**AT01 Production Diary**

*Note: Throughout this template certain headings are given numerical indicators such as 1.1.1 Depth First Search Algorithm Research. The ‘1.1.1’ here matches with the AT01 Studio Project Assessment Coversheet document, and indicates that it refers to Section 1/Part 1/Paragraph 1’.*

# Requirements & Criteria Summary

## Summary of ‘deliverables’

1. Completed ‘Gold Master’ Unity project which meets the specifications of the provided *AT01* *Game Brief.pdf*
   1. An AI NPC which uses the *Depth-First Search* pathfinding algorithm
   2. A custom UI Widget
   3. Cross-device input compatibility
2. The *project files* for the Unity project. This can be compressed and uploaded to *Blackboard* easily by exporting the project as a *.unitypackage* file.
3. A completed *Production Diary* document – either this template or your own formatted document
4. A completed & signed *Observation Checklist* (provided by the lecturer once meetings are complete)

# Section 1 – Pre-Production

## Part 1 – ICTGAM423

### 1.1.1 Depth First Search Algorithm Research

**Algorithm Summary***“Conduct research relating to the DFS algorithm and document a brief analysis of how it can be applied to different video game environments and genres.”*

You will need to explain:

* How the DFS algorithm works.   
  Some examples of how you can do this include:
  + A dot-point summary or pseudocode explaining the process that the algorithm follows.
  + Diagrams and a written explanation
  + Links to videos which explain the algorithm along with your own written summary of how it works.

Your research in how it can be applied to different video game environments and genres can include:

* An example of a game which has used the DFS algorithm.
* Written articles, tutorials or scholarly papers which explains application of the algorithm in games.

*“In your analysis discuss the standards for using the DFS algorithm in the video game development industry, as well as how the algorithm can influence the design and development of a video game.”*

* This analysis can revolve around whether the DFS algorithm is even suitable for use in video game development and why it may or may not be.
* In terms of how the algorithm can influence the design/development of a video game, think about what the limitations are for DFS vs other pathfinding algorithms.

**DFS Terminology Definitions**

*“You will also need to define the following terms as they relate to the algorithm – path-finding, tree, parent, and child.”*

* For these definitions you will need to provide full sentences.
  + EG, if I am explaining what ‘*walking*’ is to someone, I need to provide more information than just ‘*moving with legs*’.
  + Something like:  
    ‘*Walking is a process in which a creature with two or more legs moves from one point to another.   
    In the case of humans walking is performed using bipedal locomotion. From a standing position the weight of the human is shifted forward until they are essentially falling, and one leg is placed out to catch them before they do so. Then, to continue the motion, the human shifts their weight forward again until the front leg has taken all their weight. They swing the trailing leg past and continue to move their weight forward until they are once again falling, transitioning to their opposite foot as they once again catch themselves by moving a leg out in front.’*
* Using examples is also encouraged.
* Links to websites which define the terms along with your own interpretation of those website’s definitions is acceptable.

**Pathfinding:**

**Tree:**

**Parent:**

**Child:**

### 1.1.3 AI Behaviour Chart

*“The next step in pre-production for the NPC is to begin designing a feasible AI solution for the implementation in the project.*

*Based on your research select suitable AI strategies that are technically feasible for implementation and provide creative solutions to any identified design issues.”*

*" Customise the design of your AI strategy as required to ensure that the specifications of the project have been appropriately fulfilled.”*

* Provide a short explanation of what the AI is supposed to be doing in this project according to *AT01 Game Brief.pdf*
* Based on your understanding and explanation of how the AI is supposed to be behaving, explain what your plan is for the implementation
  + Include a list of the scripts you intend to make or modify from the project.
  + You can also provide pseudocode explaining how the AI behaviour will be implemented.
* When designing the behaviour you may also suggest or plan out changes – consider any improvements you’d like to make. If anything about the project as it’s presented by the *Game Brief*, or the project files that you’re given, seems strange… explain why, and how you’d like to change it to improve the final result.

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*“Use the selected ideas to design the required NPC by generating a range of goals, actions, and other relevant factors.”*

Explain, using full sentences where possible, what are the AI’s:

* Goals
* Actions
* Relevant factors (things to consider/questions that occur to you when planning this)

The actions and goals can be mostly interpreted from the *AT01 Game Brief.pdf* document.

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*“Document the design of your AI NPC in your production diary and supplement it by generating a behaviour chart that demonstrates the relationship between the goals and actions of the NPC”*

* From the previous steps (interpreting the AI from the design brief and planning out the goals/actions and how to implement it in code) create a behaviour chart which demonstrates the logical ‘loop’ that the AI will follow while the game is running.

