

University of Tartu  
Faculty of Mathematics and Computer Science

System Modelling  
Mancala Project

# Requirements Analysis

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## Version Control

Date	Changes	Comments	Author
07.11	Functional requirements.	Functional requirements for players, board, counters, objectives, game flow and visualisation.	Simo
09.11	Non-functional requirements.	Non-functional requirements for the application.	Simo
11.11	Finalising the requirements.	Reviewing all the requirements after the interview. Adding some new requirements and correcting some of the old requirements.	Simo

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## Functional requirements

### Players

1. The game is designed to be played by two human players.
2. The game is played behind one compute (no network connection).
3. Both players are using the same control method (the mouse).
4. Both players can choose their name displayed before the game.

### Board

1. The game is played on a board.
2. The board has 12 small pits (2 rows of 6 pits in a row) and 2 big pits (one in both side of the board).
3. One player has control over 1 row of small pits and 1 big pit. The other player has control over the other row of small pits and the other big pit.

### Counters

1. There are 4 counters in each small pit at the start of the game.
2. Choosing a small pit (clicking on it) during the players turn will redistribute all the counters in it: counters will be placed one by one to the next pits (excluding only opponent's big pit).
3. The number of counters in one pit is not limited.
4. It is not possible to redistribute the counters in the big pits – every counter that has been inserted to a big pit will remain there till the end of the game.

### Objectives

1. The main objective of the game is to have more counters in the big pit in the end of the game than your opponent (win scenario).
2. There can be the same number of counters in both big pits in the end of the game (draw scenario).

### Game flow

1. Players turn consist of redistributing counters from one or multiple of his small pits. After the redistribution it is other players turn.
2. All counters are redistributed to other pits in clockwise direction.

3. If during redistribution the last counter gets placed in the player's big pit, the player gets an additional chance to redistribute counters from some of his small pit. There is no limit on the number of times the additional chance for redistribution is given to a player during his turn.
4. If during a redistribution the last counter is placed in an empty small pit owned by the player, and the opposite small pit contains counters, both the lastly placed counter and all the opposite counters are captured and placed into the player's big pit.
5. A player can not choose an empty small pit for redistribution. As long as there is at least one small pit that has counters in it, the player must redistribute counters.
6. When one player no longer has any counters in any of his small pits, the game ends. The other player moves all remaining counters in his small pits to his big pit. The counters in the big pits are then counted to decide the final score for both players. The winner of the match is decided by the final score.

## Visualisation

1. At all times during a game both players must see how many counters there are in all the pits (number format and picture of counters).
2. Counters are redistributed one by one.
3. In the end on the game the score for both players and the name of the winner is displayed.

## Other

1. The game has a high scores table that can be viewed at any time when the application is running. The high scores table contains top 10 scores of all time and the player names who achieved these scores. The high scores table is resettable at all times when it is viewed.
2. The application has a help menu that can be viewed at any time when the application is running. The help menu contains a short overview of the game rules.

## Non-functional requirements

1. The application should run smoothly – no action can have a longer response time than 0.2 seconds.
2. The application must be simple – only elements that are needed to implement some kind of required functionality must be present
3. The application must be pleasant to watch – developers can choose colours for design by themselves.
4. The application must be easy to run from an executable file.
5. The application must be easy to close at any time – no more than 2 clicks.