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## Level 3 Digital Technologies 2024

**91909 Present a reflective analysis of developing a digital outcome**

# EXEMPLAR

**Achievement**

**TOTAL 03**

## INSTRUCTIONS

The task in this assessment requires you to discuss a digital outcome you have developed within the past 12 months.

You must illustrate your answers with three images you have prepared in advance:

- a single image of the digital outcome (e.g. a website, a magazine, an electronic device)
- a single image of a digital component of the outcome in the software used to create it
- a single image of the development process and /or planning process (e.g. agile development or a planning chart).

During this assessment, you may only access the three .jpg or .png images you have prepared in advance. Access to your digital outcome, online or paper resources, other Word or PDF documents, and the Internet is not permitted.

If you developed your digital outcome as part of a group, you must only write about your role and specific contributions to the project.

Read all parts of the task before you begin. Do not repeat your response in different parts of the question.

Candidates must complete their assessments individually under teacher supervision, in accordance with the NCEA Assessment and Examination Rules and Procedures. The material submitted for assessment must be the candidate's own work.

Candidates are not permitted to access any resources (either in hard copy or online) other than those supplied in the assessment itself.

Schools, teachers, and candidates are not permitted to share or discuss the assessment or their assessment responses with any other schools, teachers, or candidates until after the final date for submission (30 October 2024).

The use of chatbots, generative AI, paraphrasing tools, or other tools that can automatically generate content is not permitted and material generated by these tools should not be submitted as part of the candidate's work.

*(Assessment Specifications, NZQA 2024)*

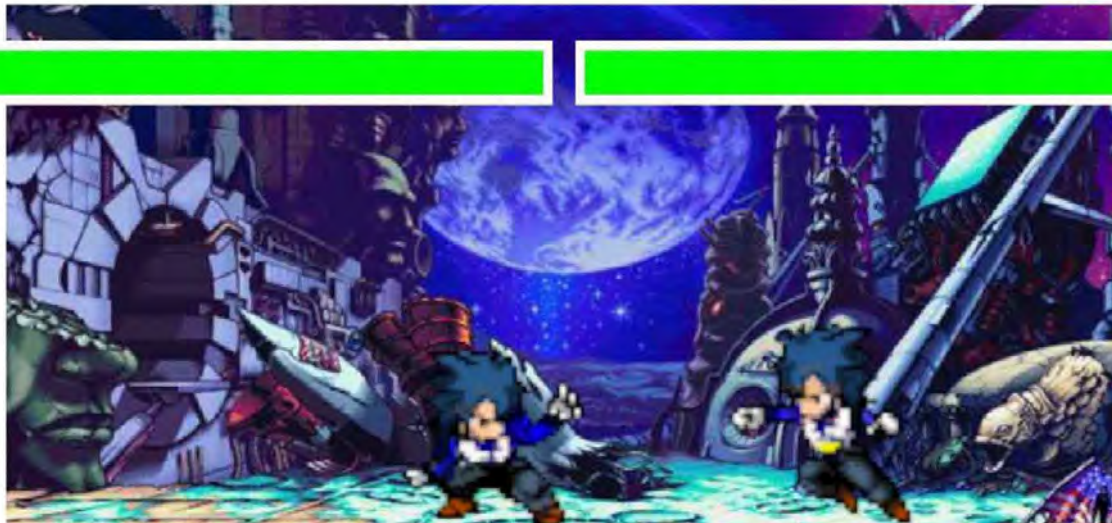
## ASSESSMENT TASK

Name the type of digital outcome you created, e.g. website, app, magazine, animation, etc.

Video Game

### Purpose and key characteristics

(a) (i) Insert the image you prepared of your digital outcome.



(ii) Explain the purpose of your digital outcome.

The purpose of my digital outcome was to create a 2d fighting game in Unity. I wanted to create a local 1v1 fighting game using only 1 keyboard so 2 players can play at once while trying to keep the game simple as possible and fair as possible.

- (iii) What are two key characteristics of your digital outcome?

Ease of use and a simple and straight forward game

- (iv) Explain how these characteristics helped to meet the purpose of your digital outcome.

**Ease of use:**

My game is simple allowing 2 players to share a keyboard and fight each other. The player 1 starts on the left and their controls are only A and D for moving left and right, W for jump, F to punch and G to kick. Whereas the player 2 starts on the right and their controls are the left and right arrows for moving, up arrow to jump, and the full-stop key to punch and the comma key to kick. This layout best avoids bumping into your opponent's hands while still being comfortable enough to not ruin the experience.

