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3

91909

NZQA | Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

COMMON ASSESSMENT TASK

Level 3 Digital Technologies and Hangarau Matihiko 2025

91909 Present a reflective analysis of developing a digital outcome

Credits: Three

Achievement	Achievement with Merit	Achievement with Excellence
Present a reflective analysis of developing a digital outcome.	Present an in-depth reflective analysis of developing a digital outcome.	Present an insightful reflective analysis of developing a digital outcome.

Type your School Code and 9-digit National Student Number (NSN) into the space below. (If your NSN has 10 digits, omit the leading zero.) It should look like '123-123456789-91899'.

SchoolCode-YourNSN-91909

Answer ALL parts of the assessment task in this document.

You should aim to write **800–1,500 words** in total.

Your answers should be presented in 11pt Arial font within the expanding text boxes.

The only resources you may access during this assessment are the three images you have prepared in advance. Access to your digital outcome, online or paper resources, and the Internet, is not permitted.

Save your finished work as a PDF file (SchoolCode-YourNSN-91909.pdf).

By saving your work at the end of the assessment, you are declaring that this work is your own. NZQA may sample your work to ensure this is the case.

Excellence TOTAL 08

Instructions

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

You are not permitted to access any resources (either in hard copy or online) other than those supplied in the assessment itself. Access to your digital outcome, AI material, online or paper resources, other Word or PDF documents, and the Internet is not permitted.

You must illustrate your answers with three .jpg or .png images you have prepared in advance:

- a single image of the digital outcome (e.g. a website, a brand identity package, an electronic device)
- a single sample image showing a relevant digital component of the outcome in the software used to create it, for example:
    - the HTML / CSS for a website in a text editor (e.g. VS Code, Notepad++)
    - the 'layers' view of a vector or raster graphic (e.g. in Inkscape / Illustrator, GIMP / Photoshop)
    - the source code for controlling an electronic device (e.g. in Arduino C, PBasic)
    - the CAD / CAM file for a 3D model (e.g. in Blender, Fusion 360, SketchUp)
    - the source code for an application in a suitable text editor (e.g. VS Code, Replit)
- a single image of your development process (e.g. agile development, a planning chart, etc).

If you developed your digital outcome as part of a group, you must only write about your role and your 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.

You must complete your assessment individually under teacher supervision, in accordance with the NCEA Assessment and Examination Rules and Procedures. The material submitted for assessment must be your own work.

You are not permitted to share or discuss this assessment or your assessment responses with any other schools, teachers, or candidates until after the final date for submission (12 September 2025).

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 your work.

(Assessment Specifications, NZQA 2025)

Assessment Task

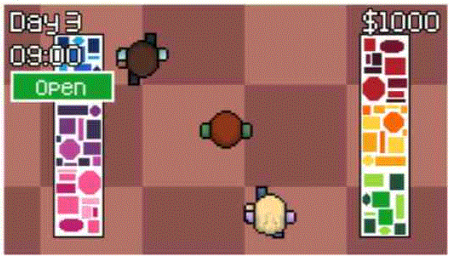
Name the type of digital outcome you created (e.g. website, app, magazine, animation, etc.):

Video Game

Insert the image of your digital outcome in the box below.

