Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 2 Digital Technologies 2024

91899 Present a summary of developing a digital outcome

EXEMPLAR

Merit

TOTAL 05

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 poster, 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.

During this assessment, you may access only the three images you have prepared in advance. You may not access your digital outcome, any other online or paper resources, or the Internet.

If you developed your digital outcome as part of a group, you must 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 task.

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)

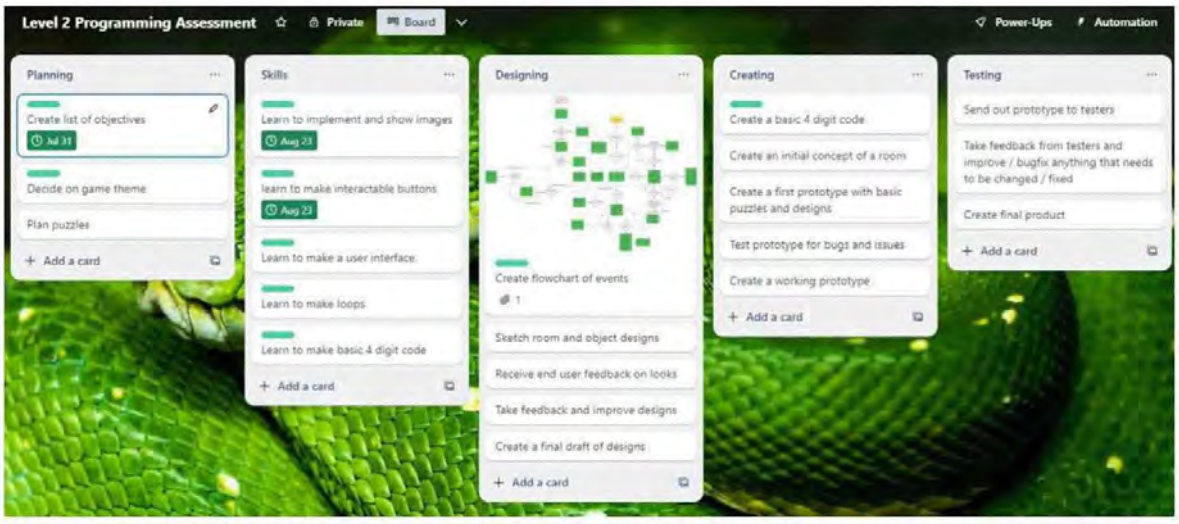
ASSESSMENT TASK

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

Puzzle Game

Development process

(a) Insert the image of your development process that you have prepared.



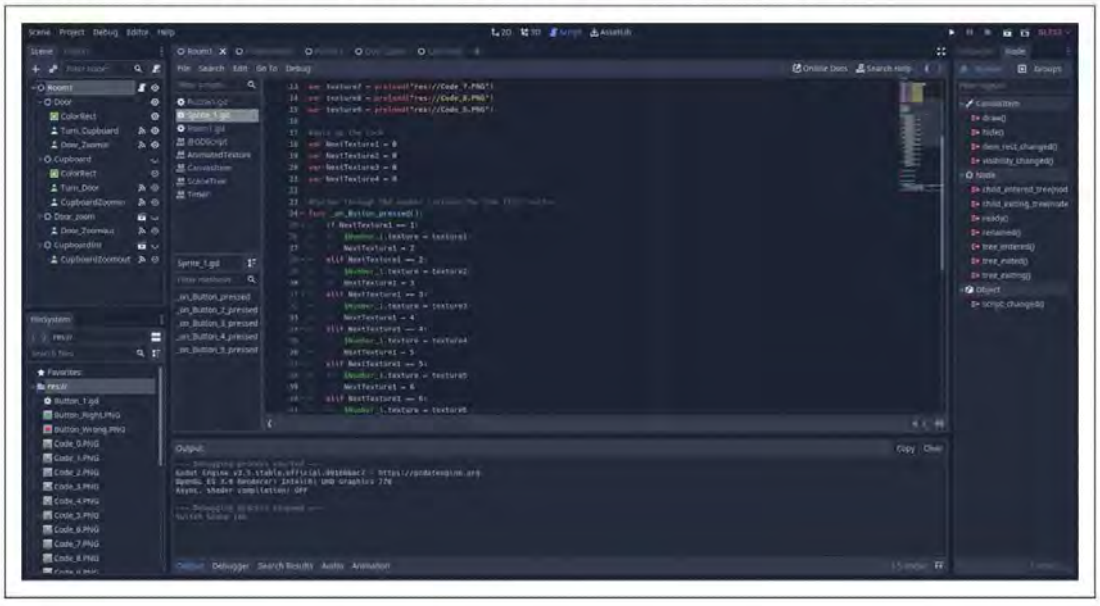
Research and design

(b) Based on your research and/or design(s), identify and explain a key decision you made about the direction of your digital outcome and its development.

