BUCKINGHAMSHIRE NEW UNIVERSITY
EST. 1891

School of Creative and Digital Industries

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	CW2	☒		CW2	20%
	CW3	☐		CW3	60%
Submission Date:	CW1	11/11/21	**Feedback Date:**	+ 3 Weeks	
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Course:	BSc. (Hons) Games Development				
Word Count:	**3290**				

Project Title (Approx. 50 Words):

How has the application of the Jungian theory of Archetypes on myths changed over the last 4,000 years into modern interactive narratives, and what does it mean for game design?

Acknowledgments (Approx. 50 Words):

YOUR TEXT HERE

Abstract (Approx. 150 Words):

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Table of Contents (Unlimited Words):

Introduction (Approx. 250 Words):

This project will look explore the nature of narratives within the context of their era. As well as to examine their archetypal structures. It is possible that the very structure of stories has changed drastically over the last 4,000 years, potentially as a result of cultures shifting, evolving, and developing. The fundamental way in which stories are told today looks incredibly different to those of past civilizations, and through an analysis of this change, much can be learned about why narratives created, as well as why they can share common cross-cultural motifs, and what their significance is to stories conceptually and in the context of game design.

This field of study has great significance to the games industry. Games are fundamentally interactive narratives. The difference being the nature of the narratives differs between games, as well as the tools the game give the player to experience the narrative. Jan Jileček's game Jung's Labyrinth (Jileček, 2021) was a useful source for exploring these ideas.

The project explores areas such as narrative structures and their relation to games design. This includes examining what it is about the nature of games that make them excellent story telling mediums that take advantage of the techniques and structures explored previously in the project in the research section. Carl Jung's The Archetypes and the Collective Unconscious (Jung, 1991) is a source that is drawn from regularly throughout this area of the project. Similarly Julian Jaynes' The Origin of Consciousness in the Breakdown of the Bicameral Mind (Jaynes, 1976), but to a lesser extent. Both books will be sources of information to explore the theories behind narrative structures we see today, as well as why they may have changed over the last 4,000 years.

Background (Approx.200 Words):

In preparation for this Project works cited previously by Carl Jung (Jung, 1991) and Julian Jaynes (Jaynes, 1976) were studied and analysed. The Archetypes and the Collective Unconscious (Jung, 1991) provides a solid foundation on the context of the Archetypes (Jung, 1991) as well as their individual properties and idiosyncrasies, this was gained from Jung's insights in The Archetypes and the Collective Unconscious (Jung, 1991). From The Origin of Consciousness in the Break Down of the Bicameral Mind (Jaynes, 1976), these concepts can be applied to Jaynes' theories to suggest why there may have been changes in the ways narratives are created and conveyed over the last four centuries.

Additionally, three stories have been analysed in preparation for this project. They will serve the purpose of being the backbone of the research and investigation that this project will display. Broken down to their fundamental, archetypal elements, they will be laid out on a metaphorical timeline and compared. This will show any potential changes or shifts in the way the narratives were constructed both structurally, and archetypally. The narratives that have been used within this project for this analyses are The Epic of Gilgamesh (Sin-Leqi-Unninni, 600 b.c.), the story of Cupid and Psyche (Madaurensis, 200 a.d.), and finally the game Bioshock (2K Boston, 2K Australia, 2007 a.d.).

This project was of interest and is an appropriate final year project because of its significance to game design itself, through its relation to solving the issue of ludo narrative dissonance in order to strive for consistency. This is an issue that has plagued the design of many games, for example Bioshock (2K Boston, 2K Australia, 2007 a.d.) could be argued to have this issue where the themes and ideas it encourages in its gameplay goes against its story of altruism and selflessness. On the other hand, there are cases where this is handled effectively and the narrative being told through the story is represented very well through the gameplay, for example Hades from Supergiant Games (Supergiant Games, 2018). These difficulties can be better understood through a thorough examination of the fundamental way narratives form, are shared, and evolve. As well as through understanding the idiosyncrasies that interactive narratives possess over traditional stories.

