 points, when the first player reaches 20 points, have lost.

REQ-2: The system displays a popup showing that a player has been eliminated when they have lost all their hearts.

REQ-3: The system disables the ability to continue playing the game for a player when the player has lost.

# External Interface Requirements

## User Interfaces

*4.1.1* Description and Priority

User Interface describes what the user will see and interact with before, during, and after the game.

4.1.2 Requirements

REQ-1: The system shall display a board with two distinct areas. One area is the city. The other is the area outside the city.

REQ-2: The system shall display the points of each player in the top left corner of the screen.

REQ-3: The system shall indicate the current player’s turn by highlighting the player’s monster.

REQ-4: The system shall display a dice icon in the bottom left corner to indicate a player’s turn to roll.

REQ-5: The system shall display the outcome of each dice in a row on the bottom of the screen after each roll.

REQ-6: The system shall allow the user to press on the individual dice icons to indicate which dice the player would like to keep.

REQ-7: The system shall display the outcome of other players’ rolls on the bottom of the screen.

REQ-8: The system displays a popup that the game has ended when a player has won.

REQ-9: The system displays a popup that the game has ended if all but one player have lost.

## Other Nonfunctional Requirements

## Performance Requirements

* PR-1: The game should work on the latest versions of IE, Mozilla, Safari and Google Chrome browsers, as of the date when implementation begins.
* PR-2: The game should be mobile compatible, both android and iOS devices.
* PR-3: The response time between events should not take more than 250 milliseconds, regardless of the number of players playing the game.
* PR-4: The system should be able to run and maintain up to 100 games at the same time, whilst conforming to the specified game rules and quality attributes in this document.

## Security Requirements

* SR-1: All personal data such as usernames and passwords must be encrypted.

## Software Quality Attributes - explicitly define, easily and reliably measurable, what users will care about

* QR-1: The product should be flexible and extendable. It should be organized such that it is easy to add new features to the system. Each addition shall either keep constant or enhance compliance with all Performance Requirements detailed in Section 4.3.
* QR-2: The product should be robust. It should be able to assign at least 50 players to games at the same time, while conforming to the specified number of players and individual player constraints.
* QR-3: The product should maintain its integrity through all subsequent updates. It should perform according to the same requirements defined in this document without risk of user modification.

**Appendix A: Glossary**

1. User: User refers to a person who has not begun playing KoP.
2. Player: Player refers to a person who has started playing KoP.
3. Monster: Monster is representative of a player in the game. Monster is also a figure a player can roll on the dice to signify an attack.
4. Thunderbolt: Thunderbolt is a figure a player can roll on the dice to signify an energy cube.
5. Hearts: Hearts are representative of the number of lives a player has. Heart is also a figure a player can roll on the dice to signify an increment to their life points.
6. Victory points: Victory points are representative of the number of points the player has. They are awarded when the player rolls and holds three numeric values of the same kind.
7. Life points: Life points are representative of the number of lives a player has, and their ability to continue playing.
8. Energy cubes: Energy cubes are to enhance the game for the player. They are awarded when the player rolls a thunderbolt.
9. City: One of the two distinct areas of the board game that represents the city of King of Prussia, PA.
10. Outside the city: One of the two distinct areas of the board game that represents where players reside when not inside King of Prussia, PA.