One key decision I made about the direction of my digital outcome and its development was to familiarise mmyself with Godot and learn skills I needed before starting on the designing and creating. This allowed me to get a sense of the size of the game I would be able to create within the timeframe given and sped up the later development process with the skills I needed already present.

Development

(c) (i) Insert the image of your software's digital component that you have prepared.



(ii) Name the primary software that you used to develop your outcome.

Godot

(iii) Based on the primary software named in (ii) above, identify one of the software tools you used, and explain the techniques you used to create an aspect of your digital outcome.

One of the software tools I used was Godot's node system, which sped up the creating process by allowing me to directly include buttons, designs and keep my work organised into groups without needing to create my own code to do such tings. One aspect of my digital outcome was a four digit number lock which I had to use many techniques to create. I used variables to load the textures I created to show the number the lock was on and other variables to keep track of what state the lock should be in, one for each digit. I used if, else and elif statements to change the texture of the digit when the button was pressed and set the internal variable for that digit to the next value, which loops from the numbers 0 – 9. I also used signals to detect when the button has been pressed, which activates the code that updates the texture.

(iv) Name one of the most important requirements of your digital outcome.

Buttons that allow the end user to move around and interact with objects

(v) Based on the requirement named in (iv) above, discuss what you had to undertake to meet this requirement, giving specific details about how you implemented this in your digital outcome.

In order to meet this requirement I had to use button nodes and signals. Button nodes were used to make a clickable area for the player to interact with and signals were used to detect when the button is activated in order to run code that hides and shows different backgrounds and buttons. I implemented these into my design for my four digit lock by detecting when the button was pressed, which changes a variable responsible for showing the correct number on the lock and having a fifth button that checks whether these variables are a specific number in order to be correct. I also implemented these into my system of moving around by turning on and off the visibility of certain scenes showing where they are in the level when the code detects the player pressing a button that moves them around.

(vi) Name a different requirement to question (iv) that was heavily influenced by feedback.

The game is clear to see and text is easy to read

(vii) Based on the requirement named in (vi) above, answer the following:

- What was a digital component that related to this requirement?
- Who did you receive feedback from?
- Discuss changes you made to this digital component, based on feedback received; give specific examples, including details of who you received feedback from.

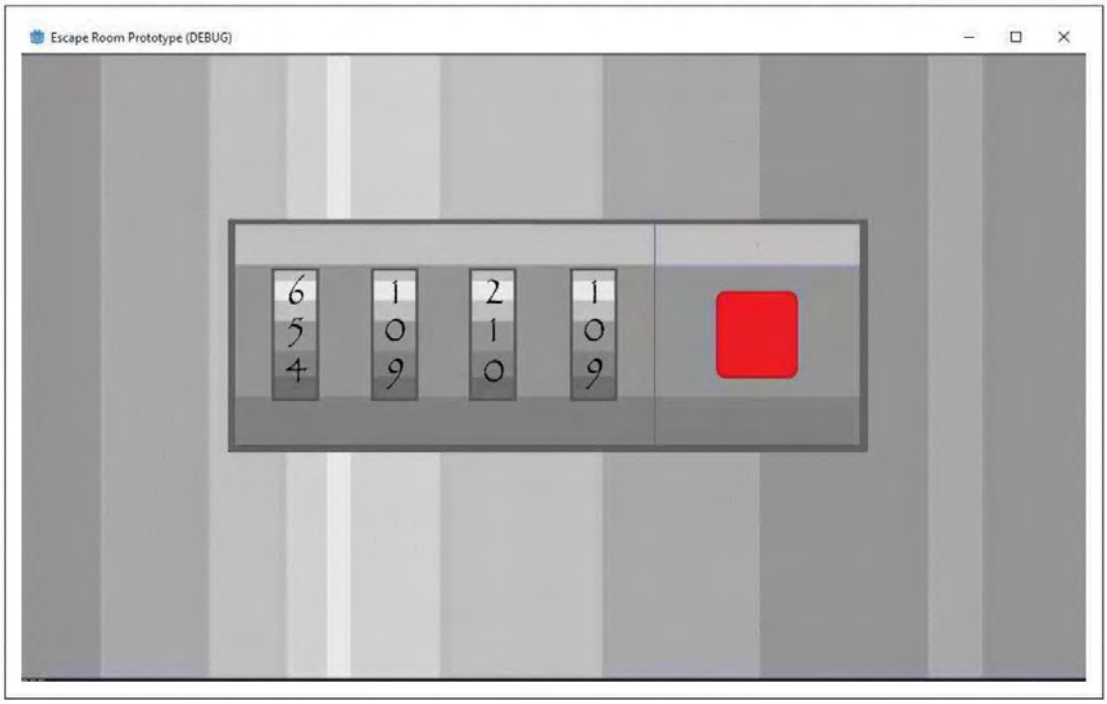
A 'component' is a smaller part of the outcome.