Rationale (Approx. 200 Words):

There are two main problems that this project aims to address.

The first of these, previously discussed, is that of ludo narrative dissonance. This is an issue that as stated as plagued many games. The reason that this is an issue is due to the potentially conflicting nature of the story of games, and the tools the developer gives the player to progress it. While on a surface level it should not matter, it in fact creates a distance between the end user and the character that they are controlling. This friction can take away from the immersion the user can experience in relation to the game greatly. It makes the stories not only less believable, but less personal, as the game fails to address this disconnect through narrative, let along justify it.

The second issue that this project addresses is the lack of understanding within the game development industry on the potential relationship between Jungian archetypes (Jung, 1991) and game narratives. Even if the end user or the writer themselves do not subscribe to the more spiritual and less quantifiable benefits of embracing the archetypes into stories consciously or otherwise, they remain strong narrative tools regardless at their most fundamental level that should not be disregarded at first glance. It is through the understanding of the changing nature of narratives throughout time, and the subsequent transition into interactive narratives that has come to pass, in the context of the Archetypes, that a beneficial relationship between them can be recognised and understood to create more engaging games, through both writing, and high-level design.

Ethical Considerations (Approx. 200 Words)

There are aspects of this project which have implications on the ethical considerations required.

The first of these is that of the nature of the artifact itself. This piece of software will be a playable game that utilizes guns as a tool the player uses to progress and complete challenges. Many people will experience gun violence at some point in their lives, specifically “an estimated 81 114 Americans were injured, but not killed, by guns annually between 2011 and 2015” (Peetz, 2018). The potential for long-term trauma is great and violent games that depict and encourage the use of guns, and other firearm like weapons, can be a potential trigger for some people. Thus, care is to be taken in the ways in which guns are depicted and used throughout the project. This includes providing ample warning that guns are a feature of the game thus the end user is made aware of a potential risk to their mental health. Alongside this, care must be taken in ensuring the use of these weapons is not glorified and that they are treated with ample respect.

The second ethical consideration is that of the subject of religion. While it is to be argued whether religious symbols have their roots in archetypal symbols or vice versa, there is no doubt that care must be taken when dealing with concepts that carry potentially very heavy religious meaning for people. Carl Jung states the relation between religion and the Archetypes is as follows: “Strictly speaking, the God-image does not coincide with the unconscious as such but with a special content of it, namely the archetype of the Self” (Carlsson, 1970). With the archetype of the self being so common and feature so heavily in many stories it is no doubt that the implications of religious symbolism must be taken seriously. Thus, in order to stay neutral, it is important that the project addresses all religious symbolism found throughout the stories analysed equally and fairly, each being given their due diligence.

Aim (Approx. 50 Words):

The aim of this project is to gain insights into the ways in which the archetypal structures of narratives have changed over the past four centuries, as from this, much can be learned about their impacts on modern narratives, as well as the unique structures of interactive narratives such as games in relation to ludo-narrative dissonance.

Objectives (Approx. 150 Words):

1. The design of the narrative elements that will be experienced by the player through the software artifact. This will be achieved as a culmination of the initial research for the project as well as the analyses of multiple pieces of literature.

2. The artifact's game systems will be designed using the UML format. The systems in question will include the players movement, actions and potential interactions within the game world, as well as any systems for the enemy AI.

3. The game world itself will be created. Including the environment that the player will be in when using it as well as sourcing models, sound effects, animations and ither assets. These will then be culminated into the artifact, as well as the game world itself for 3d models relevant to it.

4. The artifacts functionality in terms of the player will be developed. Including the movement systems, interacting, actions and combat systems.

5. The artifacts functionality of the enemy characters will be developed. These systems include the AI system, movement, actions and combat systems respectively.

