

Project: Jarl  
Design document  
Group Number: 18

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## 5 Design Details

### 5.1 Class Responsibility Collaborator (CRC) Cards

#### 5.1.1 Game Client

World	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Be the central repository for game data</li><li>• Orders list of game elements depending on position</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Building</li><li>• Game</li><li>• Unit</li></ul>

Game	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Act as a controller for all other classes, tying the game client together</li><li>• Detect collision</li><li>• Execute game commands</li><li>• Perform game logic</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Input</li><li>• GameClientNetwork</li><li>• Renderer</li><li>• World</li></ul>

Input	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handle input from user via mouse and keyboard</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• None</li></ul>

<b>GameClientNetwork</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Act as an interface towards other game clients</li><li>• Handle frame management</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Game</li><li>• GameServerNetwork (via external network)</li></ul>

<b>Building</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain basic properties of a building</li><li>• Hold hit points</li><li>• Contain the visual representation of the building</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• PolygonFace</li><li>• Renderer</li><li>• World</li></ul>

<b>ProductionBuilding</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handle the production rate of units</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Unit</li></ul>

<b>DefensiveBuilding</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain logic for shooting at nearby units</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• World</li><li>• Unit</li></ul>

<b>Castle</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Ensure that upon destruction Game is notified</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Game</li><li>• World</li></ul>

<b>Unit</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain base unit properties (hit points etc.)</li><li>• Contain basic functionality for unit movement</li><li>• Contain visual representation of the unit</li><li>• Contain unit AI</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Building</li><li>• Renderer</li><li>• PolygonFace</li><li>• World</li></ul>

<b>Archer</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain logic for shooting at nearby units</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Building</li><li>• Renderer</li><li>• PolygonFace</li><li>• World</li></ul>

<b>Swordsman</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain logic for attacking nearby units</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Building</li><li>• Renderer</li><li>• PolygonFace</li><li>• World</li></ul>

<b>Hero</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Hero logic for movement and Hero powers</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Building</li><li>• Texture</li><li>• PolygonFace</li><li>• World</li></ul>

<b>Renderer</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Render game elements to the screen upon request</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Unit</li><li>• Building</li><li>• Hero</li></ul>

<b>PolygonFace</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Act as a self contained polygon with a texture that can be rendered by the renderer</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• Texture</li></ul>

<b>Texture</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Holds a picture that can be rendered onto a polygon.</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• None</li></ul>

### 5.1.2 Game Server

<b>NetworkCommand</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain basic functionality of a network command</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• None</li></ul>

<b>NetworkGameCommand</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contain overall game client data, i.e. loosing</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• None</li></ul>

<b>NetworkInteractionCommand</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Contains data about different inputs of the clients</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• None</li></ul>

<b>FrameEndCommand</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Mark the end of a frame</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• None</li></ul>



### 5.1.3 Game Server

<b>CommandFilter</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Divide incoming commands from the game server network into two categories, NetworkGameCommands and NetworkInteractionCommands</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• ClientController</li><li>• NetworkGameCommand</li><li>• NetworkInteractionCommand</li><li>• Proxy</li></ul>

<b>ClientController</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handle NetworkGameCommands, i.e. client progress</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• NetworkGameCommand</li></ul>

<b>Proxy</b>	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handle frame management, associates incoming commands to the correct frame</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• CommandFilter</li><li>• NetworkInteractionCommand</li></ul>

#### 5.1.4 Lobby Client

LobbyGUI	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handle input from the user</li><li>• Chatting</li><li>• Displaying available games</li><li>• Logic for joining and creating games</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• GameClientNetwork</li></ul>

GameServerNetwork	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handles commands coming from the client and sends commands to the client</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• GameClientNetwork (via external network)</li></ul>

#### 5.1.5 Lobby Server

LobbyServer	
<b>Responsibilities</b> <ul style="list-style-type: none"><li>• Handles games and game servers</li><li>• Handles user that want to join and create games</li></ul>	<b>Collaborators</b> <ul style="list-style-type: none"><li>• GameServerNetwork</li></ul>