MAIN MENU SCREEN

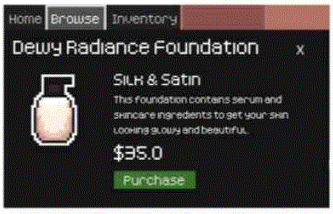
GAMEPLAY



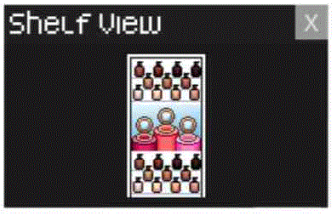
STORE MANAGEMENT SCREEN

Store inventory screen

Item purchase screen



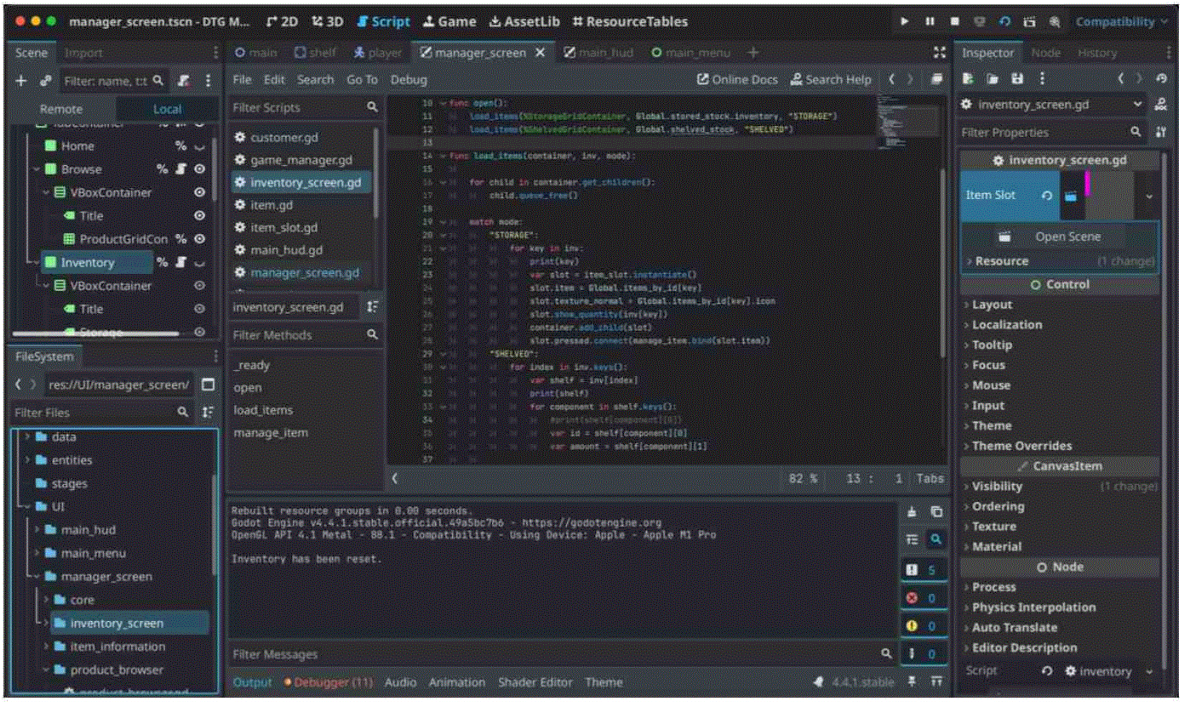
Shelf view screen



Name the main software used to develop the digital component of your outcome:

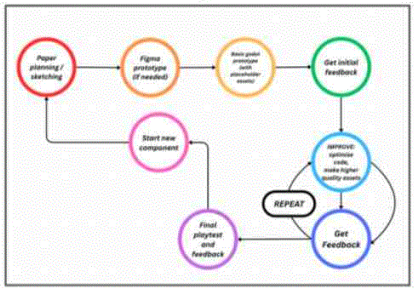
Godot 4.4

Insert the image showing a relevant digital component of your outcome in the software used to create it in the box below.

