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| **Runner Girl** |
| Game Programming Course Project |
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***Description of the Game:***

Runner Girl is simply an infinite runner game. The character (Unity-Chan) collects points (red cubes) while avoiding the hurdles in the track and to increase the difficulty of the game, the speed of the character increases as time goes on.

There is a high score for both Time and Points or Pickups, when the player gets a score greater than high score time or points greater than best pickup score then the High Score board is updated.

The character dies and the player loses if it hits one of the hurdles or when it falls in water.

There is no end to the game like subway game the user will try every time to beat the highest score in time or in collectables.

***Game Controls:***

The user can go left by pressing the <- button on keyboard.

The user can go right by pressing the -> button on keyboard.

The user can navigate the menus using mouse clicks.

***Assets Used:***

1. The main character in the game is a free unity asset on Asset store Unity-Chan Model: it's a character model equipped with all animation and scripts needed. I used some animations from the character like running, waving and falling but I didn't use any scripts from the character.
2. Grass Road Race: the track used for the game it's also a free asset from Unity Asset Store. Contains small grounds and bridges you connect them together to get the final bridge.
3. Fantasy Skybox Free: skybox free asset from Unity Asset Store.
4. Game Jam Menu Template: Menu Free Assets.
5. Graffiti Pack: Free Fonts from Asset Store.
6. Pickup: a normal cube with unity and I added some animation to make it rotate.

***Basics of the Game:***

The game consists of two scenes the Menu and the Game

***The Game Scene:***

First the track: I created small bridges as prefabs, each prefab consists of the ground, fence, hurdles and the pickups.

The Track motor script is assigned to an empty game object called track manager inside the script there is a list of the small prefabs that was created at the start and all the track motor do is generating new clones from the prefabs randomly so it will look like an endless bridge (There is also a minimum number of small bridges that should be in front of the player and if it's less than that number the track motor will generate more bridges).

Of course the memory has a limit if we keep generating bridges like that then the memory will reach its end so the solution it creating a list called Active tracks when creating new tracks we add it to that list and when the player leaves that small track which will be the element [0] in the list we destroy that bridge and remove the first element from the list and so on.

The player script allows the player to move left and right with a certain speed and also calculate the number of pickups the character collide with.

The score keeps track of the time score

timeScore  += Time.deltaTime;

and there is a method called level up when the player reaches a certain time score, the method LevelUp() is invoked which increases the speed of the player and after a certain time the speed becomes stable.

The canvas in that Game scene consists of 3 main parts

1. The Time Score Container (Clock Image+ text for the score + background).
2. The Pickups Score Container (Cube Image+ text for the score + background).
3. The Death Menu which is activated when the player loses (Game Over text + final score + Play button which play the Game scene again + Menu button which play the Menu scene).

The Camera scripts contains a simple animation at the start of the game which takes 3 seconds so in the Player script the player can't move in the first 3 seconds and in the track motor the first 3 or 4 tracks generated are empty tracks.

Rotator script simply rotates the cubes to make it a little attractive.

***The Menu Scene:***

The main scene consists of the background which is the bridge prefabs connected together + the character with simple animation.

The canvas contains

1. The main menu (Play button which plays the Game scene + Exit button to quit the application).
2. The High Score Board which is updated after reaching a new high score.