## 5.2 Class Diagram

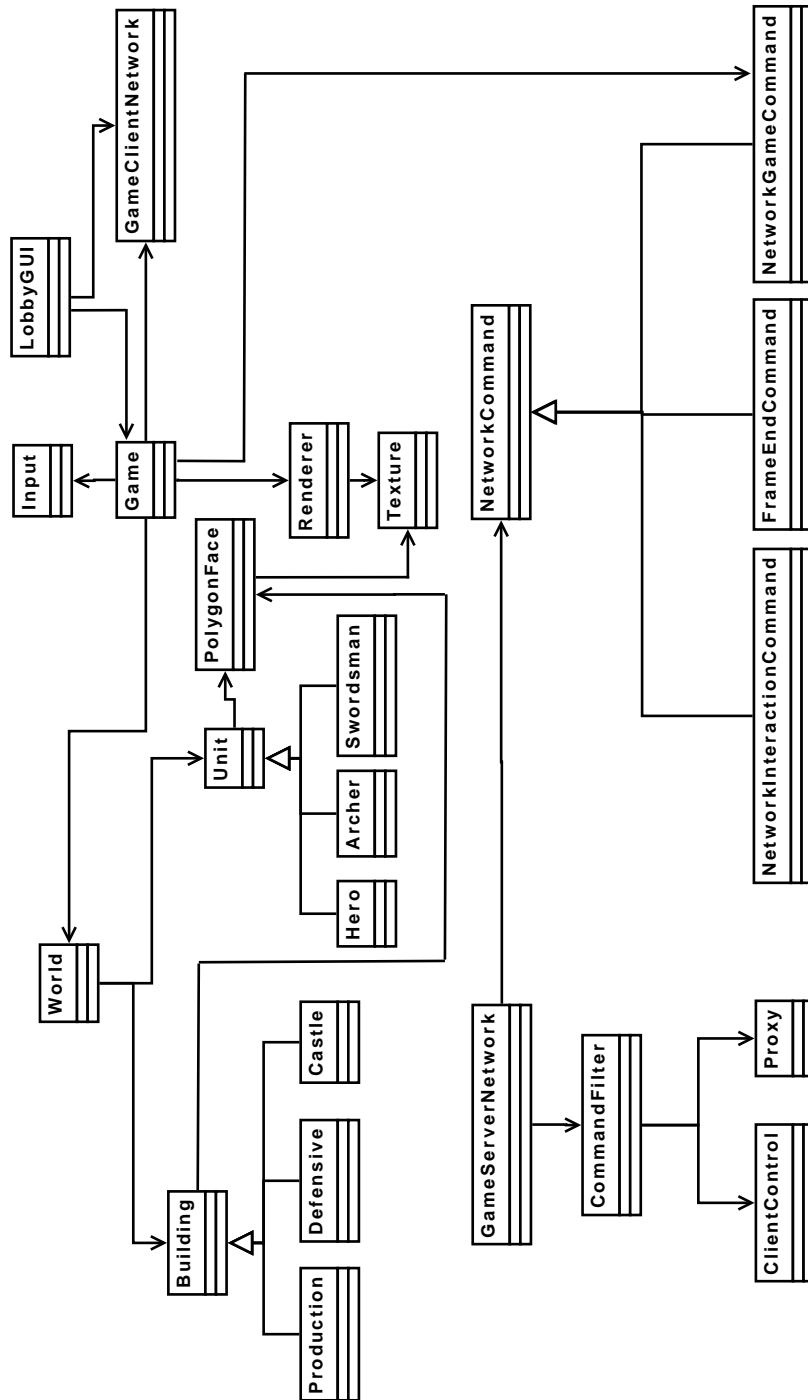


Figure 1: Picture describing the overall class hierarchy.

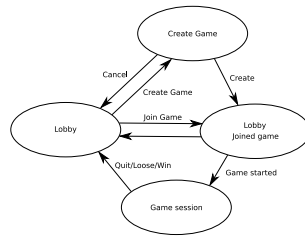


Figure 2: Picture describing the overall transitions in the game.

### 5.3 State Charts

### 5.4 Interaction Diagrams

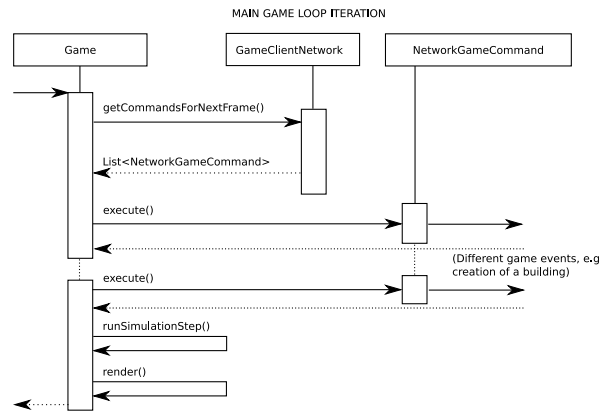


Figure 3: Picture describing the flow in the main game loop.

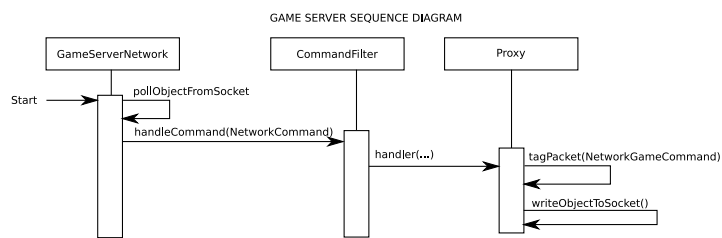


Figure 4: Picture describing the flow in the game server.

## 6 Functional Test Cases

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