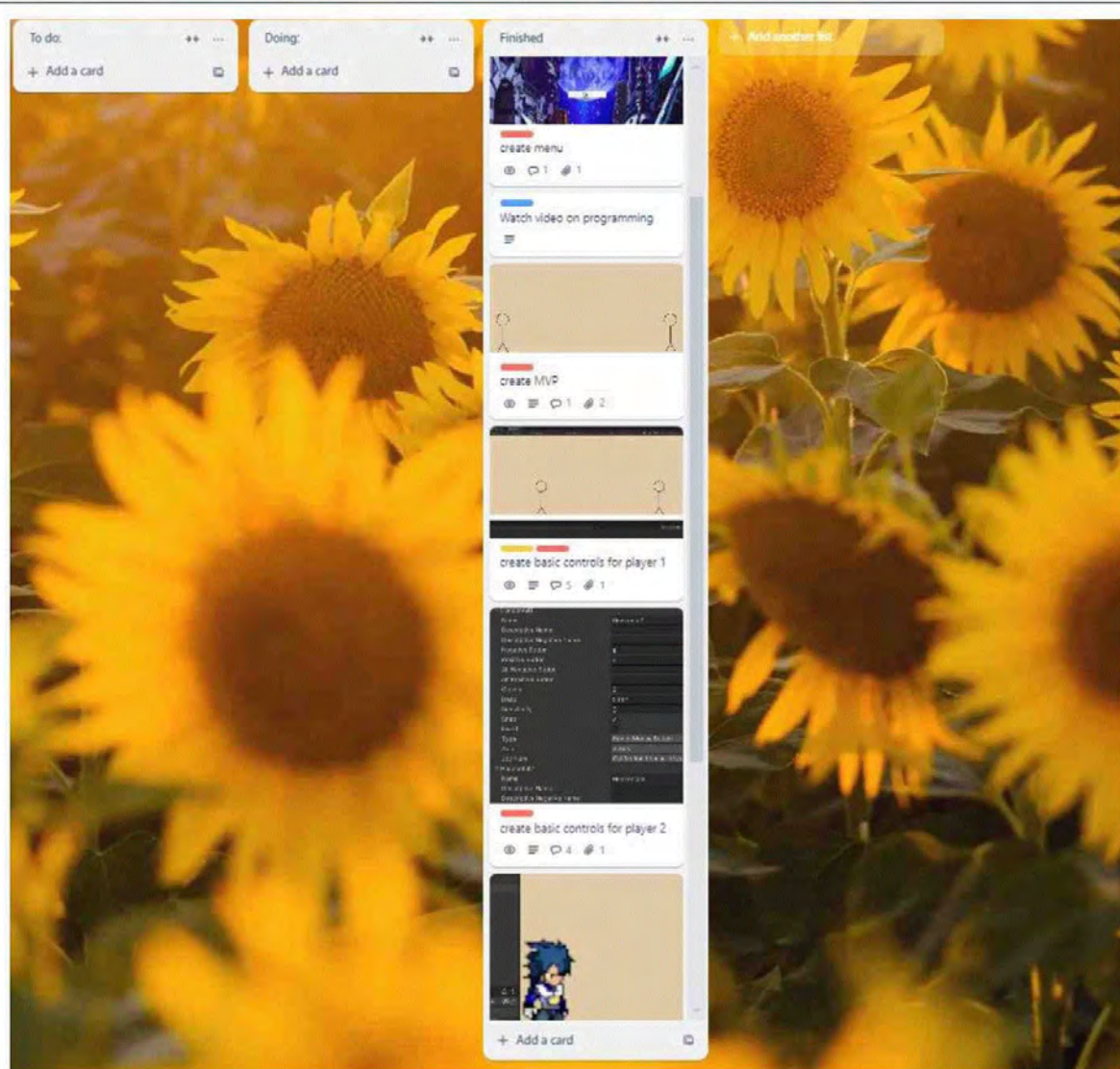
**Simple and straight forward game:**

The game consists of 1 round that continuously repeats with every winner. Each player only has 100 health with a punch being a fast attack that does 10 damage and the kick being slower but doing 15 damage. These numbers have been tested and recommended to be the fairest without one attack more viable than the other.

