System Specification

Project Name	Retro Racers Reloaded
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Content

1 Initial Situation and Goal

1.1 Initial Situation

A gamer knows the trouble of playing without internet or locally on a party or something like this. But today it’s in need of an internet connection and another computer to play against your friends.

There are several games which have a local multiplayer. But these are very old an outdated or the new windows don’t support them. And to install an old windows on a pc for playing these games is not worth it. Of course are these other games not bad for the time when they were produced, but today are new standards.

For Example “Ivan Ironman Stewart's Super Off Road”, it will run without any troubles on „DOS“, but it won’t run on a modern System like Windows 10.

1.1.1 Application Domain

Everyone knows that moment when they organizes a party with friends and think about games they could play against each other. There is only one TV and one Computer available. So this game is an option to solve this problem, because it will bring back the local multiplayer, which we are missing in the games of today.

These game only needs a keyboard and the amount of players depends on the available keys on the keyboard.

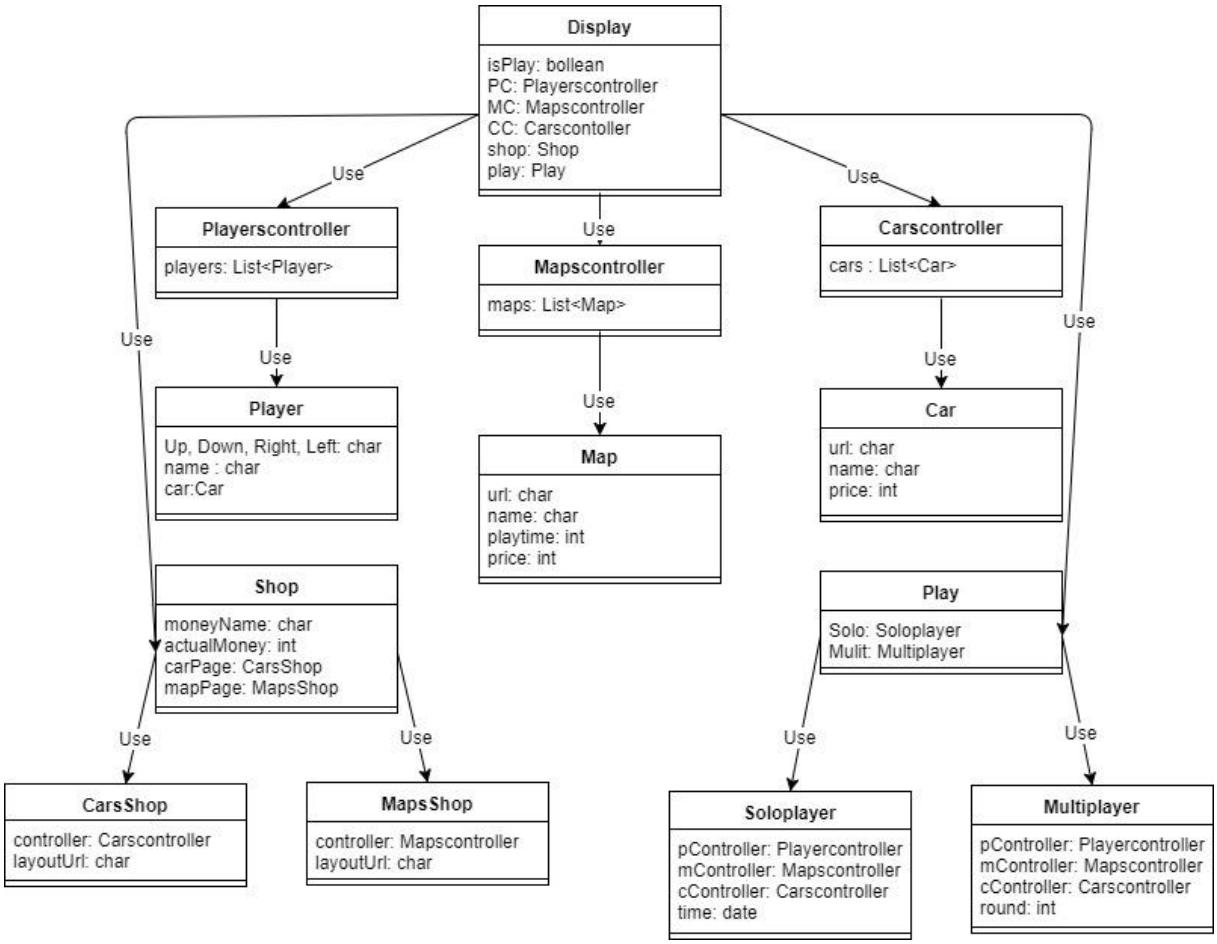
Now there is an option to play against your friends local. That should bring the fun of a local multiplayer back.