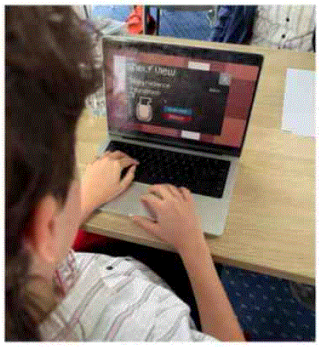

manager_screen.tscn - DTG M...
2D
3D
Script
Game
AssetLib
ResourceTables
Compatibility
Scene
Import
Filter: name, t:t
Remote
Local
Home
Browse
VBoxContainer
Title
ProductGridCon
Inventory
VBoxContainer
Title
FileSystem
res://UI/manager_screen/
Filter Files
data
entities
stages
UI
main_hud
main_menu
manager_screen
core
inventory_screen
item_information
product_browser
main
shelf
player
manager_screen
main_hud
main_menu
File
Edit
Search
Go To
Debug
Online Docs
Search Help
Filter Scripts
customer.gd
game_manager.gd
inventory_screen.gd
item.gd
item_slot.gd
main_hud.gd
manager_screen.gd
inventory_screen.gd
Filter Methods
_ready
open
load_items
manage_item
func open():
load_items(%StorageGridContainer, Global.stored_stock.inventory, "STORAGE")
load_items(%ShelvedGridContainer, Global.shelved_stock, "SHELVED")
func load_items(container, inv, mode):
for child in container.get_children():
child.queue_free()
match mode:
"STORAGE":
for key in inv:
print(key)
var slot = item_slot.instantiate()
slot.item = Global.items_by_id[key]
slot.texture_normal = Global.items_by_id[key].icon
slot.show_quantity(inv[key])
container.add_child(slot)
slot.pressed.connect(manage_item.bind(slot.item))
"SHELVED":
for index in inv.keys():
var shelf = inv[index]
print(shelf)
for component in shelf.keys():
#print(shelf[component][0])
var id = shelf[component][0]
var amount = shelf[component][1]
82 %
13 : 1
Tabs
Rebuilt resource groups in 0.00 seconds.
Godot Engine v4.4.1.stable.official.49a5bc7b6 - https://godotengine.org
OpenGL API 4.1 Metal - 88.1 - Compatibility - Using Device: Apple - Apple M1 Pro
Inventory has been reset.
Filter Messages
Output
Debugger (11)
Audio
Animation
Shader Editor
Theme
4.4.1.stable
Inspector
Node
History
inventory_screen.gd
Filter Properties
inventory_screen.gd
Item Slot
Open Scene
Resource
(1 change)
Control
Layout
Localization
Tooltip
Focus
Mouse
Input
Theme
Theme Overrides
CanvasItem
Visibility
(1 change)
Ordering
Texture
Material
Node
Process
Physics Interpolation
Auto Translate
Editor Description
Script
inventory

Insert the image of your development process in the box below.

ITERATIVE Development Process

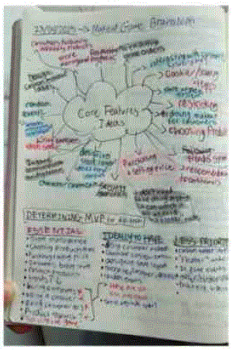


Kanban Board in Notion

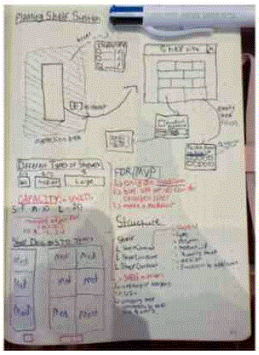


As I developed each component, I regularly tested my game with stakeholders, to gain **feedback** so I could make improvements and fix bugs.

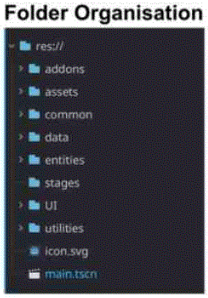
Component Breakdown and Brainstorming



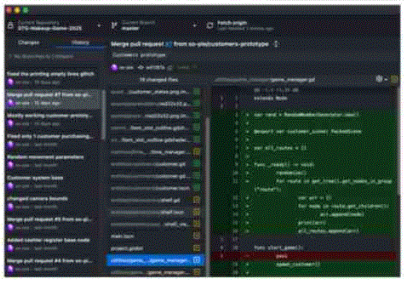
Paper planning example for each component



Folder Organisation



Version control on GitHub



Digital outcome

(a) Explain the digital outcome you created, including its purpose and intended audience/users, the environment it is found in, its functionality, key features, and aesthetics.

I created a 2D video game, where the player gets to run their own makeup store. Some of the **key features** and **functionality** of my game include the Store Management Screen, which is an all in one interface where players can manage their stores inventory, interactive Customers with a randomly generated appearance that move around the store and purchase products, customisable shelves, where players can stock any product of their choosing, as well as story elements, where players can chat with a diverse range customers to learn about their personalities, and their personal experience with makeup. This game focuses on creativity and self-expression, and aims to let the player customise their store however they would like. The **aesthetics** of my digital outcome is a 2D, pixel art style, with a vibrant colour scheme with a range of colours. The art style is intended to feel cozy and welcoming, while also bright and inspiring. The **environment** that this game is found in, and can be played in, is on the Web, or on Windows or Mac computers. It will be distributed through the online platform itch.io, which is one of the leading video game distribution websites. This game will be completely free to play and download.

