Developing a 2D Side-Scrolling Platformer Game Using Unity

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***Abstract*—This thesis designs and implements a two-dimensional side-scrolling platform game in Unity. The source describes character movement, jumping, item collection, obstacle traversal, and several sample levels. It also discusses interface, visual and audio effects, and the steps from requirements analysis through implementation and testing. The author reports a completed student game while noting that the level count is limited and that enemy AI and multiplayer modes were not implemented. The manuscript does not include a measured player study or commercial release. Its contribution is a playable platformer prototype and a documented development process using Unity and C#.**

***Index Terms*—Unity, 2D platformer, game development, C#, Unity Learn**

I. Introduction

A platform game combines movement rules, level design, visual feedback, and interaction with obstacles. The thesis explores these elements through a two-dimensional Unity project. The author reviews other platform games and uses them to consider gameplay, level layout, and difficulty. The intended outcome is a working game that demonstrates software-design and programming skills. The report focuses on the student's design and implementation, rather than a market analysis or a formal experiment on player enjoyment [1]. Published books on the methods and subject of this project provide context for this English summary [5], [6], [7], [8], [9]. Published books on the methods and subject of this project provide context for this English summary [10].

II. Methods

The student analyses game requirements, designs the levels and controls, and implements the platformer in Unity with C#. The documented mechanics include moving and jumping, collecting items, and traversing obstacles. Interface elements, visual and sound effects, and sample levels complete the basic experience. The source describes an implementation and testing process. It does not establish enemy artificial intelligence or multiplayer play as finished capabilities; both appear in the limitations and future-work discussion [1].

III. Results

The author reports a working two-dimensional platformer with the core mechanics listed in the thesis. Several sample levels were completed, and the project includes user-interface, visual, and audio elements. The result supports the claim that the student produced a playable game prototype. The source also acknowledges the limited number of levels and the absence of enemy AI and advanced multiplayer modes. It provides no quantified frame-rate, usability, or player-satisfaction evidence [1].

IV. Discussion

The completed mechanics show that Unity and C# were used to assemble a coherent student game. The limited level set and absence of enemy AI restrict the depth and variation of play. The source frames additional levels and more advanced modes as possible development steps, not results of the current project. Although the author describes a smooth and engaging experience, a formal evaluation with players is not included. A later study could document performance and playability with repeatable criteria [1].

V. Conclusion

The thesis presents a completed student platformer prototype built with Unity. The documented game supports movement, jumping, item collection, obstacles, and sample levels, with interface and audiovisual work. The author also records limitations in content and advanced behaviour. The manuscript does not demonstrate commercial readiness or measured player response. Its supported contribution is the implemented game and the development experience, with more levels, enemy AI, and additional play modes left for future work [1].

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