1.1.2 Glossary

Local Multiplayer

Means that player plays against each other, but without any use of an internet connection or a second pc

1.1.3 Model of the Application Domain



Class diagram to illustrate the domain of application

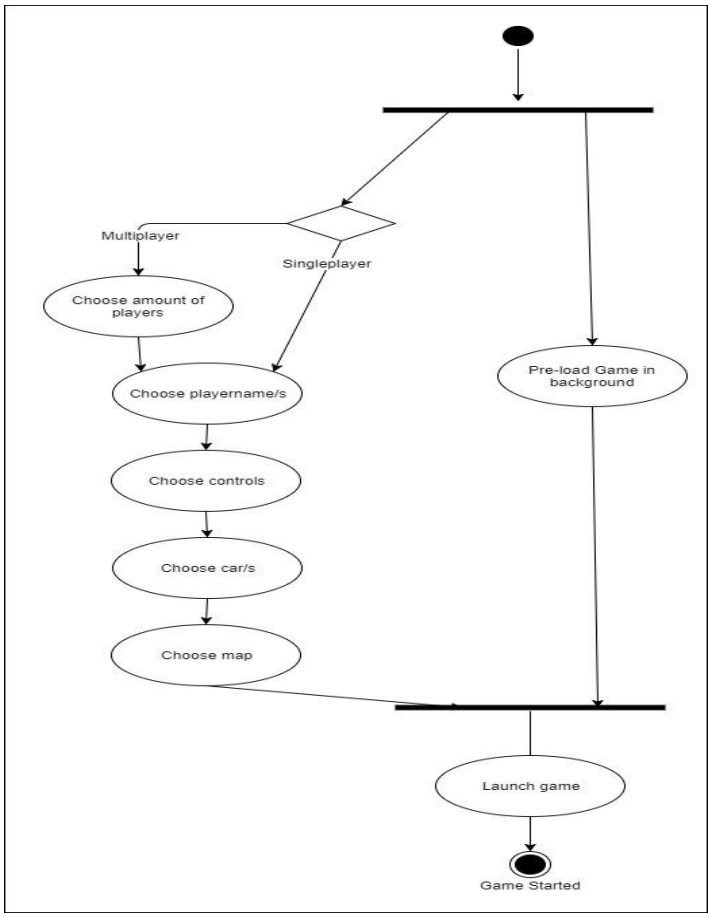
The Display class is the main class, this class controls the other classes like PlayersController etc.

PlayersController implements a list of players, same in the MapController, but in the list are maps. The CarsController equals the other controllers.

The play function loads the settings and starts the Singel-/Multiplayer game.

Stuff can be bought in the shop, this needs some special things to get safe.

1.1.4 Model of the Activity Diagram



When the game starts and the player does enter some settings the game will preload in the background. So the player has a short amount of time he/she has to wait.
For this the program will use multithreading, the cpu's nowadays have no problems with multithreading

1.2 Goal Definition

Our Project idea is to bring gamer back together and out of their dark rooms. To play against friends and that in a social environment. Or on parties, which easily can be played, because no expensive hardware is needed.

