PROJECT-SCOPES
TECHNICAL REALISATION

by MicroScopes

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5 Graphical User Interface

The Graphical User Interface is fully designed and implemented in Unity game engine version 5.4.1f1 Personal. Only standard unity assets are used, no additional elements are required. All of the implementation is written in C# programming language.

5.1 EPIC 1 Specific Information

In EPIC 1 all of the users are gathered on the same device and all of the user actions are performed with this device's mouse and keyboard. The Graphical User Interface of this version looks as follows:
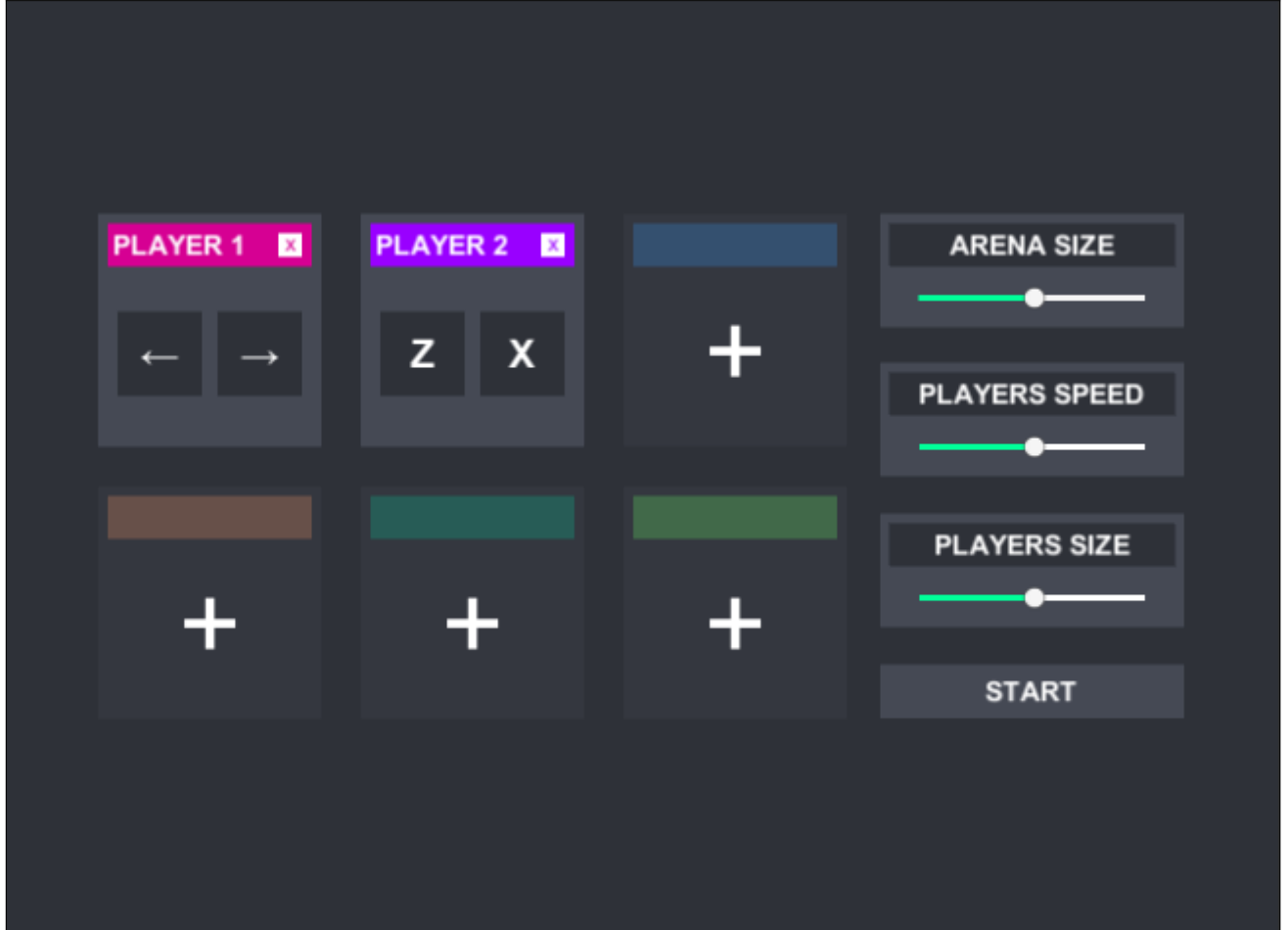

