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| Valepaska |
| An online multiplayer card game |

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| Juho Rantala  1-27-2022 |

Version history

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| --- | --- | --- |
| Changes | Date | Author |
| Created documentation | 25.1.2022 | Juho Rantala |
| Added Group, Lobby and Game | 27.1.2022 | Juho Rantala |
| Removed client managing on EventHandler and moved it to Groups.  Removed broadcast | 27.1.2022 | Juho Rantala |
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# Server side

This section covers the documentation for the server side of Valepaska. The code is in **./server/** and the project is defined in **server.pro**.

Server side is responsible to allocate new clients to their lobbies, start and handle their games and removing them after they are finished.

## Server

Class: Server

Files: **server.h** and **server.cpp**

A TCP server which communicates with clients.

This is an abstract class, which is meant to be derived from.

### Public Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| Server(*const* std::string& port = "12345") | Initialize the server. By default, uses port 12345. Creates a listening socket |
| *virtual* ~*Server*() | Closes all sockets |

### Protected Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| bool sendToClient(SOCKET& client, *const* std::string& msg) | Send a string ***msg*** to socket ***client***. Return false if an error occurred |
| bool broadcast(*const* std::string& msg) | Send a string ***msg***to all connected clients. Return false if any failed, but try to send to each client |
| void acceptClients() | Start main loop accepting clients to connect. This loop will run as long as the server is on |
| *virtual* bool *handleEvent*(Event& event)=0 | Pure virtual method to handle event ***event.***  Must be implemented by deriving class |
| *virtual* bool *addClient*(SOCKET client) | Virtual method to add a new client ***client.*** This method will call Server::handle(client) on a detached thread.  Return true if client was added. If the client already existed, return false |
| *virtual* bool *removeClient*(SOCKET client) | Virtual method to remove client ***client***.  If client doesn’t exist return false |

### Private Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| **void closeConnection(SOCKET client)** | Closes connection with client ***client*** |
| **bool hasClient(SOCKET& client)** | Return true if Server has client ***client*** |
| **void stopListen()** | Closes listening socket |
| **void handle(SOCKET client)** | Receive messages from client ***client*** and call Server::handleEvent for each message. Removes client if receive fails |

## EventHandler

Class: EventHandler : protected Server

Files: **eventhandler.h** and **eventhandler.cpp**

A class to handle server events and manage lobbies. Derives from Server.

### Public Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| EventHandler() | Initialize EventHandler. Create latest lobby |
| ~*EventHandler*() | Delete all lobbies |
| void **start**(Lobby\* lobby) | Call EventHandler::toGame if there are enough members in ***lobby*** |

### Protected Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| *virtual* bool *handleEvent*(Event& event) *override* | Passes event to its handler. Return false if event is unknown |
| *virtual* bool *addClient*(SOCKET client) *override* | Overrides Server::addClient. Return false if Server::addClient returns false. Otherwise add ***client*** to latest lobby and create new if needed |
| *virtual* bool *removeClient*(SOCKET client) *override* | Overrides Server::removeClient. Return false if Server::removeClient returns false. Removes ***client*** from lobby and destroys the group if it’s empty. |

### Private Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| bool sendEvent(Event& event) | Return false if event command is unknown.  Send ***event*** to the client specified in ***event***. |
| bool isHandler(command command) | Return true if command is valid to handle |
| bool isGenerator(command command) | Return true if command is valid to send |
| void createNewLobby() | Creates new empty lobby |
| Game \*toGame(Lobby\* lobby) | Transfer clients from ***lobby*** to new Game and delete ***lobby***. Returns the new Game |
| Group \*getGroupByClient(SOCKET client) | Return pointer to the Group where ***client*** is. If not found, return nullptr |

## Group

Class: Group

Files: **group.h** and **group.cpp**

A class to handle a group of members

### Public Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| *virtual* bool *add*(id member) | Adds ***member*** if not already in group. Return false if already in group |
| *virtual* bool *remove*(id member) | Removes ***member*** if in group. Return false if not in group |
| *virtual* bool *hasMember*(id member) | Return true if ***member*** is in group |
| std::vector<id> getMembers() | Return members |
| int size() | Return group size |
| bool **isFull**() | Return true if there are MAX\_SIZE amount of members |
| bool **isEmpty**() | Return true if there are no members |
| *virtual* void *transferTo*(Group\* other) | Add all members to other group |

### Protected Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

### Private Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

## Lobby

Class: Lobby : public Group

Files: **lobby.h** and **lobby.cpp**

A group that keeps track on ready-state of members

### Public Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| Lobby(EventHandler\* eventHandler) | Link ***eventhandler*** |
| void setState(id member, bool isReady) | Change ***member*** state to ***state***. Do nothing if ***member*** not in Lobby |
| bool *add*(id member) *override* | Return false if Group::add returns false. Insert new ***member*** with ready-state false. |

### Protected Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

### Private Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| bool **isReady**() | Return true if all members are ready |
| void **signalReady**() | Calls eventHandler::start |

## Game

Class: Game

Files: **game.h** and **game.cpp**

<description>

### Public Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |
| Game(EventHandler\* eventHandler) | Link **eventHandler** |

### Protected Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

### Private Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

# Client side

# Template

## <class>

Class: <class>

Files: **<class>.h** and **<class>.cpp**

<description>

### Public Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

### Protected Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |

### Private Methods

|  |  |
| --- | --- |
| **Method** | **Explanation** |