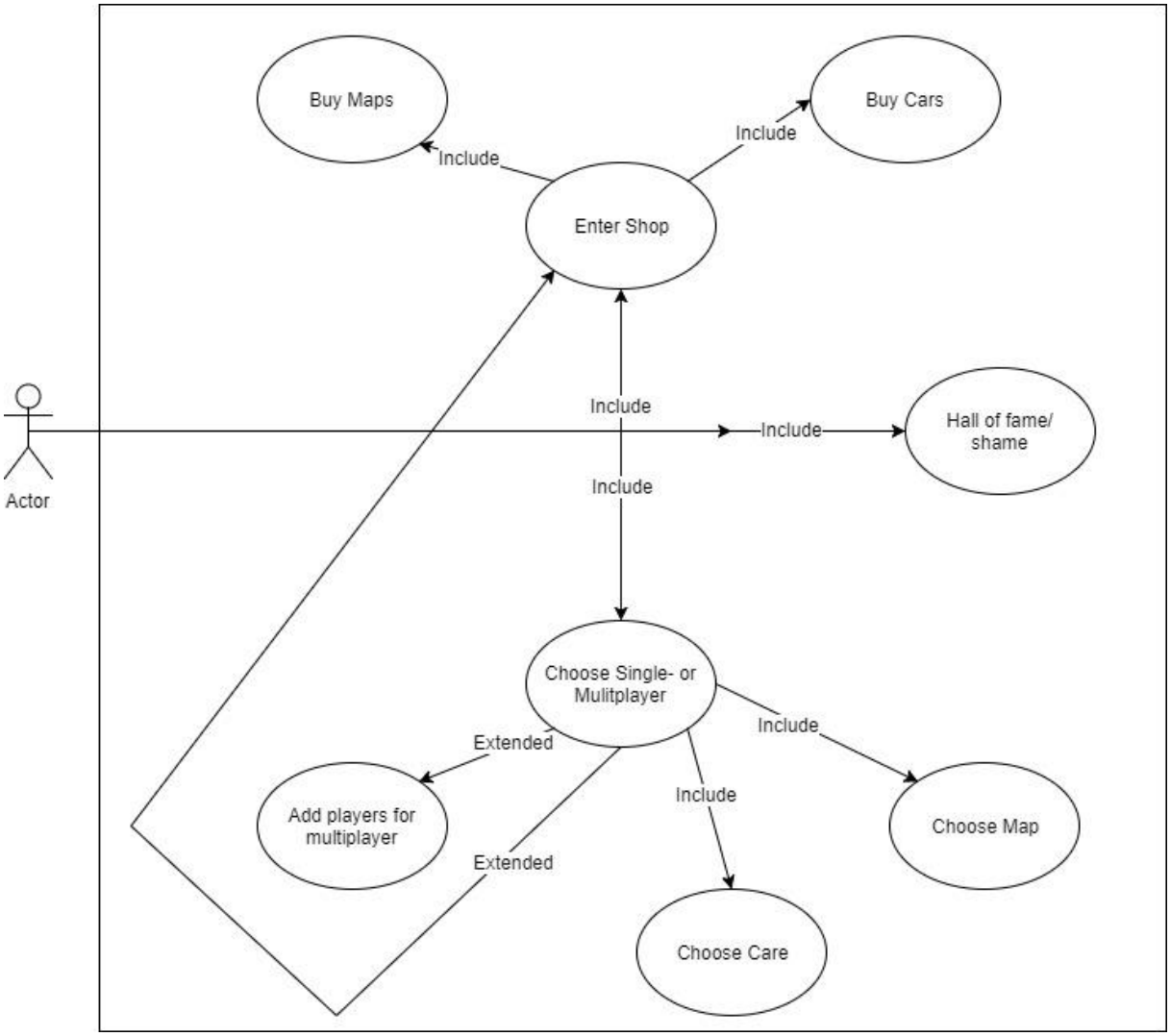
The final application will be based on a WPF menu and an UNITY C# game. So the launch menu will be as a WPF program, this program starts the UNITY game.

People don't need know much about computer and software, all is very easy to handle, so everyone, who can start windows, can play this game.

2 Functional Requirements

2.1 Use Case Diagrams

When the user starts the program, he/she can choose, if they want to play in single play or multiplayer. There's also a Hall of Fame where the best Local lap times, Global lap times are listed, the Global lap time require an active network connection. So, that the game can be synchronized with a database.
It will be possible to open the shop window out of the start menu or after a round.
In the shop, the user can buy maps and cars, these maps and cars he/she can choose, when he/she starts a new game.
In the start menu, there is also the important part of options. In the options. the player can choose volume of the sounds and graphics like resolution and typical graphic options.
When ESC is pressed there is a menu where the play can quit back to the Main Menu or Close the Game.



2.2 <Use Case ID 1 (REQ_00x)- Use Case Details>

Single- or Multiplayer Use Case:

As example he/she starts a multiplayer game, the main-window will be closed, as long as they don't go back to the main menu, and a new window for setting the amount of players, the map/car and the controls for each player opens. If the Start button on the bottom of the window gets pressed the game will launch.