*Insert your behaviour chart for the AI here.*

### 1.1.4 AI Design Reflection

*“Reflect on your designed AI strategy and document an assessment of the associated production implications in your production diary.*

*While you are reflecting on the design of the NPC, consider how technically feasible the implementation of the AI strategy is and how suitable the design will be in relation to potential players.*

*You will also need to consider its potential impact on a theoretical production budget and timeline by estimating a potential and duration for the production of the NPC.”*

Consider:

* Does your proposed AI strategy do what the *Game Brief* document says it should be doing?
* Technical feasibility:
  + How much time will it take to implement the strategy you’ve decided on?
  + Is it possible to do, based on your current skill level and the tools/support available?
* Budget/Timeline: keep in mind that in a larger production any changes you intend to make or delays you encounter could have a knock-on effect.
  + If your design required the AI to switch between several types of action, for instance, how much extra work would that create for the animation team? What other code would need to be created to handle the additional complexity of the AI?

## Part 2 – ICTGAM430

### 1.2.1 Planned HCI Device Integration Summary

*“In your production diary identify the relevant controller devices that need to be integrated into the project and describe the game controls that must be defined in their implementation.*

*Make sure to clearly identify and describe the specific type of gamepad controller that you have selected for implementation in the project.*

*Outline the intended control scheme associated with the selected device.”*

* The *Game Brief* document specifies which devices are required for this project.
* List *all* of them, not just the gamepad.
* Explain how each device will be used by the player to ‘move’, and any other inputs or functionality that may be required.

### 1.2.2 C# Event System Summary

*“In your production diary identify and describe at least one (1) potential industry-standard method for implementing the required device functionality using event-systems.”*

* Explain how event-systems work in C#.
* Refer to in-class activities and projects to provide technical details.

### 1.2.2 Unity GUI Library Review

*“You must also identify and describe how at least two (2) compatible GUI libraries may be used in Unity to implement the required UI widget.”*

* There is at least *one* built-in tool in Unity for creating a GUI and UI widgets (buttons, sliders, drop-downs, text-fields, etc, etc)
* The second compatible GUI library can also be something native to Unity or any other 3rd party plugins/addons which you may find using research.
* For both of the GUI libraries you identify your description should include both a summary of how they are used and your own assessment of how suitable the two methods are in your own implementation for this project

### 1.2.3 UI Widget Example Overviews

*“In order to produce a UI widget that is well-designed for use in a video game heads-up display HUD, it’s a good idea to analyse a range of relevant widget designs that have been implemented in existing video games.*

*In your production diary identify a selection of at least two (2) examples of UI widgets from the HUDs of existing video games that perform similar functionality to the widget you are required to design.*

*Describe the functionality of each example, and how each example has been used within the HUD of the video game they are from.”*

* Find two video games with widgets which perform a similar functionality to the widgets requires for this project.
* Include:
  + The names of the games
  + How these widgets are *similar* to the project you’re working on
  + How they are *different* to the project you are working on
  + Labelled screenshots of the game’s HUD showing these widgets

### 1.2.4 UI Widget Paper Prototype

*“Generate a paper prototype or functional digital wireframe after you have identified the task requirements.”*

*Your paper or digital prototype must be accompanied by a clear description of the requirements for the UI widget, as well as the planned methods for handling relevant hardware input events in the game.”*

* Task requirements are identified by reading the *Game Brief* document.
* A ‘paper prototype’ here refers to a diagram or non-functionality visual example of how the HUD GUI will be laid out.
* Remember: Not just the diagram, but a *clear description* of what the UI widgets shown in the diagram will do
* Additionally: Explain how you plan to take input from these UI widgets and the physical input devices (gamepad and keyboard) and trigger a method for moving the player using *events*

*Insert the paper prototypes for the required UI widget here.*

## Meeting with Studio Head (Lecturer)

Part 1.2 instructions you to meet with your studio head (the lecturer).

*“Once you have recorded your research relating to AI and the DFS algorithm in video games you will need to discuss your findings with the studio to ensure your research is in line with the intended specifications.*

*Organise your research findings then update the studio manager with the relevant information by presenting them with your research.*

*Discuss your ideas and analysis of the required AI strategy and confirm that they satisfy the specifications for the AI of the project.”*

Part 2.2 *and* Part 2.4 also instructs you to meet with the studio head.