Risks (Approx. 250 Words):

Description of Risk	Risk Resolution Action	Impact on Project Aim	Impact on Project Objectives	Impact on Project Plan
Massive loss of data or information.	Avoid it by backing up data regularly to an additional space.	No foreseeable impact on the project aim.	Limit scope of objectives depending on the time needed to recover.	None, assuming that the project objectives can be limited while still achieving the project aim. Otherwise, the time taken for development of the relevant objectives may be increased depending on the data lost.
Malfunctioning development hardware.	Resolve the hardware issue, if possible. Else accept this and use hardware from the university facilities.	No foreseeable impact on the project aim.	No foreseeable impact on the project objectives.	No foreseeable impact on the project plan.
Going into a pandemic related lockdown.	Accept it and hold supervisor meetings online using a VOIP services instead of in person	No foreseeable impact on the project aim.	No foreseeable impact on the project objectives.	No foreseeable impact on the project plan.

Illness or injury causing inability to work for a period	Accept it and attempt to clear additional time in the following weeks to make up for lost time.	No foreseeable impact on the project aim.	None, assuming time can be found afterwards to make up for it, otherwise limit the scope of objectives depending on the time needed to recover.	No foreseeable impact on the project plan.
Illness or injury causing an inability to hold supervisor meetings in person	Accept it and hold supervisor meetings online using a VOIP services instead of in person	No foreseeable impact on the project aim.	No foreseeable impact on the project objectives.	No foreseeable impact on the project plan.

Literature Survey (Approx. 1550 Words):

Books

The first section of the literature survey will be a review and critical analyses of the three most useful and sourced books that are used throughout this project.

"The Archetypes and the Collective Unconscious" (Jung, 1991)

The first of these is "The Archetypes and the Collective Unconscious" (Jung, 1991). This book stands as the fundamental backbone of the research section of this project. The book can be split into its two components, as the title suggests: Jung's description of what he calls the "Archetypes" (Jung, 1991), and his description of the "Collective Unconscious" (Jung, 1991). These two areas differ and offer different values to the project.

The subject of "Archetypes" (Jung, 1991) is covered in the section of the book titled "Archetypes of the Collective Unconscious" (Jung, 1991). It details an initial theory of "Archetypes" (Jung, 1991), where Jung lays out a metaphorical bed of truths in relation to them about their function within the psyche and why they are important. This also includes a description of their place within the collective unconscious and why it is important to reconcile the two as a unit that coexist, one within the other, rather than being separate psychological entities. This information was an excellent starting point that allowed the project to effectively find its aim in relation to it by informing it on the structure of the archetypes conceptually. This information is then reinforced and expanded upon within the sections "Psychological Aspects of the Mother Archetype" (Jung, 1991), "Concerning Rebirth" (Jung, 1991), "The Psychology of the Child Archetype" (Jung, 1991) and finally "On the Psychology of the Trickster-Figure" (Jung, 1991). Each of these sections respectively takes a detailed look into an archetype and analyses it through looking at various examples of it appearing in myths and folk tales, as well as Jung's own experience reconciling this archetype within the patients of his during his time working as a psychiatrist. Through these sections a greater understanding of the archetypes was gained that allowed for the analysis of the three stories that made up a large portion of the research for this project.

The second subject of this book, the "Collective Unconscious" (Jung, 1991) is less integral to the project than the previously described one. It Details the structure of the unconscious within the psyche that is persistent across culture and that underpins all unconscious human experience. It provided useful insights that complimented the theory of "Archetypes" (Jung, 1991).

"The Origin of Consciousness in the Break Down of the Bicameral Mind" (Jaynes, 1976)

The second book that informed the project was "The Origin of Consciousness in the Break Down of the Bicameral Mind" (Jaynes, 1976). This book was a follow up to the research itself. The research showed some changing trends in the use and application of the Jungian theory of "Archetypes" (Jung, 1991), and the theory of the "Bicameral Mind" and its origins put forth by Jaynes, suggests a reasonable explanation that could reconcile the change in storytelling and narrative structures over the last four centuries.