When the user chooses the single player, then there will be a window like in the multiplayer, but without the option of adding any player. It will be possible to set the controls for 1 person and to set a map and car.

Characteristic Information

Superior business process:	The user opens the Menu and select Singe-/Multiplayer
Goal:	After the button was pressed, there opens a window for selecting the features.
Precondition:	The use case is executed, when it's proved that the game is fully installed and has no other
Postcondition:	The main window will be closed, after this use case, because another window will be opened
Involved User:	User choose the names, the cars and the map. The main window will execute the game in background until the player starts playing than its open in the foreground
Triggering Event:	The action will be triggered, by pressing the button on the main window

Shop Use Case:

A new window opens, with the possibility to buy new cars and maps, there is it also possible to Buy credits, via "Paypal" as example. These credits can be changed to in game money, so the User can buy some vehicle, with the money the gets in races, but some need the special credits which only can be bought. When the maps or cars are bought, they will add to the profile of the player, so they can play it.

Characteristic Information

Superior business process:	The Player opens the Shop-Menu.
Goal:	The goal is that a user buy things there so, we get some money.
Precondition:	If anything bought, with real money there is an need of an active internet connection, so it can be
Postcondition:	That not any other window from this program is opened and when something got bought, which costs real money the internet connection is proofed.
Involved User:	User can enter the favorite way, how to buy with real money. As example he/she chooses paypal, he/she can safe e-mail and password, so they can buy faster.
Triggering Event:	When shop is opened, this use case is triggered

Hall of Shame/Fame Use Case:

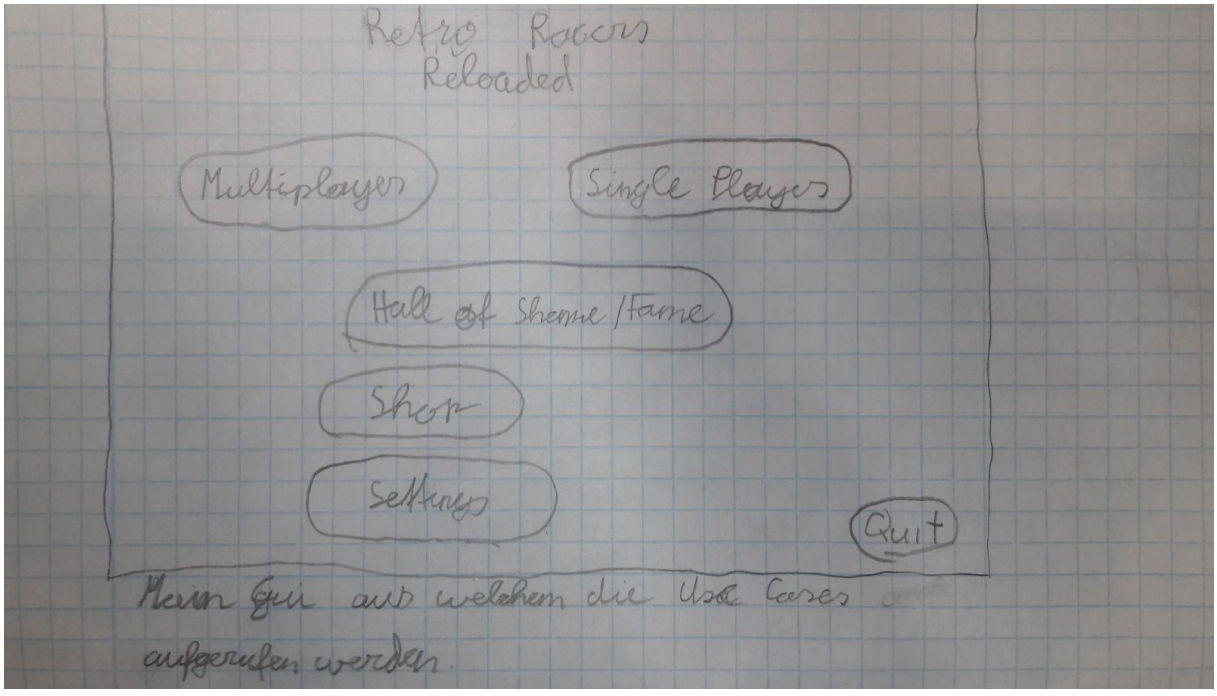
Opens a window, there are 2 buttons, when the first button is pressed, it checks if there is an Internet connection, when there is no connection, on the bottom will a text be displayed with the

info that connection to the internet is found. But else a list with the Top 10 Players of the world will be display, with the following information, like Username, Time, Date.
The other button displays the local lap times and the date, so it is possible for the player to check if the time is, from today or another day.

