COMP4002/GAM Coursework 2: Prototype Game and Design Documentation

Summary

This coursework is worth 40% of the overall module assessment and is to be **conducted individually.**

> Design and implement a prototype computer game using Unity that demonstrates an appropriate progression of challenges for the genre, documenting its design and presenting a video show-reel that documents the prototype and the lab exercises.

Your game and documentation should be submitted no later than:

> **3pm Friday 14th May 2021**

Submission should be made electronically via moodle (http://moodle.nottingham.ac.uk). Standard penalties of 5% per working day will be applied to late submissions.

Your game and documentation should be submitted as a .zip or .tar.gz file containing a Unity project folder including all relevant scripts, assets and related files, a .doc, .docx or .pdf file containing your report.

There is a hard limit of 250MB for individual file uploads to moodle that is outside of my control, and it is likely that your project will legitimately exceed 250MB. Detailed submission instructions to work around this are on the Moodle page.

Requirements

1 Game Prototype

You should design a game within a genre of your choice, with challenges appropriate to that genre. Your game should demonstrate the practical implementation of a difficulty curve appropriate to the implemented challenges, ensuring that there is an appropriate introduction to the mechanics of the challenge, followed by several challenges of increasing difficulty. The core mechanic and style can be chosen as you see fit.

You must submit a complete Unity project including all associated assets and project files, that when opened and "played" starts from where the player might expect the game to start on first launch. There is no requirement to use a specific sub-version of Unity, nor target a particular platform or operating system.

The game must be your own work, including the game design and implementation. Any exceptions to this must be clearly identified and acknowledged in either in the documentation or inline as comments:

- You may make use of pre-existing (e.g. found) images, textures, sprites, models and other media, either via the Unity asset store or online, but these must be clearly

identified and acknowledged in your report, and they must be available under a license that allows their reuse in this context.

- You may make use of existing code libraries and script assets within your game but these must be clearly identified, referenced acknowledged within your project.

- You may (and it is expected that you will) draw upon the lab exercises, and these do not need to be acknowledged.

2 Design Documentation

Your documentation should consist of two sections, as follows. There is no word limit, however there is a page limit of 8 pages.

Prototype Design and Specification

Detail the features and functions of your final prototype game – what goes into the game and what it does. This is not a technical specification, but it is a "bible" that could be given to a developer who could then use it to produce a technical specification or a working prototype. It should detail the underlying principles behind the game design that you have then implemented. The rationale for this is that you can demonstrate your understanding of the principles and justification behind the design where the implementation might be limited.

Diagrams and bullet points should be used rather than flowing prose to make the specification clear and readable. You might consider including the following as relevant (this is a suggestion, not a requirement):

- Core game play
    - Objects, rules, procedures and resources, game play elements
        - What are the core game objects?
        - Weapons, switches, traps, items, power-ups. What are the sinks and sources?
- Game flow
    - The progression of challenges
        - What is the desired difficulty curve?
        - What are the skill gates?
- Characters
    - Controlled by the players or AI
        - How do they move?
        - What are their statistics or resources, and how are they related?
- Physics and parameters
    - Movement and speed, collisions and reactions. What are they and why?
- AI (if applicable)
    - Desired behaviors, states, transitions
- Level requirements
    - Level relationships

        - What are the different levels, rooms or areas, and how are they linked?
    - Target difficulty
        - Do you have easy, medium and hard levels? How have you quantified the difference between these?
    - Feature revelation
        - When and how are the game's features revealed to the player?
        - Bosses and enemy types, weapons, power-ups, objectives, new challenges

Prototype Instructions

A set of instructions or a transcript describing one way of successfully completing your prototype. NB – this is not just a restatement of the game design in the abstract, instead describe the player's experience, that is, an instance of playing through the game, in a way that could be used for a walkthrough or tutorial for the game.

3 Showcase

You should submit a short video that documents:

- Your solutions for each of the lab exercise games, showing in particular how you approached the exercises in each one. For example, lab exercise 2 called for a simple linear level consisting of different platformer challenges, whereas lab exercise 6 called for a variation on locked door challenges.
- A short *teaser* or trailer for your coursework game that highlights key features.

The video should be no longer than 4 minutes.

You should capture footage from each game using a screen capture tool. The video should be encoded and submitted as H264 video in an .MP4 wrapper, or alternatively you may host the video on an online video platform and submit a link.

Hints

Your game should allow the player to play towards a clearly defined objective, comprising of representative challenges, for example, exploration, pattern recognition, knowledge etc. The game should be appropriately balanced, and demonstrate an appreciation of the concept of progression and increasing difficulty and challenge.

A rule of thumb is that your game should take around 10 minutes to play.