Jaynes' theory puts the development of language at the forefront of the emergent property of consciousness. According to him as humans developed, the right temporal lobe began to contextualise the things that are experienced around them, for example a large storm approaching, that that could not fully understand or interpret. It then passed that information to the left temporal lobe through the corpus callosum to be experienced by the person often as an auditory hallucination, which people interpreted as the gods talking to them. The important part of this is that it was communicated through narrative. This explains why the oldest stories are those of gods deities interacting with the world, because according to Jaynes, that is exactly what the people were experiencing. As language developed and societies became more interpersonal the fundamental common themes seen throughout these stories altered in order to better accommodate the change. It is here that the archetypes potentially have their origins, which were embedded in the psyche and over the last 4,000 years influenced the ways in which people tell and interact with stories. It could be argued that modern narratives are less archetypally representative than their counterparts from the last four centuries, as is suggested through the analysis of "The Epic of Gilgamesh" (Sin-Leqi-Unninni, 600 b.c.), "Cupid and Psyche" (Madaurensis, 200 a.d.), and finally "Bioshock" (2K Boston, 2K Australia, 2007 a.d.). This however does not to take away from their utility. Rather it is more of a comment on the changing state of the human psyche within modern culture than it is of their function or validity as psychological phenomena.

"The Origin of Consciousness in the Break Down of the Bicameral Mind" (Jaynes, 1976) aided in the understanding of the theory of "Archetypes" in the context of the changing nature of narratives and gave the project a solid grasp of the intended nature of the artefact that would be developed.

"Rules of Play" (Katie Salen, 2003)

The third book to be covered is "Rules of Play" (Katie Salen, 2003). The book covers a very wide range of topics related to the subject of game design. The most important areas being the ones where the authors talk about games as narratives. These sections informed the project through their useful insights into the unique relationship between a story and the act of play within a game. It states that games are "Formed by rules and experienced through play" (Katie Salen, 2003), the versatility of the definition of a games "rules" (Katie Salen, 2003) allowing them to mould effectively to various types of narratives. This works for both

broad and different methods of understanding narrative components of games. Firstly, the act of players experiencing narratives as set stories simply told interactively, the example in the book being: “the characters Jak and Daxter are saving the world”. The second being the engagement with a narrative through the emergent properties that players are given as tools to experiment with in game. The example that is given is: “Jak and Daxter’s story arises through the play of the game”.

While it is true that these are not necessarily related to the content of a story itself, it does allow for the understanding of the processes involved with contextualising themes, archetypes and motifs into a game narrative effectively such that it complements the gameplay rather than hindering. Ignoring this causes one of two issues. The first is that the narrative is metaphorically forced into submission by gameplay causing the ludo narrative dissonance where these two aspects of the game are not complimenting each other but pushing against themselves to satisfy two different goals without the correct reconciliation of the two subjects. Two subjects which are structurally two sides of the same coin that is game design.

Technical decisions

When it comes to the technical choices involved with the development of the software artefact, the two main decisions to be made were that of the game engine and the programming language used for development.

The two main choices of game engine were Unity and Unreal Engine, and within these two choices the question of programming language is also relevant. Both game engines are versatile, however unity uses the C# programming language, whereas Unreal Engine uses C++ in combination with their own proprietary node-based graphical user interface for visual scripting, called “blueprints”.

The engine of choice for this project was the unity game engine. This is for three main reasons.

Firstly, it is an engine of which has very detailed documentation and API resources available for free on their website. It gives clear examples of different ways in which to use their codebase. It also offers a wide variety of useful libraries, with functionality that range from GUI systems to AI systems. While the documentation for the unreal engine is not necessarily bad, it does not hold up to the detailed nature of unities.