Characteristic Information

Superior business process:	Hall of Shame/Fame
Goal:	To List up the best and worst player in this game, so everyone, can compare
Precondition:	It only can list, under special consideration, like for global an internet connection is required and for locals some save times.
Postcondition:	That the list is correct loaded and the database is used.
Involved User:	Users can save their best time and then compare them to friends or player all over the world.
Triggering Event:	By pressing the Button of Hall of Fame/Shame

2.2.1 GUI to call the use case

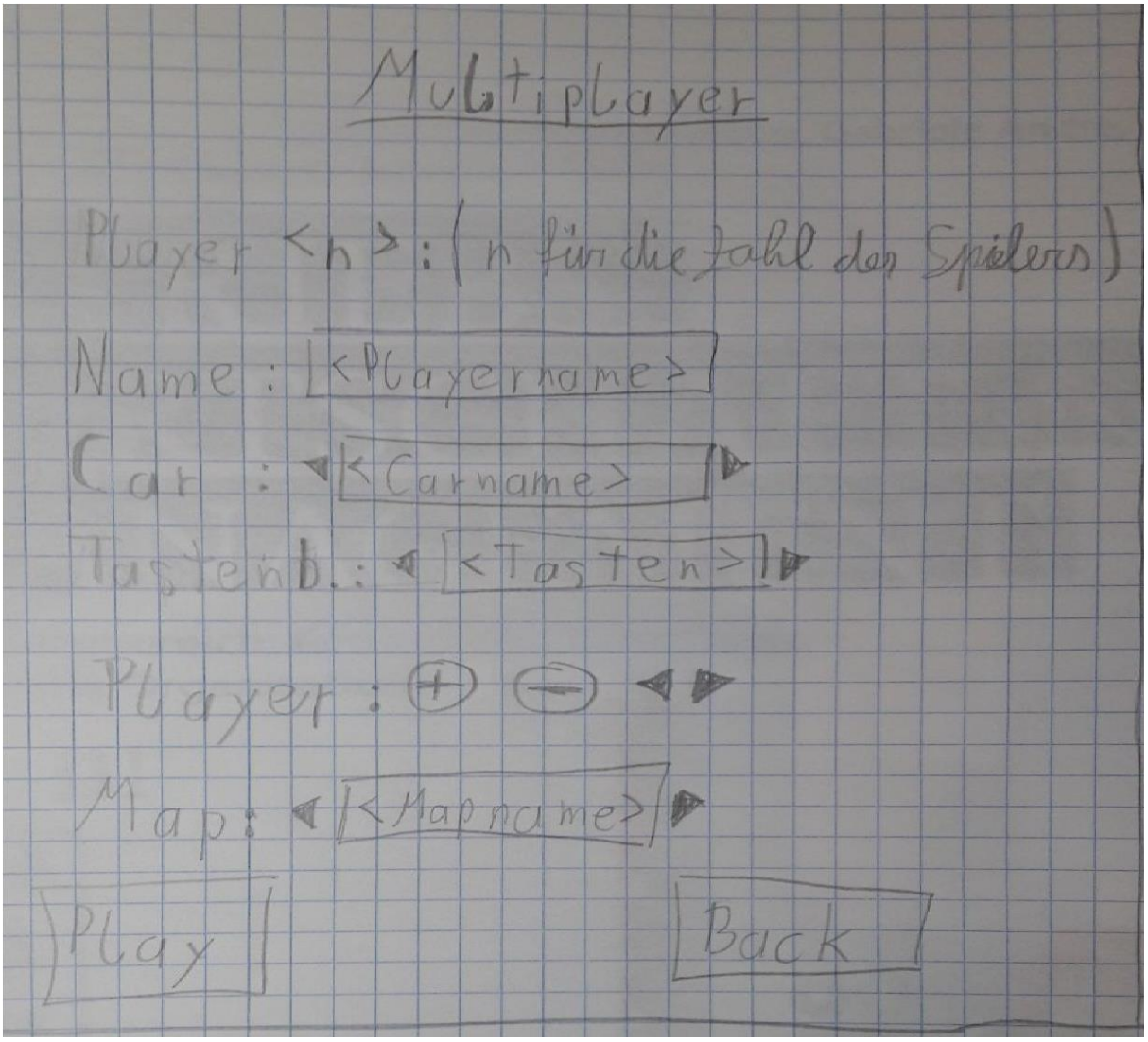


Input Field	*Valid Inputs*
Multiplayer	Same names are valid, but same keys not
Single Player	Button only can pressed once