Figure 1: EPIC 1 Graphical User Interface

5.2 Palette of colors

The full spectrum of colors that are used in the project is presented below.
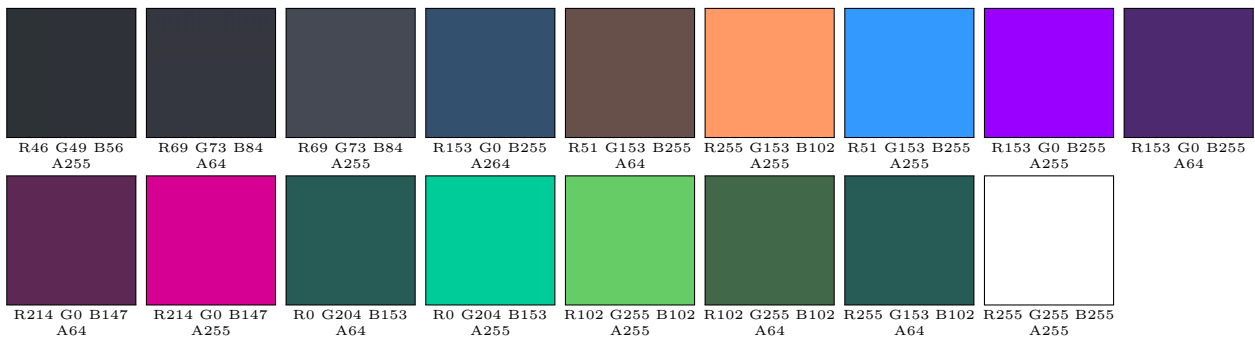

Figure 2: Pallete of colors

5.3 Components

The Graphical User Interface is build with standard unity UI objects. These objects are built into components that make up the user interface.

```
PlayerSettingsPanel [Canvas]
  PlayerDisabledPanel [Button]
    PlayerNicknameInputField [InputField]
  PlayerEnabledPanel [Panel]
    PlayerNicknameInputField [InputField]
    PlayerDisableButton [Button]
    PlayerKeyLeftButton [Button]
    PlayerKeyRightButton [Button]
  ArenaSizePanel [Panel]
    ArenaSizeTextPanel [Panel]
      ArenaSizeText [Text]
    ArenaSizeSlider [Slider]
  InitialSpeedPanel [Panel]
    InitialSpeedTextPanel [Panel]
      InitialSpeedText [Text]
    InitialSpeedSlider [Slider]
  InitialSizePanel [Panel]
    InitialSizeTextPanel [Panel]
      InitialSizeText [Text]
    InitialSizeSlider [Slider]
  StartButton [Button]
```

5.3.1 PlayerSettingsPanel

The main GUI canvas object. It is the user interface background on which all other components are placed. The `R46 G49 B56 A255` value is used as its color. The panel size is `650x457` pixels.

Table 1: PlayerSettingsPanel details

Name	UI object	Size	Color (RGBA)
PlayerSettingsPanel	Canvas	650x475px	46,49,56,255

5.3.2 PlayerDisabledPanel

Unity `Button` object which is used to add a player to the game. Its text font is Arial of size 55 and color `R255 G255 B255 A255`. The button consist of `PlayerNicknameInputField` subcomponent.
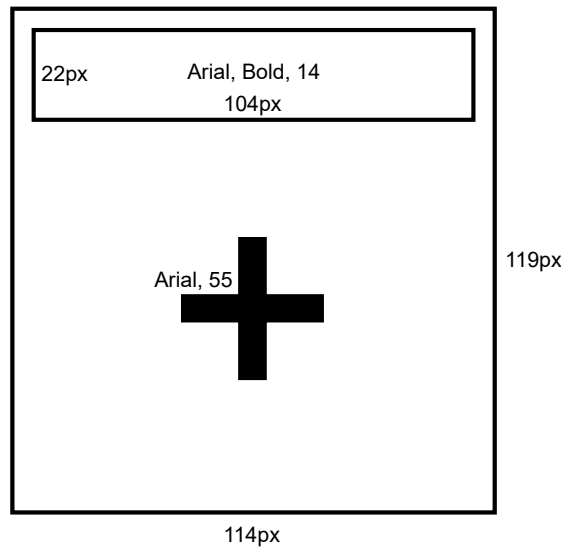

Figure 3: PlayerDisabledPanel size

Table 2: PlayerDisabledPanel details

Name	UI object	Size	Color (RGBA)
PlayerDisabledPanel	Button	114x119px	69,73,84,64
PlayerNicknameInputField	InputField	104x22px	214,0,147,64
			153,0,255,64
			51,153,255,64
			255,153,102,64
			0,204,153,64
			102,255,102,64