The second reason is related to the programming languages that the two engines utilize. While the node-based system of Unreal Engine is easier to pick up and more visually understandable than a C# script in a lot of cases, it nevertheless would require more studying of the system to use it than C# would. This is because C# is a language that has been used

consistently throughout this course, however no research has been done on the Unreal Engines system, or the C++ language in general until the last academic year. Thus, if it were to be used there would be additional time required to study it to a fluent level. This would put pressure on the projects timescale and potentially cause delay to the development of the software artefact.

The third and final reason for using the Unity Engine is that it has far more support throughout the university. It is the engine that the university has focussed many of its modules around and many of the lecturers are proficient in its use. This means that if guidance were to be required then they would be more well equipped to do so.

Methodology (Approx. 850 Words):

The structure of the project is being determined by the agile approach that is being taken. This approach will allow for the use of an iterative framework in that facilitates defined sprints followed by progress review. The progress review involves checking the code and functionality of the systems against specific requirements defined before the sprint. Then with this information a decision is to be made whether the work done is satisfactory or requires further improvements or potentially reimplementation.

This system entails a quick implementation and review process that allows for the fast passing of ideas throughout the project. This would occur when a particular sprint was completed not up to a standard that fits the criteria set out prior to its commencement.

As this is a solo project there will be no capacity for traditional scrum meetings to reflect on various aspects of the project being developed simultaneously, meaning systems must be developed in a coherent order as of the ways they interact and rely on each other heavily in some cases. To account for this, meetings with a supervisor are stand-in replacements that serve a similar function to scrum meetings or stand ups.

While this is a drawback, it is necessary as the benefit of being too quickly implement new changes to systems that are deemed unfit for purpose gives so much flexibility in the development cycle of the project.

The sprints in question are related to the specific system designs respectively and are as follows:

1. The player movement system. This entails the development of code that gives the user a way to move the character around the world environment, further developments on this to broaden the interactivity come with the next sprint.

2. The player-world interaction system. This is a development on the first sprint that adds the functionality of cause and effect between the player and their environment to the game. Specifically, aspects in the vein of collisions, destructible objects, interactive level items and any other aspects of gameplay that would transpire between the player and the game world.

3. The player combat system. This final player focussed sprint entails the development of the combat system that allows the user to directly attack enemies in the environment and use various weapons / abilities. This includes adding effects, hitboxes, collision detection and animations.

4. The enemy-world interaction system. A system such as this is a more predictable sprint as a lot of the functionality for it can be taken from the player-world interaction system due to the very similar ways in which they both work.

5. The enemy combat system. While similarly to the last sprint, this does have a player driven counterpart, it is less predictable as the specifics are much more dependent on the entity in question (in this case it is the enemy entity). Thus, the sprint treads more new ground than the previous one.

6. The enemy AI system. This final system brings AI functionality to the previous two sprints and acts functions to give the enemy entity instructions that allow it to interact with the world independent from direct developer control.

The software used for this project will entail three main applications. Their appropriate use cases and specifics are as follows:

1. Unity. This is the game engine of choice for this project. It has extensive API documentation, as well as plenty of forum support online that can aid in problem solving during development. On top of this it is the engine that the developer has the most experience with, lessening any additional time needed to learn the software's nuances.

2. Visual Studio. This text editor will be used the writing of code within the project's development cycle. It has a myriad of industry leading features, appropriate to its use case, as well as plenty of supporting information online to aid in any potential problems that may be encountered throughout development.

3. Blender. This is a piece of software that will be used for any modelling, sculpting, animating or rigging tasks that need to be completed throughout the development cycle of this project. It has a very user-friendly UI and is relatively simple in functionality so the learning process is smoother and takes less time away from more important aspects of this project.

The hardware used for the development of this project will be for the most part limited to a single computer. This machine has the necessary specifications to run the software that has been defined effectively, with some extra performance room to make the process smoother. This computer's storage houses the primary set of data and files relating to this project. A secondary backup that is consistently updated is located on a cloud network maintained by a separate organization. This will be retrieved and used if anything happens to the main files on the computer that the bulk of the work is being done on.