The **intended audience/users** for my game is young women between the ages of 15-24, who either have a pre-existing interest in makeup, or who would like to learn more about it. They might not be experienced gamers, or they may be very passionate about games, my game caters to both casual and more serious audiences. The **Purpose** of my digital outcome is to inspire my intended audience into viewing makeup as a tool for self expression and creativity, rather than just something to hide insecurities. During my research for this outcome, I learned that the majority of young women feel bad about themselves from images that they see online, and that they feel less beautiful because of that. Because of this, many young women turn to makeup, as a way to make themselves appear more like the highly edited images we see online. My digital outcome aims to inspire young women, and share that makeup doesn't have to be viewed with a

negative attitude, and how it doesn't have to be associated with self hate and insecurity. Makeup is an amazing tool that can be used for self-expression, creating art, protesting causes you are passionate about, and more. Through the relaxed gameplay, focusing on creativity, this game intends to make a difference, and share a new perspective.

(b) (i) Name a key feature, quality, or attribute of your digital outcome that relates to your choice in software used to develop it.

One key feature of my digital outcome that relates to my choice in software used to develop it is my **Store Management System**, relating to my **choice to use Godot.** This is an in-game screen that allows players to browse and purchase new products for their store, as well as viewing and managing their store's inventory.

(ii) Briefly describe a decision you made that relates to the key feature, quality, or attribute named in (b)(i) above.

One decision that I made that relates to my outcome's Store Management System, was to use Godot's built in UI Nodes to create custom user interface panels, instead of drawing them in a pixel art software called Aseprite. Games in Godot are built using "Nodes", which are basically lots of little building blocks or components, that you can put together to make in-game functionality and scenes. I decided to create and style all of the panels for the Store Management System directly in Godot, using its variety of UI specific nodes, instead of drawing them by hand in Aseprite (a 2D pixel art software), and then importing them into Godot.

(iii) Analyse the impact that your decision from (b)(ii) on page 4 had during the development process, and discuss how this decision affected the **functionality, aesthetics, and usability** of your digital outcome.

This decision had a hugely **positive impact** during my **development process**. It made my **development process** much **more efficient**, as I was able to easily make small changes and tweaks, directly in Godot. If I had created my UI assets in Aseprite, I would have needed to re-export each asset every time, even if it was as minor as a change in colour, or expanding a pixel's width by 1 pixel. In Godot, every UI node can be easily customised, and you can change literally everything, from the dimensions, to the border width to the colours. This made it so simple to make changes, and I could quickly prototype and develop functionable and aesthetically pleasing components of my Store Management System for my stakeholders to test. There are also specific types of Nodes called "VBoxContainer" and "HBoxContainer" which arrange its child nodes vertically and horizontally respectively. These were extremely useful to my development process, as I could set parameters and easily arrange my nodes evenly, rather than having to struggle to manually place them in the correct positions. This also meant that I did not have to manually set the position of UI panels in code, and it would be assigned automatically. The use of Godot's UI tools greatly increased my productivity during my **development process**, and made it much easier to make changes.

This decision affected the functionality of my digital outcome, as if I did not use Godot's UI system, the Store Management Screen would not have been able to function as intended. For example, the Inventory screen within the Store Management Screen (which is shown in my image of my outcome above) needed to dynamically display items each time a new item was added to the inventory. I could not have done this without Godot's HBoxContainer node, which allowed me to evenly space out each new item. Using the Label nodes instead of creating titles in Aseprite and importing them in allowed me to update headings in the Item Purchase Screen to show the current item's information. This made my digital outcome much more functional, and allowed me to code the features that were needed to meet the needs of my end users, and ensure that they enjoy the game.

This decision affected the aesthetics of my digital outcome by allowing me to make cohesive and visually appealing interfaces. Godot allows you to create and apply "Themes", which determine the appearance of any UI panel that it is applied to. This meant that I could make one universal theme for my Store Management Screen, which determined the font, colours of panels, border width, corner radius, etc of everything that it is applied to. This meant that all of my panels were cohesive, and if I wanted to make a change, it could easily be applied to everything automatically. This had a huge positive effect on the aesthetics of my digital outcome, as everything looked cohesive, and visually appealing to my end users.

This decision affected the usability of my digital outcome, as using Godot's inbuilt system allowed me to easily scale the UI for different screen sizes. My stakeholders could be playing this game on the web, or on their computer, but every computer has different screen dimensions. If I had made the UI backgrounds and buttons in Aseprite, then imported them into Godot, they wouldn't be able to dynamically scale to fit different screen sizes, as they would remain one static size. This could mean that some panels would go off the screen, or could be partially cut off, greatly reducing the usability of buttons and readability of the information. Using the inbuilt system had a major positive effect on the usability of my digital outcome, and ensured everything was usable, legible, and clear for my end users.