The emphasis of this coursework is about thinking about structured game play, and demonstrating your understanding of the course material, so try not to get too bogged down designing assets and sprites - you'll get more marks for a simple looking game that has a well thought out game design than for an aesthetically beautiful game that is shallow.

You're encouraged to use the simple games from the lab sessions as a starting point – **it is a risky strategy to attempt to implement a game mechanic from scratch that you have yet**

to explore in Unity – however it is expected that these are then developed into a much more sophisticated game by adding multiple further challenges and progression. Coming up with a unique form of game play is very difficult, so you can also draw inspiration from existing games. However, you should aim that your game is suitably unique, whether this is in terms of core mechanics, premise, challenges or aesthetic.

NB – games that are simple derivations or clones of online Unity tutorials are not acceptable, and will be heavily penalized. Similarly, it is not acceptable to submit just one of the lab session exercises without modification. You are being assessed on your understanding of the course content, and as such you should specifically attempt to introduce substantial higher level game design concepts, such as particular sequences of applied challenges, difficulties and balanced relationships into your game that demonstrate this.

As a starting point you might consider the formal and dramatic elements of game play:

- What is the premise of the game?
- Is there a narrative?
- What is the core mechanic?
- What are the goals and objectives, rules, resources, conflict and challenges?

NB – You are required to submit a prototype of a game, not a complete game. Again, remember that you are being assessed on your understanding of the course content. It is better to submit a prototype that demonstrates a few points well, than attempting to construct a full game. Additional marks will not necessarily be given to large games that do not demonstrate specific additional game design elements (e.g. multiple similar levels that do not change in difficulty, or excessive use of 3rd party assets without justification).

Assessment Criteria

	Marks Available
Quality of the implementation	
Choice and implementation of the core mechanic	10
Choice and implementation of challenges	20
Choice and implementation of difficulty or progression mechanic	20
Construction style	
The game project is easy to understand, with comments, correct formatting, meaningful asset, script, function and variable names and organisation	5
Generalisation and appropriate use of Unity (prefabs are reusable, variables likely to require editing are parameterised)	5
Documentation	
Quality of show-reel documentation	25
Quality of prototype design documentation	15
Total	100

Each element of your coursework will be assessed against the standard criteria:

Exceptional (90-100%)	The work should exhibit all the characteristics of an Excellent grade. Additionally the work should be essentially without fault and of the highest possible quality, exhibiting a substantial original component.
Outstanding (80-89%)	The work should exhibit all the characteristics of an Excellent grade. Additionally the results should exhibit independent thought and originality. Any short-comings should be no more than incidental.
Excellent (70-79%)	The work should display a complete and thorough understanding of the conceptual and practical issues surrounding the topic. The work should be well structured with a clear line of argument and the quality of the analysis should be excellent. The work should be comprehensive and rigorous. Any software should be complete in all respects and exhibit very high quality. There should be evidence of reading beyond the core lecture material.
Good (60-69%)	The work should show a good understanding of the conceptual and practical issues surrounding the topic. Arguments should be clearly structured. The quality of analysis and writing should be good. The work should be competently conducted using recognised and appropriate methods. Any software should be complete and usable and exhibit good levels of quality.
Average (50-59%)	The work would be expected to display a fair understanding of the key conceptual and practical issues, although weakness may be present in some areas. There work should have a basic structure, and there should be some argument around the information available. The analytical content should be fair. Any software should be adequate to illustrate principles; it may display weakness in areas not central to the work.
Adequate (40-49%)	The work would display an incomplete understanding of the central issues relating to the topic. The work would lack a clear structure and strong argument and the quality of analysis would be below average. Any software would be poorly designed, incomplete, poorly commented and difficult to understand; it would exhibit poor levels of quality.
Poor (below 40%)	The work would display a very poor understanding of the area; there would be no clear structure and the analysis may be weak or incomplete. Any software would be limited in capability, and difficult to use.

Plagiarism

Plagiarism or other academic offenses will be dealt with using the standard University procedures[1] , and may result in a mark of zero for the entire assessment, module or year.

N.B. Use of third party assets (images, example code, libraries etc) MUST be credited or referenced, and you MUST be able to demonstrate that they are available under a license that allows their reuse.

Making significant use of tutorials AND referencing the original source will result in a lower mark. FAILING to attribute the original source will result in a mark of zero.

Copying code from other students, from previous students, from any other source, soliciting code or attempting to solicit code from online sources and submitting it as your own is plagiarism and will be penalized as such – potentially resulting in failure of coursework, module or degree.

[1]https://www.nottingham.ac.uk/qualitymanual/assessment-awards-and-deg-classification/pol-academic-misconduct.aspx