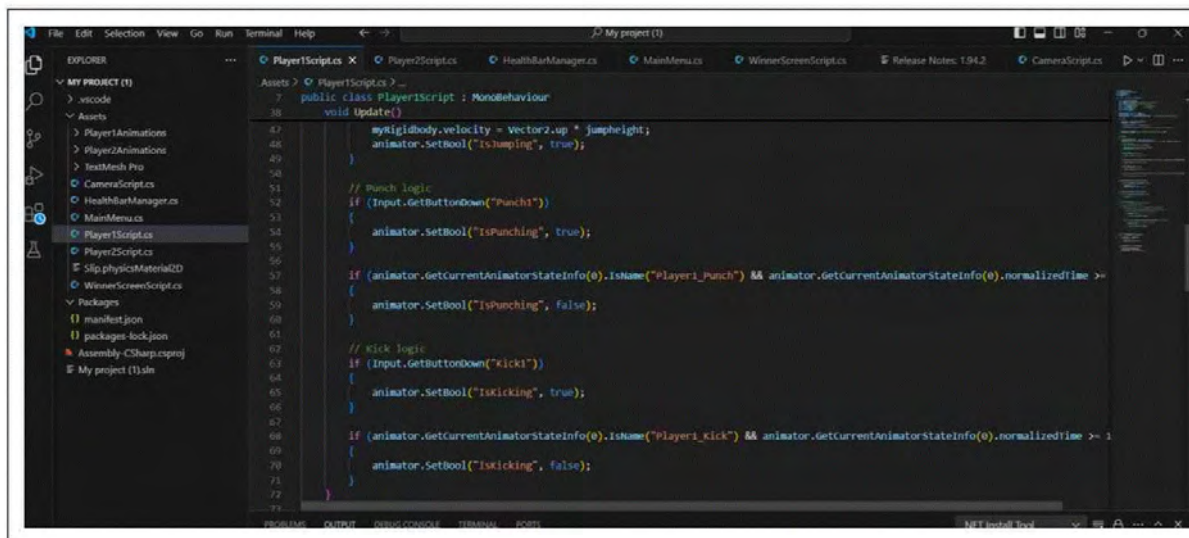


## Planning and development process

(b) (i) Insert an image from the planning /development process you followed.



(ii) Insert an image showing a relevant digital component of the outcome in the software you used to create it.



### Software application decisions

- (c) (i) What was one software application you chose to help you develop your digital outcome?

Unity engine

- (ii) Explain the importance of this application to your digital outcome.

Unity was important because it had plenty of support for 2d games compared to more 3d oriented engines. Unity also has a vast library of tools such as simple scene transitions, built in animator that links directly to your code and a library of assets and guides to help develop my game.

- (iii) What was ONE key planning decision you made during the development of your digital outcome?

To limit both player's defensive options

- (iv) Explain the importance of this decision to your digital outcome.

To not include blocking into the game prevents players from sitting in a corner until the opponent kicks which gives the defensive player enough time to counterattack. While I was considering adding blocking, it would drastically increase the amount of time each game would take, I would have to differentiate from high and low attacks to not make block too strong and overall promotes a playstyle I didn't want to promote. Instead, I made the arena small and limited jumping to prevent running away. While this will favour the more aggressive player, it still gives some leeway to avoid attacks. This means players are encouraged to focus on their movement and positioning which gives a simple game with 2 buttons some extra depth and skill while still being simple and accessible.

## End users

(d) (i) Who were your end users?

Video game players, specifically those who like fighting games.

(ii) What was an important requirement that your end users requested?

To make moving faster.

(iii) Explain how you implemented this requirement in your outcome.

A problem my feedback requested was to make movement faster however, if I make all movement faster, then problems such as playing aggressive being the only way to win remain dominant. Due to a small arena, moving faster would essentially make every fight be in one of each corner favouring whoever was more aggressive. However, I instead made moving backwards more valuable by making an animation that leans the character backwards a bit to make landing hits on that character harder. It turns out that making moving backwards slightly faster and harder to hit fixed the issue of the characters moving too slow.



## Stakeholders

- (e) (i) Who was an influential stakeholder?

An avid gamer

- (ii) Explain how specific feedback from this stakeholder influenced your development process.