(c) (i) Name a key feature, quality, or attribute of your digital outcome that relates to **cultural, ethical, sustainability, or future-proofing** implications.

The **Character Customisation Feature,** which allows players to customise their in game appearance. This relates to the **ethical** implication.

(ii) Briefly describe a decision you made that relates to the key feature, quality, or attribute named in (c)(i) above.

I decided to make a separate sprite sheet layer for each part of the character, (e.g. the hair, skin, pants, shirt), and coloured each of these in with a monochromatic colour scheme. This was so that each element could be easily recoloured and customised, instead of having a finite number of options for the player to choose from.

(iii) Examine how the decision you described in (c)(ii) above influenced the way you developed your digital outcome, and explain how it affected the final outcome.

This decision influenced the way I developed the digital outcome, because I needed to restructure some code and asset systems. Initially when creating the elements for the character customisation feature, I had decided to have a finite number of options for the player to choose from, like other games like Stardew Valley and the Sims 4 have for their customisation systems. This would not matter so much for the pants and the shirt, but for skin colour and hair colour, it would be impossible to have every possible skin colour and hair colour in my game, as there are infinite possibilities. However, I decided that this would not be satisfactory, and would not provide enough representation for my end-users. Representation is so important in games, and is a really important Ethical issue to consider. It is so empowering to be able to see characters that look like you, as it can be very inspiring. It would not address the Ethical Implication to have a lack of representation in the game, as this is a significant ethical issue. To make sure that I could address this implication, and make my game fully inclusive, I decided to instead create one generic spritesheet for each part of the character, which could easily be recoloured using a colour picker. I needed to change a lot of my code to do this, but in the end, it was worth it, as it would allow for maximum representation. **This decision had an enormous effect on the final digital outcome**. I received a lot of feedback from my end users that this was one of their favourite features, and that they loved customising their in-game character to look like them. This has developed to be one of the most significant features of my digital outcome, and has truly helped to meet my purpose, as everyone who plays can feel represented, and inspired to try out makeup in new ways.

Knowledge and skills

(d) Explain what new knowledge you gained and how you used your skills to apply this knowledge in practice, within your development process.

Note: Examples given can be of a positive or negative type.

Some new knowledge that I gained was the use of custom Resources in the Godot Engine. In Godot, Resources are data containers, and are used to store all sorts of information, like images, numerical values, etc. My game needed an easy way to store information about all sorts of products, and it would need to be scalable, incase in the future I decided to add more products to my game. While researching, I found a very interesting YouTube video, discussing how Resources could be used in all sorts of ways in the Godot Engine, and how you can even make your own Resources, which could hold any values you like. This was exactly the knowledge I needed to learn about to start creating my Item system. **Using my pre-existing skills in GDscript** (the programming language of Godot) **I applied this knowledge of Resources in practice, within my development process.** I created a new script, extending from the Resource class, and with a class name of "Item". Using my skills with creating variables, as well as my skills of using the Inspector tab to edit values, I was able to add a number of different parameters to this Resource script, like the item's price, icon, name, etc. My skills in GDscript also allowed me to access the values of each Item in other scripts, which helped with a lot of important functionality, eg adding up the value of a customer's inventory, and then adding this amount to the players money, when the customer purchases an item. This new knowledge, combined with my existing skills was the missing puzzle piece for my development process, as it solved the problem I was having with pretty much all of my gameplay systems, as this Item system was the key to making it all work.

Some other new knowledge I gained was about Git, and how to use GitHub desktop. I had used GitHub once before, but had given up, due to the difficulty. I decided that this would be a good chance to learn, so I could use it on future projects. While I haven't learned how to use the command line yet, I learned knowledge of how to use the GitHub desktop app to commit changes, revert to old versions, and push changes to the web. I also learned knowledge of how to use GitHub web in partnership with this, to create new branches, and create and merge pull requests. I had some rudimentary version control skills, learned from more basic Version Control like uploading to Google Drive. However, my **skills** were not quite enough to **apply this knowledge in practice** successfully **during the development process**. I had several issues during the development process, a major one being my files duplicating themselves, which cause my Godot project to crash multiple times. If I had the skills to use the command line, it may have been an easy fix, but unfortunately I did not. However, I did some research, and it turned out that it was some issues with iCloud interacting with Git, and whenever I switched branches, iCloud added back the files that had been deleted. **Applying this knowledge in practice within the development process with my limited skills** was a bit of a rocky road, however, now I feel much more confident with my skillset, and have learned a lot more knowledge that I can apply in the future.