Requirements (Approx. 850 Words):

The methodologies of the primary data gathering will take the form of focus groups, as well as unstructured interviews.

For a focus group, a set number of people will be given the artefact, a prototype of a game, and play through a short gameplay section. The vertical slice in question equates to five to 10 minutes of gameplay. This gameplay section involves the design aspects discussed in the next section of this document. They are asked to bear in mind a few questions or considerations in relation to the prototype such that they all have a base line of information to bring to the focus group. The focus group is held when all participants have either completed the gameplay section or spent 15 minutes attempting to complete it. Within the focus group a few areas are encouraged to be discussed. For example, did you manage to complete it in the time given? If so, how long did that take? Did that time feel appropriate for the encounter? Did the participants feel any more or less connection to the narrative based on the gameplay links between the player and enemy entities? Would the game have been more fun if it were stripped of its narrative elements? Did they feel any connection to the player characters experience as a person? Participants are all given their due time to speak and discuss their thoughts and feelings on the material covered. This session is then audio recorded with the participants permission and reviewed later for common threads and opinions.

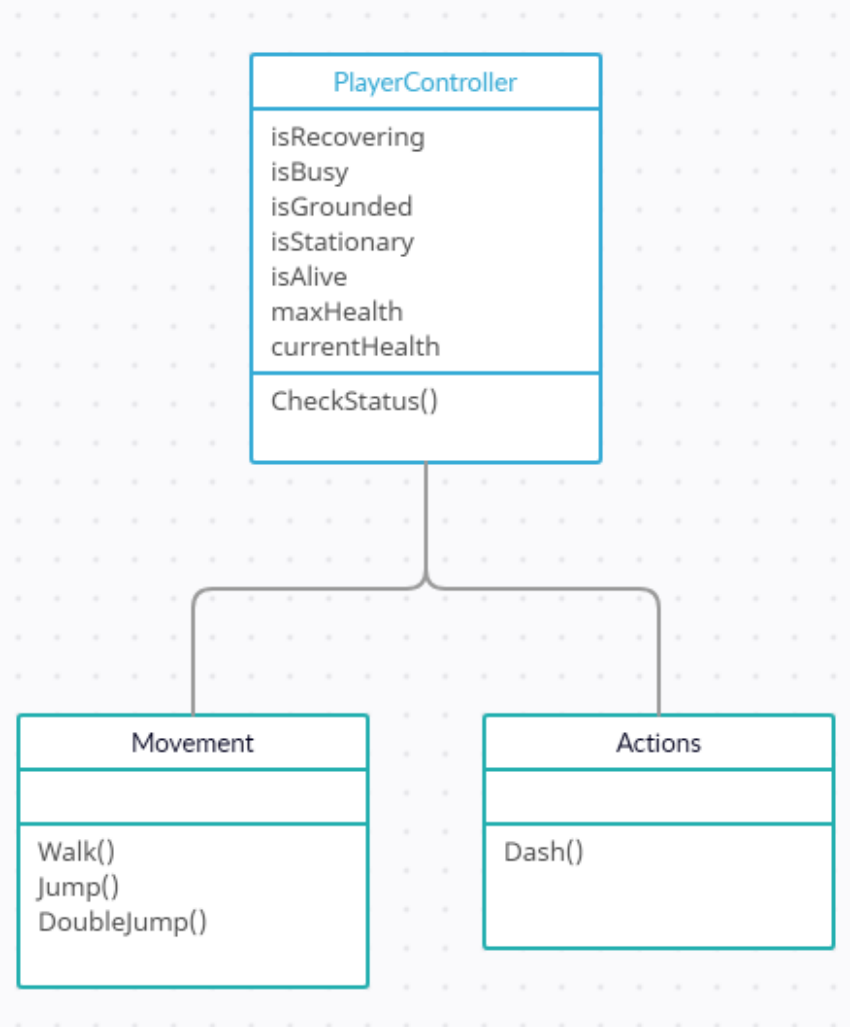
Next, each of the participants are asked to take part in an unstructured interview. This allows for specific questions to be asked if they need to be addressed. On top of this it gives participants the opportunity to say things and make comments on the prototype and its contents that they may not have felt comfortable saying around multiple people in the focus group. This is also recorded and reviewed later.