One digital component related to this requirement was the numbers on the 4 digit number lock. I received feedback from peers in my class that the text was hard to see, and the lock blended in with the door background. To solve the issue of the text being hard to see, I changed the lock to be a lighter color to help contrast with the black numbers, as well as making the numbers a larger size to make them more visible. To solve the other issue of the lock blending in with the background, I decided to create a border around the lock in a much darker color compared to the lock and door background, which helps the lock stand out more and be clearer to see.

(viii) Discuss the cultural and/or ethical implications you considered during the development, and how you addressed this in your digital outcome.

Testing and evaluation of final outcome

(d) (i) Insert the image you prepared of your finished outcome (what the end user sees).



(ii) Explain your final digital outcome – the purpose of it, how it looks, how it works, where it is used, and who uses it.

My final digital outcome is an escape room puzzle game. Its purpose is to entertain and help develop thinking skills during short breaks in between work that could be used to be learning and practicing. My target audience is teenagers from 13 – 18 that usually find they have a lot of free time but are instead using that time to play games with no educational value. It is used in the five minutes of free time a person of my target audience may have after finishing work.

(iii) Identify one of the key digital components that required testing. Explain the process you undertook for testing this, and evaluate the impact the testing had on the digital outcome.

One key component that required testing was a memory puzzle where you have to click buttons in the same order that the game shows you. To test this I created a testing table and inputted what I expected to happen, which was that the buttons would only be correct in the same order as shown by the game. Instead when tested, any button shown by the game pressed in any order would be marked as correct, instead of a specific sequence.The impact the testing had on the digital outcome was that I was able to catch critical bugs that could have likely broken the game and create a much less buggy version of the game.

(iv) When considering your final outcome, provide an evaluation of the overall performance and discuss specific examples of what this conclusion is based on.

Overall my final outcome and performance is too slow paced and flawed. I spent too much time trying to make a four digit code and trying to make it look good instead of getting basic movement and puzzles prioritised. I also spent a lot of time in forums researching how to do basic things. Partway through my development process I realised I wouldn't be able to do everything I planned and had to cut out an entire planned room, meaning I only had one basic room. My designs could also be improved with several visual bugs due to me using the snipping tool to insert my designs and my designs being very simple. My slow pace meant I was not able to get much feedback due to me not being able to get a working prototype to send out to stakeholders. My lack of experience in Godot meant I also spent a lot of time in forums researching how to do basic things and meant the process took much longer than if I had just practiced beforehand.

(v) Look now at the entire development process of your digital outcome and consider what you could have done differently.

- Identify which stage of your development process you would change next time (can be from one named in this paper, or another).
- Discuss what you did and what you would now change.
- Discuss how making those changes would impact your final digital outcome.

One stage of my development process I would change next time would be spending a lot more time planning and learning the skills I need in order to get a better scope of my capabilities in the timeframe required. I did not spend enough time learning the skills I needed, causing me to not be as efficient with my development as I had to repeatedly stop and research how to do basic things in the engine. The main change I would make is to spend some time in Godot before starting the project so I can learn and familiarise myself with its main features. This change would allow me to work faster and get more done as I would have a lot more experience and be better prepared before starting. Another change I would make would be to make a smaller game as my planning was too ambitious for the lack of experience I had with Godot. This change would help me focus on less work and expand on the project if I end up with spare time, instead of having to cut back on my work partway through the development.

Merit

Subject: Digital Technologies

Standard: 91899

Total score: 05

Task	Grade score	Marker commentary
One	M5	The candidate explained how research influenced key decisions in the direction of the development of the outcome (Game). The software selected (Godot) for the digital outcome is well-suited, and the candidate identified specific tools used within the software in their explanation of the techniques used to create a particular part of the digital outcome. They described the purpose of the digital outcome and its intended use. An important requirement for the digital outcome was then discussed. For the second requirement, the candidate discussed how feedback influenced the development of the outcome, including specifics about the digital component that was affected, who provided the feedback, and what changes were made based on the feedback. The candidate could have gained a higher score by discussing cultural and/or ethical implications considered in this outcome.