Evaluation

(e) (i) Reflect on what could have been done differently in your development process, and how this would enhance the quality or effectiveness of your digital outcome.

One thing that I could have done differently was to have a more structured method of collecting feedback from my stakeholders. I made sure to regularly gather feedback from my stakeholders, to ensure that my outcome was meeting their needs, and was engaging and interesting for them to play. However, I gathered this feedback in a number of different formats, and sometimes it was quite difficult to keep track of. For example, sometimes I asked some of my peers during Digi Tech class, as they were part of my end user group, and were some of the stakeholders for my game. Sometimes I got them to write down the feedback, or I wrote down feedback based off what they were saying. Other times, I received feedback over through text messages, or just through conversation. This proved to be quite an issue, as I found that often I couldn't find a certain piece of feedback, or sometimes I forgot what a stakeholder had said, or the words I had transcribed weren't accurate. This meant that I couldn't implement those changes or feedback, which had a negative impact on my digital outcome, as I wasn't able to meet my end user's needs as well as I could have.

To enhance the quality and effectiveness of my digital outcome by doing this differently, I would create a Google Form, and send it to my stakeholders when they playtest my outcome, so they would be able to write down their thoughts, and it would be all stored in one place. Google Forms automatically creates spreadsheets and graphs to display answers when they are submitted, which would be very useful tools to allow me to analyse user feedback in a quantifiable way. Using a Google Form would also help my development process because I would be able to ask targeted questions to my end users. Before, when I was asking for feedback, I tended to just ask general questions, rather than specific things about specific features. In a Google Form, I could ask more specific questions, and use the rating features, and ask users to rate something out of 5, which would give me numerical results to compare. **This would enhance the quality and effectiveness of my outcome** by allowing me to gather feedback in a consistent way, so that I can apply it to my outcome, and better meet my end users needs. The **quality** of my digital outcome would also be enhanced, as I would be able to keep track of all bugs and issues reported from playtesting easily, so I could fix them and improve the functionality of my outcome. The **effectiveness** of my digital outcome would be improved as I would be able to compare my stakeholders feedback easily between playtests. If one iteration of a feature met their needs, or interested them more than another, I would be able to focus on developing that further. I would also not lose any feedback that I received, so I could make all changes requested, to make my outcome as effective at meeting my purpose as possible.

Another thing that I could have done differently in my development process, is to start with a smaller scope, and then expand my outcome further if I had time. During my Level 1 and Level 2 projects, I struggled a lot with this, as I would have lots of huge, ambitious ideas for games to make, and then run out of time at the end, and not complete all of the features that I wanted. This year, I tried my best to keep a small scope, but even then, it was still too ambitious. I had a lot of features that I had included in my time plan, such as a mini game where you could draw custom makeup looks for customers, but lots of my other features took much longer than I was expecting to develop. For example, the shelving system ended up taking me around 2 months to create, when I had originally set 2 weeks for it. Unrealistic expectations around what I could accomplish in the set time we had to make the project, combined with a scope that was way too large made me fall quite behind in my schedule, and I had to rush to finish a lot of features. I still ended up completing everything, but there were a lot of bugs left. This reduced the quality of my final digital outcome, as some features were still a bit glitchy, and didn't work as intended.

To enhance the quality and effectiveness of my digital outcome, in the future I would start with a very small scope, and then work up from there. I would determine a Minimum Viable Product with only the very minimum features for my game to function. My mistake when doing this was also including extra "would be nice" elements into my MVP, which really defeats the whole point of having a minimum viable product. I would only include the very barebones features that are essential for the game to function and meet the needs of my end users. I would make sure to plan as much time as possible to complete this, and if there is any time left at the end, I would be able to develop a few extra features. **This**

would enhance the quality of my digital outcome, because I could ensure that I have enough time to fully focus on the most important features, and be able to flesh them out with a lot of detail. This would also mean that I can make sure they work as intended, and that there are no bugs, glitches or errors with each of these features. **This would also enhance the effectiveness of my digital outcome**, as I could ensure that the most important features that meet my end users needs, are 100% complete. This would make my outcome more effective, and allow me to easily meet my purpose, and fulfill the needs of my end users.