The ingame pictures of all possible PlayerDisabledPanels look as follows:
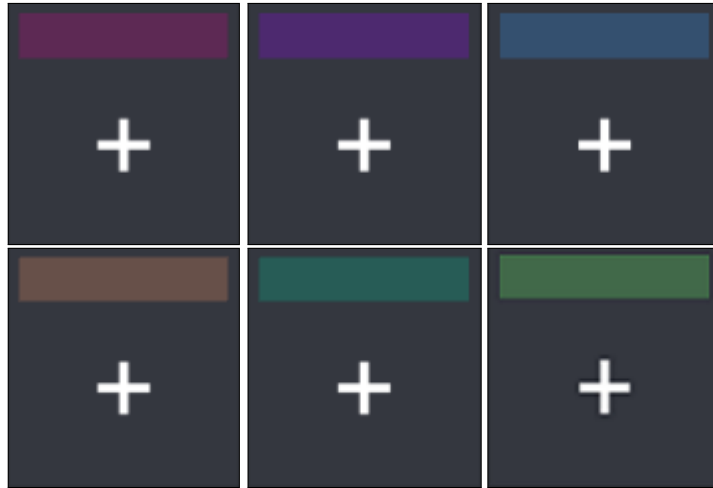

Figure 4: PlayerDisabledPanels ingame

The component functionality is explained in the implementation section.

5.3.3 PlayerEnabledPanel

Activated version of the `PlayerDisabledPanel`. Consists of four subcomponents: `PlayerNicknameInputField`, `PlayerDisableButton`, `PlayerKeyLeftButton`, `PlayerRightLeftButton`.
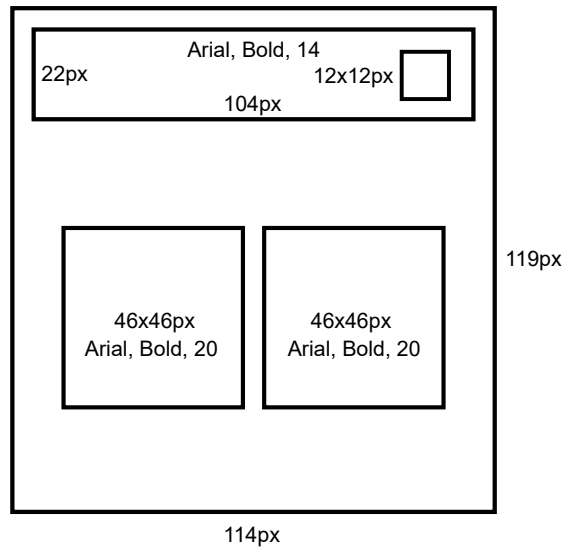

Figure 5: PlayerEnabledPanel size

Table 3: PlayerEnabledPanel details

Name	UI object	Size	Color (RGBA)
PlayerEnabledPanel	Button	114x119px	69,73,84,255
PlayerNicknameInputField	InputField	104x22px	214,0,147,255
			153,0,255,255
			51,153,255,255
			255,153,102,255
			0,204,153,255
			102,255,102,255
PlayerDisableButton	Button	12x12px	255,255,255,255
PlayerKeyLeftButton	Button	46x46px	46,49,56,255
PlayerRightLeftButton	Button	46x46px	46,49,56,255

The ingame pictures of all possible PlayerEnabledPanels look as follows:

Figure 6: PlayerEnabledPanels ingame

All of the componetns has its default values hardcoded. All of them along with functionalities are explained in the implementation section.

5.3.4 ArenaSizePanel

Consists of two subcomponents: `ArenaSizeTextPanel` with the "ARENA SIZE" `ArenaSizeText` written in capitals letters only and `ArenaSizeSlider` with three possible values.
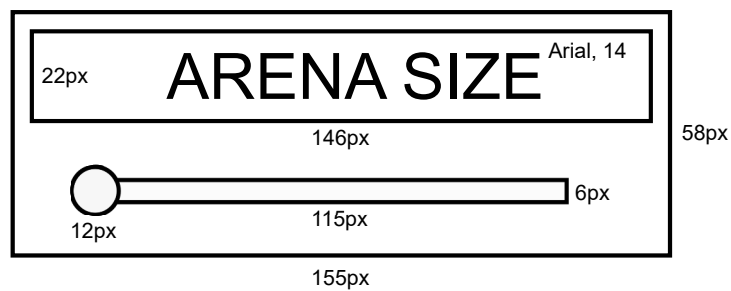