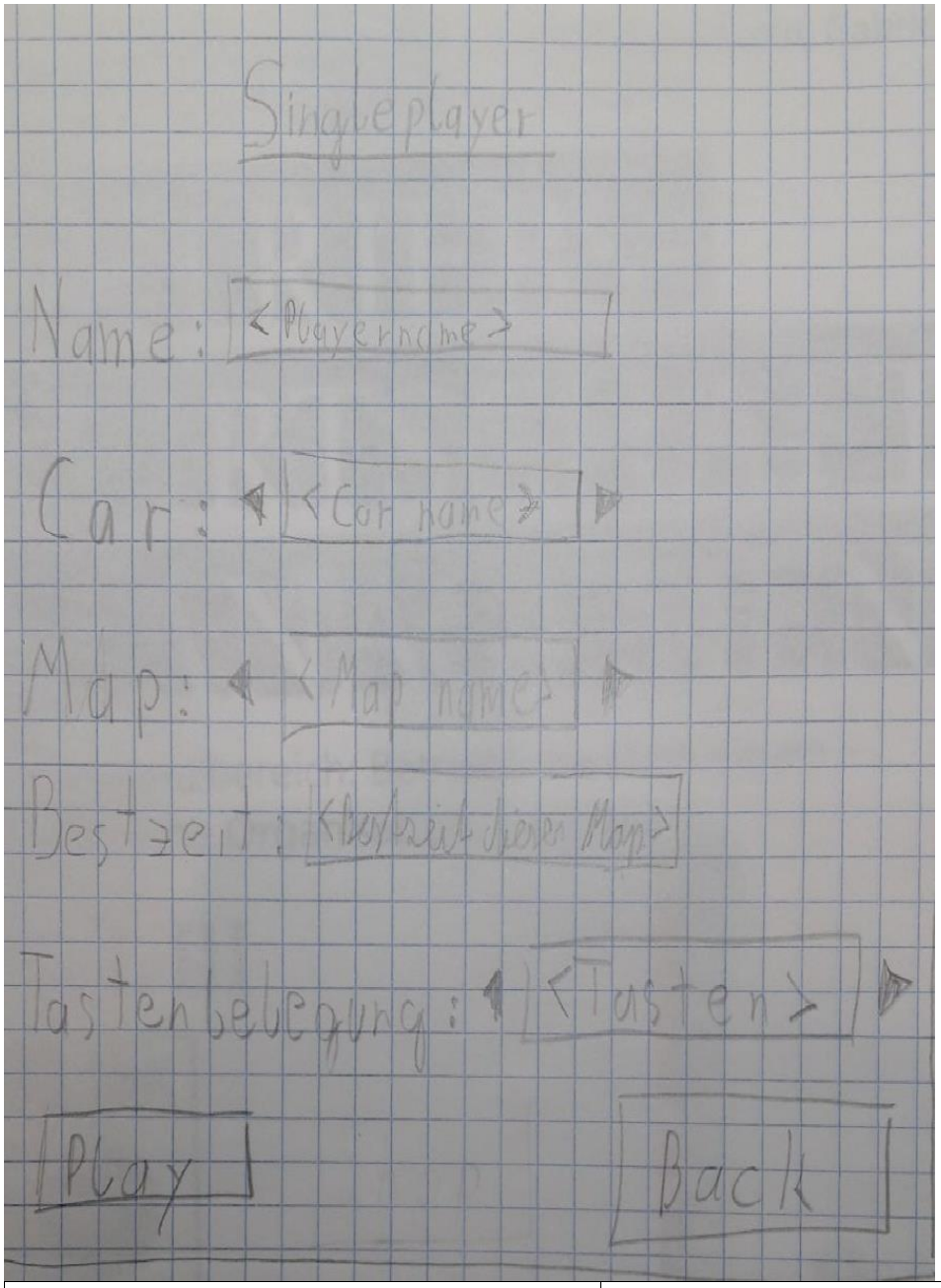
Scenario for the standard use (good case)

