**Supplementary Specification**

## **Introduction**

This document is the repository of all KU Alchemists requirements that are not captured in the use cases.

## **Functionality**

The System does actions in the game. For example; displaying the player’s inventory, showing ingredient and potion information. The details are explained in Application-Specific Domain Rules.

## **Logging and Error Handling**

Log all errors to persistent storage.

## **Security**

All usage requires user authentication at the beginning of the game. (Login Page)

## **Usability**

***Human Factors***

The players should be able to see and understand the game objects and their interactions with the game board. Therefore:

* The visuals of game objects should be compatible with the design of the game
* Avoid colors associated with common forms of color blindness.
* Interactable areas (e.g. the Foraging area in the First Round) on the board should be identifiable and clear to the player. The organization of the game board in each round is crucial.
* All texts and graphics should be identifiable and readable to the player from a distance of 50 cm.

## **Reliability**

***Recoverability***

If there is a failure to interact with the system, try to save the current game progress into the local game folders and reset the game. The user will be able to continue playing from where they left off in the previous game.

## **Performance**

Players want to have an engaging gameplay experience. Therefore, the player must be able to interact with game objects quickly without error or confusion. There should not be any delay between architectural layers (e.g. UI layer responds very slowly to change in the domain layer). Our goal: maximize engagement and gameplay experience by optimizing performance time.

## **Supportability**

***Adaptability***

Different players of the KU Alchemists Game will have a unique gameplay experience. However, the rules are the same for every player. Therefore, the game is adaptable to every scenario by default.

***Configurability***

Different players will have different preferences in each round. For instance, one player might prefer to forage for ingredients while the other player might prefer to buy ingredients. Therefore, the system will be somewhat configurable to reflect the different needs of players. UI should be configurable to the needs of players in line with the game rules. Our goal: provide a user-friendly and configurable game environment.

## **Implementation Constraints**

Group Çizik Çizik uses Java and built-in Java libraries such as javaSwing and JavaSQL to implement the KU Alchemists Project.

## **Free Open Source Components**

We want to maximize the use of free Java open-source software components on this project. We might also use open-source assets for game design elements.

**Application-Specific Domain Rules**

The game mostly follows the rules of the original board game, Alchemists. See the link for detailed rules. <https://www.czechgames.com/files/rules/alchemists-rules-en.pdf>

***General Rules***

The game consists of three rounds. In each round, the player has three action points. Each round includes new action types for players to use. Once entered a new round, the player can use action types unlocked from previous phases.

**First Round**

In the first round, there are four action types:

1. Players can draw 1 ingredient card from the deck at the beginning of the round.
2. Players can discard 1 ingredient card and take 1 gold.
3. Players can buy artifacts.

* Players pay 3 golds to take one card from the artifact deck.
* Artifacts taken by the player can be seen by other players.
* Players can also use their artifacts and don't use additional action points.

Artifacts can have:

* Permanent effects that last the entire game.
* Temporary effects can be used only once in the game unless you draw the same card and use its effect.

1. Players can make experiments.

* Players mix two ingredients to make potions.
* Players can try the results of the experiments on his/her students or themselves.
  + The player chooses the type of the experiment. The potions can be experimented on students and themselves.
    - If the player chooses to experiment with the potion on students;
      * If the potion is positive or neutral, the player sees the effect of the potion
      * If the potion is negative, the player sees the effect of the potion and also pays 1 gold for students' health expenses.
    - If the player chooses to experiment on him/herself;
      * If it is positive, the player sees the effect of the potion.
      * If it is neutral, the player is not affected.
      * If it is negative, the player’s sickness is increased by 1. When the sickness point reaches 3, the player loses all of his/her money to get treatment.

**Second Round**

In the second round, there are two action types.

1. Players can sell potions.

* Players sell potions to the adventurer in the range of 1-3 golds.
  + The player earns 3 golds for positive potions.
  + The player earns 2 golds for neutral potions.
  + The player earns 1 gold for negative potions.

1. Players can publish a theory.

* The player publishes a theory about an ingredient.
* The player chooses an alchemy marker and places it on an available book on the theory board.
* The player pays 1 gold piece to the bank as a publishing fee.
  + The player cannot publish a theory if he does not have any gold.
* The player gains 1 reputation point for publishing a theory.
  + Theories can be debunked (look final round)

**Final Round**

In the final round, there is only one action type.

1. Players can debunk a theory.

* The player selects a published theory he suspects.
* The player chooses an aspect of the theory.
  + If the theory is correct, the player loses 1 reputation point.
    - If the player has 1 reputation point, he loses 0 reputation points
  + If not, the player gains 2 reputation points.

**Final Scoring**

The player with the maximum score points wins the game.

* One Reputation gives 10 score points.
* One Artifact gives 2 gold.
* Three gold gives 1 score points.
* If there is a tie, the tiebreaker is gold.