Figure 7: ArenaSizePanel size

Table 4: ArenaSizePanel details

Name	UI object	Size	Color (RGBA)
ArenaSizePanel	Panel	155x58px	69,73,84,255
ArenaSizeTextPanel	Panel	164x22px	46,49,56,255
ArenaSizeText	Text	Arial, 14	255,255,255,255
ArenaSizeSlider	Slider	115x6px	255,255,255,255
			0,255,153,255

The ingame pictures of the component looks as follows:

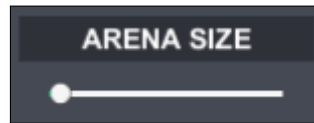Figure 8: InGame ArenaSizePanel Slider

Figure 9: ArenaSizePanel ingame

The functionality and implemetation of `ArenaSizePanel` is described in the implementation section.

5.3.5 InitialSpeedPanel

Simiar to `ArenaSizePanel`. The only differece is `InitialSpeedText` which now is "PLAYERS SPEED".

Table 5: InitialSpeedPanel details

Name	UI object	Size	Color (RGBA)
InitialSpeedPanel	Panel	155x58px	69,73,84,255
InitialSpeedTextPanel	Panel	164x22px	46,49,56,255
InitialSpeedText	Text	Arial, 14	255,255,255,255
InitialSpeedSlider	Slider	115x6px	255,255,255,255
			0,255,153,255

The functionality and implemetation of `InitialSpeedPanel` is described in the implementation section.
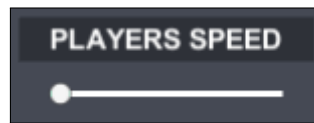

Figure 10: InitialSpeedPanel ingame

5.3.6 InitialSizePanel

Simiar to `ArenaSizePanel`. The only differece is `InitialSizeText` which now is "PLAYERS SIZE".

Table 6: InitialSizePanel details

Name	UI object	Size	Color (RGBA)
InitialSizePanel	Panel	155x58px	69,73,84,255
InitialSizeTextPanel	Panel	164x22px	46,49,56,255
InitialSizeText	Text	Arial, 14	255,255,255,255
InitialSizeSlider	Slider	115x6px	255,255,255,255
			0,255,153,255

The functionality and implemetation of `InitialSizePanel` is described in the implementation section.
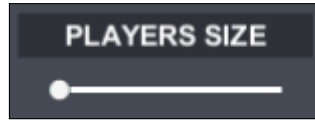
Figure 11: InitialSizePanel ingame

5.3.7 StartButton

Starts the game.

Figure 12: StartButton size

Table 7: StartButton details

Name	UI object	Size	Color (RGBA)
StartButton	Button	115x27,5px	69,73,84,255

The ingame pictures of the component looks as follows:

Figure 13: InGame StartButton

The functionality and implemetation of `StartButton` is described in the implementation section.

5.4 Implemetation

The implementation of Graphical User Interface is spreaded in four files:

- *GUIManager.cs*: Contains all unity components functionality implementation.

- *GUIHelper.cs*: Contains helper methods that keeps the GUIManager class easy to maintain.

- *PlayerInitialData.cs*: Contains all information about player initial data.

- *Configurator.cs*: Contains all information about game configuration and each player's data.

The following functionalities are implemented:

- Reading initial game configuration which is stored in 'default.cfg' file.

- Adding and removing player by pressing `PlayerDisabledPanel` and `PlayerDisableButton`. There is a minimum of two players that must participate the game. There is no possibility to lower the value from the GUI perspective. A user can manipulate the number of players between two and six. It is also not possible to have more than six players in the game.

- Setting the nickname of the player using `PlayerNicknameInputField`. The nickname is limited to 9 characters and may contain only english alphabet letters and digits. It has to be unique for each player.

- Setting the player movement keys with use of `PlayerKeyLeftButton` and `PlayerKeyRightButton`. Each player must have its own movement keys. There is no possibility that two playes has the same key set. There is also no possibility that the player has the same key set for both directions.

- Changing the initial arena size. The `ArenaSizePanel` slider allows user to set the initial arena size. There are three possible sizes of the arena: small, normal and big.

- Setting the initial speed of all players. The `InitialSpeedPanel` slider allows user to set the initial speed value. There are three possible speeds to be set: slow, normal and fast.

- Setting the initial size of all players. The `InitialSizePanel` slider allows user to set the initial size value. There are three possible sizes to be set: thin, normal and fat.

- Starting the game. The `StartButton` loads a new scene with the game itself.

5.5 Sounds

There are no sounds implemented on the GUI yet.

6 Tests

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6.3 Report

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