(ii) Evaluate how problem-solving and your personal experience contributed to the successful development of your final digital outcome.

Problem solving was essential to the successful development of my final digital outcome. Throughout the development process, I needed to solve a lot of problems, whether it was finding a solution for designing a certain feature, or solving issues with my code or software. One problem solving strategy I tried to use was writing problems down on paper, to break down the problem into parts, brainstorm solutions and plan out new ways of approaching an issue. One problem I was facing in particular was my shelf system, which allows players to stock shelves with items for customers to purchase. I wasn't sure how I should approach this issue, especially due to the art style of my game. My art style is from a birdseye view, so I wasn't sure how to display all of the items on the shelves, as they wouldn't be visible. I sketched out a number of different ideas, and wrote out pseudocode and plans of how I would structure the individual inventory of each shelf. Then, after I had gone through this process, come up with several ideas, and got feedback from end users, I ended up deciding on the structure that ended up becoming my final shelf system. When you interact with a shelf, a user interface is brought up, allowing you to visually see shelf items, and restock and remove items. You can see an example of this problem solving process in my development process image. **Problem solving strategies like this were essential in contributing to the successful development of my final digital outcome**. If I did not make an active effort to solve the problems I was facing, I would need to drastically change my outcome, or completely restart some aspects of development. If I had done this, my outcome might not have met my end users needs. This really contributed to the successful development to my final digital outcome.

My personal experience contributed enormously to the successful development of my final digital outcome. Firstly, I have a lot of personal experience in using the Godot engine, and coding in GDscript (Godot's programming language). I have been using the engine for around 3.5 - 4 years now, and while I haven't made a project as ambitious as this one, I have made lots of small to medium scale games in the past. This past experience in Godot was essential to the successful development of my final digital outcome, as my prior experience and learned skills allowed me to be able to successfully create a project of a larger scale. If I was new to making games, or decided to make my game in a different game engine such as Unity, it would have been a lot harder. Instead of focusing on developing the gameplay mechanics, I would have needed to spend a while learning the software and programming languages required, which would have taken up a lot of development time. In addition to this, attempting a large scale project as a beginner would have been overly ambitious, and very difficult. This personal experience I had in using Godot contributed hugely to the successful development of my final digital outcome, and allowed me to create an ambitious project, that was successful in meeting my end user's needs.

Another way that my personal experience contributed to the successful development of my final digital outcome, was that it allowed me to continuously be engaged and passionate about my project, even when I hit some roadblocks. I have a lot of personal experience with the subject matter of my game, which is makeup. Makeup is something that I am really passionate about, particularly how it can be used for creative purposes. I am a very artistic person, and love doing colourful makeup looks to express myself. I am also very interested in the cultural significance of makeup, and its importance throughout history. Throughout the development process, I would often hit some roadblocks, like not being able to solve a particularly difficult bug, or struggling with the workload. However, whenever this happened, I would always remind myself about the "why", the reason that I am making this project in the first place. I wanted to share my love for makeup with my end users, and this inspired me to keep progressing. While I would not consider myself to be an expert in makeup, I think that this **personal experience**, and passion for the topic really propelled my development process, and **contributed to the successful development of my digital outcome**.

Excellence

Subject: Digital Technologies

Standard: 91909

Overall grade: 08

Grade	Marker commentary
E8	This report described an outcome idea that is achievable for all learners and clearly lays out the process logically, using critically reflective statements. The candidate deeply analysed the impact of their tool choices, such as using Godot's native UI for efficiency and aesthetics. Critically, they demonstrated strong ethical insight by proactively changing the character customisation system to ensure maximum user representation. The candidate showed they could identify knowledge gaps, with the discovery of Godot Resources being recognised as the 'missing puzzle piece' that enabled core game systems. Their approach to solving problems, like the shelf system, was highly structured, involving brainstorming, pseudocode, and user feedback, which prevented a major project restart. Their self-evaluation was highly sophisticated. They didn't just identify weaknesses but proposed specific, high-value solutions, like switching to Google Forms for collecting quantifiable feedback. Most notably, they recognised that their initial scope was too ambitious and proposed adopting the industry concept of a Minimum Viable Product (MVP) to enhance quality and ensure 100% completion of core features. This demonstrates a mature, professional understanding of project management principles.