*“Once you have documented the required information, meet with the studio manager for assistance in selecting the most suitable GUI library for production and to discuss the ramifications of the selected library.”*

*“Once you are satisfied with your prototype you must meet with the studio manager to confirm that your custom UI widget design is suitable for use in the HUD for the game.”*

**To summarize:**

* Complete all the other steps for Section 1, Part 1 and Part 2 as detailed above.
* With all the documentation completed at this stage contact your lecturer via email to arrange for them to come speak with you
* Your lecturer will respond to the email and create an appointment in Outlook.
  + Take a screenshot of the initial email exchange and the appointment once you have hit ‘confirmed’, and provide the screenshot below
* Your lecturer will ask a series of questions and look over the work you’ve done so far
  + Your lecturer will both be testing some of your knowledge of the required skills and providing a ‘green light’ for your planned implementation of the AI in the project
  + They may suggest changes or revisions to certain aspects: list those changes in the provided field below
* Once complete, the lecturer will provide you with an observation checklist document. You will need this for a second meeting in *Section 3.*

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| *Insert screenshot of meeting request & Outlook appointment confirmation* |
| *Provide details of any changes, revisions or suggestions the lecturer provided.* |

# Section 2 – Production

## Part 1 – ICTGAM423

### 2.1.1/2.2.2 Testing Log

*“Implement the required AI NPC strategy in the game as according to your planned design and integration.*

*Implement the DFS algorithm as the path-finding solution for the AI NPC, and test the implementation of the AI to ensure it meets the project requirements”*

* Your test cases should mostly be derived from the requirements listed in the *Game Brief* document
* Additional test cases may be derived from any additional functionality or changes you created
* Remember: testing in this fashion is not about ‘knowing’ what is going to happen. Just because you ‘know’ that the program will behave in a particular way because ‘that’s how you programmed it’, doesn’t mean you shouldn’t test it.
  + For example: Obviously if you have not coded your game to do anything when the *Konami Code* is entered, it will not do anything
  + But until you *test* that you do not ‘know’ this is the case

“For any test cases that return an unsuccessful result you will need to implement appropriate amendments to your implementation of the AI, before re-testing the test case to confirm that the amendments were successful.”

* If your test table includes a test case which was *not* successful….
* …you need to fix whatever is causing it to fail…
* …then there needs to then be a second test of the same conditions
* It isn’t expected that your testing will provide zero failures; just that any failures you identify are then rectified before moving on.

*Please add rows as required.*

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| Test Case Description | Expected Results | Actual Results | Success? |
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# Section 3 – Gold-master

### **3.1 Final Checks**

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| **Final Checks** | **Confirmed** |
| * AI pathfinding (using the DFS algorithm) has been successfully integrated |  |
| * Game over conditions have been successfully implemented |  |
| * Appropriately compatible with Google Chrome web browser |  |
| * Appropriately compatible with Mozilla Firefox web browser |  |
| * Appropriately compatible with Windows |  |
| * UI widget responds to relevant keyboard inputs |  |
| * UI widget responds to relevant mouse inputs |  |
| * UI widget responds to relevant controller inputs |  |
| * UI set to scale with a full HD resolution (1920x1080) |  |

**3.1 AI Evaluation**

*“You will also need to record a brief evaluation of your implementation of the AI to identify and describe its strengths and weaknesses.”*

* Evaluate how accurately your implementation matches what was required in the *Game Brief*. Provide full sentence answers.
* Describe strengths and weaknesses: what worked well or didn’t work well, and what are the limitations or advantages of how this project required the AI to work?

**3.2 Meeting with Studio Head (Lecturer)/Required Amendments**

Before submitting the assessment you will need to meet with your lecturer again.

*“Once you have implemented and performed the final checks for all of the functionality you have implemented, you will need to seek feedback from the studio manager to determine whether any additional modifications need to be integrated.*

*Meet with the studio manager to discuss and seek feedback regarding the state of the project.*

*In consultation with the studio manager confirm that there are no additional project requirements to be fulfilled, or modifications to be implemented for the design of the game.*

*Any further required modifications should be documented in your production diary for reference.*

*After the discussion with the studio manager, incorporate the required amendments and create a new version of the gold-master build.”*

* As with the previous meeting: email the lecturer to request another meeting
* Your lecturer will provide a calendar appointment in Outlook
* The final parts of the *Observation Checklist* document will be completed at this stage
* Note below any changes or amendments which the lecturer has asked you to make.

**3.3 Final Client Sign-Off**

*Insert a screenshot of your email communications with the client, providing evidence of their endorsement to finish the production of the project.*

# Submission Checklist:

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| *Unity* project files (as a *.unitypackage*) |  |
| Production Diary |  |
| Completed and signed *Observation Checklist* |  |
| Windows compatible ‘Goldmaster’ build |  |
| Web GL compatible ‘Goldmaster’ build (or link to itch.io page where it is hosted) |  |
| Version 2 of the Windows and Web GL builds (if required) |  |