Zense Project

Project: 2D platformer game made with Unity
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Instructions to test the game:

Go to https://github.com/KMishra23/UnityFirst and download the SecondVersion.zip file locally and extract it. Inside the extracted folder run the First.exe program.

Game controls:

- A and D keys to move the player left and right
- Space key to jump
- E key to dash towards the mouse cursor location. Hold E to slow down time and accurately aim your mouse towards a direction
- Left Click shoots a grappling hook that attaches itself to the object the mouse cursor is currently on. The hook only works on white boxes(This change was made for optimisation reasons). The player needs to be a little close to the box for the grapple hook to work. Left click again to release.
- Press Esc to pause the game and open the pause menu.
- Press P to reset to last checkpoint.

Project Description:

Taking inspiration from some of my favourite games which are sonic the hedgehog and ori and the blind forest, I decided to create a platformer game on unity that, similar to these to games has an emphasis on player movement and freedom the explore the level. The game currently implements a dash for the player which follows the cursor and can slow down time to accurately dash around the level. A grappling hook that allows the player to swing by latching onto the white blocks and a jump pad that launches the player into the sky to reach far away places in the level.

There is also a fully functional checkpoint system that allows the player to go back the last checkpoint after falling out of the level.

There are 2 collectible pellets, a cyan torus that gives the player the ability to jump once again in the air and a yellow triangle that allows the player to dash again after dashing once. You can also find a couple of stars in hard to reach

areas that act as collectibles and maybe in the future even as a skill upgrade points.

There is currently only one level in the game that aims at demonstrating all the player's abilities and help him gain some control over it.

The game also has a rudimentary UI system.
The gameUI tracks the amount of stars collected while the pause menu allows the player to go back to the last checkpoint, return to the menu or quit to desktop.
The play game menu allows you to start the level from the beginning again or quit to desktop.

There are a few sound effects for dashing, grappling and the jump pad(It was all I could find royalty free ☹).

My Journey:
After being unable to find any inspiration for a website idea or an app for more than half a month, I finally decided to take my shot at game development. I have played games since before I could walk, so they are a huge part of what and who I am today. I had played a lot of games and my favourites, Sonic the Hedgehog, Hollow Knight and Ori and the Blind forest, are all 2D platformers with tight controls and a huge emphasis on giving the player freedom to move and explore the game as they like.
I began unity by watching a basic unity tutorial on youtube(Credits: https://youtu.be/pwZpJzpE2lQ). This gave me a basic idea of how unity works and a huge amount of inspiration and motivation to create my own game. Of course I was also running on a timer so I quickly learnt basic C# and started to spend hours of my day learning about different components of unity and messing around with them until I fully understood them.
Most of my 12ish days spent on this project were spent with a 3D test world where I tested different things. The test world is still in the github repository and can be accessed via selecting the SampleScene and JointTesting Scenes inside unity.
After I felt comfortable enough, I started working on the platformer game. I wrote down all the ideas that came into my head in notes app on my phone and started to implement them one by one. Although I got quite a few of them into this submitted version of the game, I have lots more still sitting in my notes that I will still definitely implement into my game while there is still time.

There is also a lack of any sort of proper 3d models and animations as I prioritised first making the game playable. There is a lot I still would love to do with this project.

Learning from this project:
I learnt a bit of C# which isn't too different from the other languages that I already know. My main learning was how to work with unity. I have learnt so much these past few days that it would be impossible for me to recollect all of them and compile into a list. But here is still an attempt from me:

- Making player movement using Rigidbody and CharacterController
- Using the provided joints in unity(Fixed, Spring, Hinge, Configurable, Character joints)
- Using Rigidbodies to create a natural feeling player movement which is also very easily tweakable via scripts.
- Using Events to clean code(Not used in this project because there isn't too much to gain by implementing an events system in such a small project).
- Level Designing for games.
- Some level of 3D modelling that is available within unity.
- And A lot of other smaller things.

This project has also taught me a lot of patience. Sitting and staring at a simple bug for hours and finally fixing it, going through so many pages of unity documentation, looking for help on unity forums and tutorials in youtube. There were some points where the doubt I had just did not exist on the internet and I would end spending hours trying to implement a certain element into my game. But I have also discovered a love for game development that I didn't know I had inside myself.
This was another important milestone for me and gave me a huge confidence boost that I can learn anything and make anything. It's just a matter of time after all.

Future Plans:
Initially, I wasn't expecting to have any future plans for this game. When a senior I asked suggested that I include future plans for my project I started to look at it from a different perspective. As I came close to completing my first level, I really wanted to see my game complete with 3D models, animations, a soundtrack new mechanics and improving the old ones. If I do get the chance to continue with this game, a list of new features that I would like to implement in

this game are:

- Custom 3D models with proper rigging and animations.
- A sound effect for each action and some ambience.
- Wall sliding and climbing.
- Dynamic Switching between rigidbody and character controller to implement a better grappling hook(the current one uses a spring joint which is a little buggy)
- Making grappling easier to use by making it less reliant on the exact location of the mouse cursor and rather making the grappling hook attach to objects around the general location of the mouse.
- Adding enemies:
  1.) Basic enemies that walk on a platform(like mario)
  2.) Enemies that pop out of the ground and shoot at you if you get close to them
  3.) Enemies that shoot out laser with a visible warning.
- Rope bridges (I have made them using spring joints and they, well are not very fun to use.)
- Player shooting and sword attacks.
- Ability to reel in the grapple hook.
- Teleporters on the level
- A Minecraft like building system where on right clicking the player can place blocks on the cursor location and create sort of his own level to cross unscalable gaps or reach some hidden locations.
- Better UI with proper resolution scaling and better button textures and fonts.

This might be too ambitious for a game made in 10 days from scratch but I haven’t played a game that was made in a month either. I do have high hopes of atleast making my game feel like a publishable game in the future.