



Specification



The following is a full Phase 1 specification — design and implementation requirements for the game **ConKUeror**. Some parts of the specification might be subject to change during the next stage/phase of development.

User Interface: The View

As mentioned, the user interface is an abstraction layer separate from the Domain in accordance with the Model-View separation principle.



Login screen of *ConKUeror*.

App Screens

These are the five different screens of the application:

- **Login screen:** Appears before the game starts. Has options to either create a new game or continue the previous game.
- **Building screen:** Lets the user to add players and configure the map.
- **Game screen:** The screen with the world map and the user panel.

- **Pause screen:** Pauses the game, shows a leaderboard of the players in the game with their army and territory counts. Also has options to go to the help screen, save and exit.
- **Help screen:** Shows a list of most important rules with the option to go back to the Menu Screen.
- **Game Over screen:** Appears when the game ends, shows the winner, and lists other players as runner-ups in order of when they lost the game. Has options to play again or quit to Login Screen.

World Map

The map shows all the territories and the continents, and the sea-lines that connect them.

- **Color:** Initially all territories with no owner are gray. But when conquered, the territory changes to the color of the player.
- **Armies:** Numbers are shown on each territory, indicating the armies stationed on them.



Game screen of **ConKUeror: Koç University Dominion**. Shows the map, menu options, the phase panel with user actions and a list of all players.

Map Grid

The Map consists of **6 continents** and **39 territories**. The following is a list of all continents and territories in **ConKUeror**:

Europe (9)

- Great Britain
- Iceland

Asia (7)

- Russia
- Mongolia

North America (9)

- Alaska
- Greenland

- Scandinavia
- Northern Europe
- Western Europe
- Eastern Europe
- Southern Europe
- Anatolia
- Persia
- Japan
- China
- India
- Middle East
- Siam
- Northwest
- Alberta
- Ontario
- Quebec
- Western America
- Eastern America
- Central America

Africa (6)

- North Africa
- Egypt
- East Africa
- Congo
- South Africa
- Madagascar

South America (4)

- Venezuela
- Peru
- Brazil
- Argentina

Oceania (4)

- Indonesia
- New Guinea
- Western Australia
- Eastern Australia

Map Actions

When clicked on a territory, depending on the phase and current action different options are shown.

- In the draft phase, it shows an input prompt to specify how many armies to deploy.
- In the attack phase, it shows all possible territories that can be attacked from there.
 - After an opponent territory is selected, you are asked to specify a number of armies (the input starts from 2).
 - After a territory is conquered, it prompts you to specify how many soldiers to send to the newly conquered territory.
- In the fortify phase, it shows possible territories where troops can be moved.



Pause screen for ConKUeror.

User Panel

The user panel is a layer of different buttons and inputs on top of the world map. It is designed to align with our “Adaptability” principle. The user panel is divided into the following sections:

- **Game Menu:** Pause/Resume and other options of the Menu Screen.
- **Players List:** all players are shown with their names and avatars in turn order.
- **Turn Control (dynamic):** shows the current phase of the turn, and has a button to go to the next phase
- **Game Notifications (dynamic):** used to notify the user of possible actions
 - In the draft phase, shows how many armies are left to place on the map.
 - Shows an icon when there's a complete set of territory cards, indicating a possibility of exchange. When clicked, conquers the continent for the user and prompts to add armies to the territories of the continent.
 - Shows an icon when there's a complete set of army cards, indicating a possibility of exchange. When clicked, prompts user to select a territory to do the exchange.
 - Shows if there are active “Chance Effects” applied for that turn.

Game Notifications

During an illegal or disallowed move (or action), a small message indicator appears at the top right corner of the screen, indicating the appropriate warning message.

Avatars and other visuals

All UI components, including buttons, dialogs, inputs and also avatars are designed in comic-book style, with big and bulky sizes to align with our “Ease of Use” principle.

Here are some of the custom avatars we created using AI. In total there will be 20 different avatars to choose from.



System

The `App` — or as we call it, the **System** — is the controller of the MVC pattern. In our diagrams, we actively use the name, **System** in describing the interactions between the user and the application. This abstraction layer handles game states, the game loop, as well as, all other user-application interactions, delegating all logical tasks to the individual **Model Objects**.

Different Game Modes

- **Building Mode:** allows the user to add players and make changes to the map (i.e. enable/disable territories and continents)
- **Running Mode:** main part of the game where turns take place



Screen for adding players in ConKUeror.

Adding Players

In the building mode,

- User adds players and specifies whether each player is played by a person or the computer. *However, at least 1 player must be computer-controlled.*
- User chooses an avatar, username and a color for the player. *There are 6 colors to choose from: Blue, Red, Green, Yellow, Orange, Purple. There are also 30 different avatars to choose from.*



Screen for customizing the player in ConKUeror.

Game-controlled Players

Game-controlled players are represented just as any other player, except that they have pre-programmed ways of interacting with the game objects, defined by straightforward set of rules and constraints.

Enabling/Disabling regions

In the building mode, you can enable/disable territories or entire continents on the world map. These continents or territories will not be playable in any way, and **any interaction with them is disallowed**.