Their feedback included making jump attacks for kicks but not for punches. Kicks were 3 frames slower (12 frames a second) than a punch but kicks hit lower and did more damage which made them the only way to hit an opponent on the ground that wasn't also jumping. This feedback means that doing a "jump kick" would jump over the opponent's kick but leave them vulnerable to at least 2 punches if the opponent stood still, or if the opponent moved back in time, then they could counter with potentially more damage without taking a hit. This opened up the game from a linear back and forth fight to one that includes height and allows for more strategy and made the game more fun overall with more high risk - high reward strategies.

## New knowledge and skills

- (f) (i) What was new knowledge you needed to learn to develop your digital outcome?

Learning the C sharp programming language

- (ii) Explain how this new knowledge influenced your development process.

C sharp allowed me to integrate scripts and more complex features to my game unlike python, such as physics, gravity and all the variables for the characters like health, damage and speed. Which were all integral parts of my game.

- (iii) What was a new skill you needed to learn to develop your digital outcome?

Animating in unity

- (iv) Explain how this new skill improved your development process.

I was completely new to the animator tool in unity when starting my project. However, learning to use the animator tools made all development smoother, easier and significantly simpler to understand which drastically speedup the development process. Using the built in Unity animating nodes that will smoothly transition into another animation when a new event happens made animating intuitive and simple.

## Reflective analysis

In this section you are required to write critical evaluations of both the positive aspects and potential issues with your development process and outcome.

In the development of your outcome, implications needed to be considered. These included:

- cultural issues
- legal issues
- ethical issues
- issues relating to intellectual property
- issues relating to sustainability
- issues relating to privacy
- issues relating to accessibility
- issues relating to usability
- issues relating to functionality
- issues relating to aesthetics
- end-user requirements
- health and safety issues.

(g) (i) What were the most significant implications you addressed from the above list?

Issues relating to accessibility and issues relating to intellectual property.

(ii) Explain how you addressed these significant implications.

I simplified all attacks to only 2 buttons and spread out the controls to not interfere with the other player on the keyboard and making the right player attack with their left hand so left-handed players could still enjoy the game without suffering a handicap.

I used copyright free assets to avoid copyright issues.

(iii) What did you learn from addressing these significant implications?

Originally, I was going to use the numpad instead of the comma and period for attacks, but this would mean that the left player could interfere with the right player's attacks. But I learnt that accounting for left-handed players helped increase accessibility for all those who wanted to play the game. So, the player on the left attack with their buttons on the right hand and the left player attacks with the buttons on their left hand.

That google has search options for copyright free material.

- (iv) What strategies did you use to check that your outcome addressed these implications?

I tried playing with both characters to check if left-handed system worked then I asked a friend to try the left-handed system and he gave positive feedback saying, "It was fine, the game is simple enough to not be a problem."

Double checking license limitations on all assets used.

- (v) Reflecting on your outcome and its development, what have you learned about developing a digital outcome that you did not know before?

I learnt that players will always play whatever they feel like is the most fun for them. If its being aggressive, being passive or trying to find the most optimal way to play. I learnt that trying to get players to play in only 1 way makes the game less fun and allowing creativity and expression makes the game more enjoyable for everyone.

All high-quality assets require payment of some type, and some assets cannot be used for commercial purposes.

- (vi) How could you apply the learning from creating this digital outcome to future outcomes you may develop?

Next time I will try to take left- and right-handed players into account as well as to allow players to express themselves in their own way and to try not to limit the playstyles the player can have.

To purchase high quality assets with the right licenses to avoid copyright issues.

## Achievement

**Subject:** Digital Technologies

**Standard:** 91909

**Total score:** 03

Task	Grade score	Marker commentary
	A3	<p>The candidate submitted work describing development of a two- person 2D combat game. This was a suitable outcome that provides scope for a Level 3 student to do well in this standard.</p> <p>The technical level of the submission met the requirements for candidates' work to be at L8 of the NZ Curriculum.</p> <p>The outcome was well described and aspects of playability were well explained. The use of unfamiliar tools (animator features in Unity) were justified in terms of the outcome's development and meeting stakeholder requirements.</p> <p>While the candidate described some aspects that could have extended their project to increase its impact, had they taken a broader view of game playability and used a wider group of stakeholders, more features and aspects for the game's development would have been considered. This would have broadened the scope for writing more detailed reflections, and would also have increased the opportunity to step up to a higher grade.</p>