Step	*User*	*Activity*
1	Start Single-/Multiplayer	Select Single or Multiplayer
2	Enter Name	Fill your name into a textbox so It will be displayed like this
3	Controls Settings	There are a few of different control settings. One is required to enter.
4	Select Car	Chose a car from a list of your available car
5	Select Map	Its like to chose a car, but only with maps
6	Start Game	User now starts playing the game

2.2.2 GUIs for the standard use



Input Field	***Valid Inputs***
Name	Same names are valid
Car	Two cars of the same type in one race a possible
“Tastenbelegung” alias Keys	A key combination is unique



Input Field	***Valid Inputs***
Name	Same names are valid
Car	Two cars of the same type in one race a possible
“Tastenbelegung” alias Keys	A key combination is unique
“Bestzeit” alias Best Lap	Choose which time you will get displayed

2.2.3 Scenarios for non-standard uses (bad cases or work around cases)

There is a problem with the controls, if they are double used. So, one play controls his car and at the same time this of his competitor. To improve this trouble there are pre-defined controls, like “WASD” and the player can choose one of them.

If the game is played in other Continents or other Countries, it is possible that they have other time or date. To synchronize between User and server I will use the server time, when it will be save online.
If all use cases, are successful completed, the game should start and allow that the user can play. If there are

2.2.4 Open Points

- What is the best user friendly way to initialize the menu?
- With problems could exist, by the names that the users enter?

3 Non-functional Requirements

ID:	NFR_001
Name:	Hardware requirements
Type:	Type as described below
Description:	The game should be low hardware compatible, so it runs on an old plattform like an i3 first gen or older. An old graphic card like an nvidia gt 540m or something comparable.
Assigned use cases:	To all use cases.

ID:	NFR_002
Name:	Response time
Type:	Type as described below
Description:	The response time can be up to 5 seconds, because nobody cares if a game loads 1, 5 or 10 seconds, but after 10 seconds they think it’s not really good implemented.
Assigned use cases:	Singel-/Multiplayer use case

ID:	NFR_003
Name:	Languages
Type:	Type as described below
Description:	The game should available in more languages, like English.
Assigned use cases:	To all use cases

ID:	NFR_004
Name:	Security requirement
Type:	Type as described below
Description:	Security is important that nobody can cheat or hack some cars, which would bought with real money.
Assigned use cases:	Shop

ID:	NFR_005
Name:	Legal requirement
Type:	Type as described below
Description:	Of course when we get money, we must pay taxes, so we should include that this taxes are instantly payed.
Assigned use cases:	Shop

ID:	NFR_006
Name:	Storage requirement
Type:	Type as described below
Description:	It don’t uses more than 2gb storage
Assigned use cases:	All use cases

ID:	NFR_007
Name:	Ram requirement
Type:	Type as described below
Description:	The game will run with 1gb of ram. But with more ram it will run better.
Assigned use cases:	All use cases

4 Quantity Structure

Lokal:

The game will need up to 2 GB space, this is not important for our servers, the server only need 2 GB for the game to download.

Database:

Every user will have a name, a date time and a round time. Only the best time will be saved. For every user we will need like, 10kb of space, when the game is played by 7 million people, we will need about 7TB disk space.

2 System Architecture and Interfaces

Functional:

- It can be played per Multiplayer
- You can choose between different maps and cars
- It gives an online ranking
- It gives a shop-system with in-game money
- The in-game money can only get from playing games/races

Not-Functional:

- The time to loading a new game is faster than 5 seconds
- The game can be played without any internet connection
- The game money can’t be cheated
- The maps and cars can’t be cheated

3 Acceptance Criteria

3.1 *<AC_001> - <Run Acceptance>*

Test Step	Expected Behaviour	
Start menu test	If all buttons work and there are no lags by pressing them.	
Single player test	If the single player works. As example, the round counter correct, timer and bug free	
Multiplayer test	When pressing controls at the same time, are there any issues?	
Shop test	Are the transition working, does the user get the cars?	
Settings test	Will the settings apply correctly?	