Different Game Actions

There are various, what we call “game actions” that determine game functionality, changing how the controller behaves. These actions are the interactions that the controller is “expecting” the user to make, divided into different types of “sub-actions”:

- **Action: Next Phase**
 - During a Draft Phase
 - During an Attack Phase
- **Action: Territory Selection**
 - **Sub-action: Own Territory**
 - During a Draft Phase
 - During an Attack Phase
 - During a Fortify Phase

- After an army card exchange
- During a relevant chance card: Diplomatic Immunity, Revolt, Reinforcements, Mercenaries
- **Sub-action:** Opponent Territory
 - During an Attack Phase
 - During a relevant chance card: Nuclear Strike, Revolution, Sabotage
- **Action: Army Number Selection**
 - During a Draft Phase
 - During an Attack Phase
 - For an attack to place
 - After a territory is conquered
 - During a Fortify Phase
- **Action: Dice Roll**
 - During an Attack Phase
 - During a relevant chance card: Sabotage, Mercenaries, Reinforcements
- **Action: Army Exchange Outcome Selection**
 - When you select army exchange in a certain territory
- **Action: Army Card Exchange Outcome Selection**
 - When you select to do army cards exchange

Initial Armies

When the game starts, depending on the number of players, each player gets equal armies, using the following rules:

- **2 players** ⇒ 40 Infantry
- **3 players** ⇒ 35 Infantry
- **4 players** ⇒ 30 Infantry
- **5 players** ⇒ 25 Infantry
- **6 players** ⇒ 20 Infantry

Army Exchange

At any point during their round, players can exchange their armies using the following rules:

- **1 Cavalry** ⇒ 5 Infantries
- **1 Artillery** ⇒ 2 Cavalries or 10 Infantries

Round Phase Mechanics

During a turn of the player, there are 3 phases to be completed: Draft, Attack, Fortify. The last two are optional, but need to be signaled by the user to skip.

- During a draft, the player places all armies given to him (and can continue only if he places all armies). At any time, he can select a territory to do army exchanges and army card exchanges.
- During an attack, the player first chooses his own territory, and then an opponent's territory. If he is allowed to perform the attack, he chooses the number of armies to send over to opponent's territory. As before, he can select a territory to do army exchanges and army card exchanges.
- During a fortify phase, the player first chooses a territory to send armies from, a territory to send armies to, and then the number of armies to send. After this, the player's turn is automatically concluded.

Game Dice

During an attack phase or a relevant chance card, a dice roll is expected to take place (if there is no chance card effect to roll two dice).

Attack Mechanics

During the attack phase, the player first chooses an own territory:

- If own territory has less than 3 armies, the territory is not selected, and a notification is sent to the user.

And then an opponent's territory:

- If the opponent territory doesn't satisfy the "**Army Match**" requirement, system sends a notification to the user.

Army Match Requirement: *the attacker's territory must have at least as much armies of each type as the defender.*

And then the user specifies the number of armies to send:

- The number of armies to send cannot be less than 2.

During the attack, two die are rolled for the attacker and the defender.

- If the attacker rolls a smaller number, he loses two armies that he sent over.
- If the defender rolls a smaller number, he loses one army that defends the territory.

If the final attack, wipes out all the armies on a territory, the player proceeds to conquer the territory, by specifying the number of armies.

Game Deck

At the beginning of the game, a deck consisting of army and territory cards are shuffled and added to the game. At the end of each round, if a player conquers a territory, a random card is drawn.

Army Cards

The number of army cards is determined by the system using the following formula:

$$[\text{Number of Army Cards}] = [\text{Number of Players}] \times (3 \text{ Infantry} + 2 \text{ Cavalry} + 1 \text{ Artillery})$$

Territory Cards

There are 39 territory cards, each denoting a unique territory on the map.

If the territory and army cards end before the game ends, they are shuffled and used again.

Therefore, a player who has conquered a continent using territory cards may lose that continent to another player later in the game.

Chance Cards

There are 5 unique chance cards, each with a unique feature.

Army Card Exchange

At any point during their round, if players have a complete set of 3 army cards, they can exchange them using the following rules:

- **3 Infantry Cards** ⇒ 1 Cavalry
- **2 Infantry Cards + 1 Cavalry Card** ⇒ 2 Cavalry
- **2 Infantry Cards + 1 Artillery Card** ⇒ 2 Artillery
- **1 Infantry Card + 2 Cavalry Cards** ⇒ 1 Cavalry + 1 Artillery
- **1 Artillery Card + 2 Cavalry Cards** ⇒ 3 Artillery

Territory Card Exchange

There are 39 territory cards for each territory on the map, when a set of territory cards for a specific continent is completed, system sends a notification to the user, about a possible exchange. When a player decides to use the complete set, the whole territory is conquered by the player, and the user is prompted to station troops on them. The game cannot continue, until the user decides to send at least one army to each newly conquered territory.

Chance Cards



Some of the icons for different chance cards in the game.

Chance Card Mechanics

Chance cards are given by the system randomly. The user holds the right to skip them if necessary. The following are the 10 unique types of chance cards:

- **Revolt:** Play this card on your turn to remove all armies from one of your territories and add them to another.
- **Nuclear Strike:** This card allows you to wipe out all armies in one territory, regardless of how many there are, but at the cost of destroying one of your own territories as well (chosen randomly by the game).

- **Draft:** This card allows you to draw two additional army cards at the end of your turn.
- **Bombardment:** You can use this card to attack a territory with a barrage of artillery, allowing you to roll two dice instead of one for that attack.
- **Reinforcements:** This card allows a player to add a certain number of armies to one of their territories. The number of armies added is determined by a roll of dice.

Because these cards vary in their mechanics and communication with game objects, each is handled by the system separately. UI handles them in different ways as well (as specified in the UI section).