Once both stages of data collection have been completed, the recordings are analysed, noting reoccurring ideas and opinions shared by multiple people, as well as noting particularly useful comments made by the participants irrespective of their commonality in the context of the wider group.

The participants may find that the experience was not only satisfactory but that the ludo-narrative synergy was meaningful. If that was the case then it would suggest not only that such areas are an important area of game design that shapes the player experience in an impactful way, but that also the adoption of Jungian archetypes can have a positive impact on the reception of a narrative. While such a hypothesis is incredibly difficult to prove, due to the subject’s unconscious nature, such results can suggest a link between the two, which could be followed up and built upon in future research studies.

Design (Approx. 1500 Words):

Player Movement System



The player movement system is responsible for handling all actions the player takes that moves the character a substantial amount.

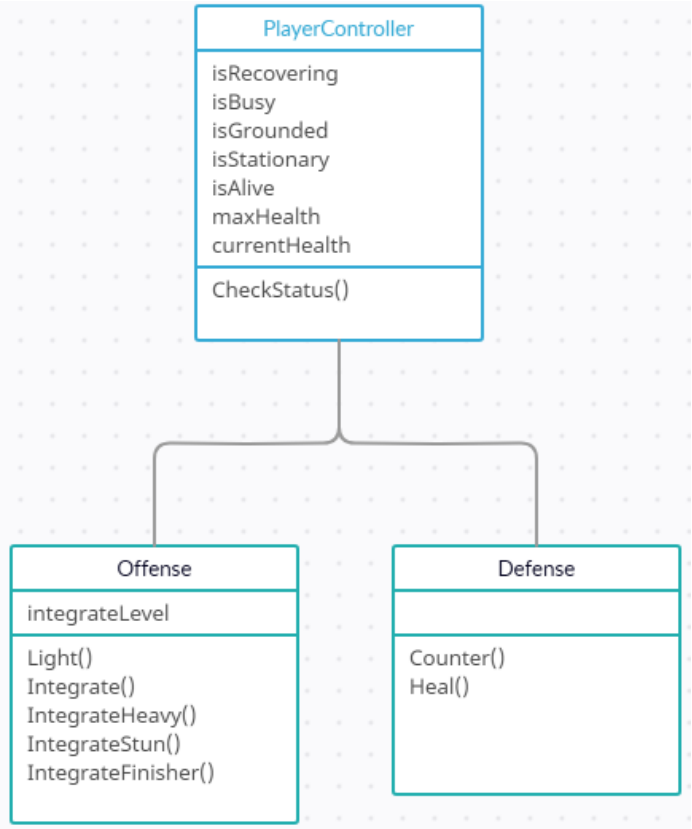
The following functions are from the Movement class which handles player movement that does not cause the player to go into recovery after the it.

The Walk() function is used to move the player character around the game world at a set speed using the WASD keys and is the primary form of movement. It is reliant on the isRecovering and isBusy variables to return false in order to function.

The Jump() function initiates a jumping animation where the player is moves up vertically into the air and is reliant on the isRecovering and isBusy variables to return false in order to function. Similarly, to this the DoubleJump() function allows the player to jump a second time while mid-air and is also reliant on the false returns of the isRecovering and isBusy bools. The last two of these are used mostly by the player for positioning and evading enemy movements and attacks.

The Actions class is responsible for movement that counts as an action and thus causes the player to go into a recovery state for a short time after the action is completed. The only function in this class is the Dash() function. This moves the player forward in a direction according to their current vector, additionally it gives the player invulnerability for a fraction of a second during the action allowing them to dodge incoming attacks with it. It is reliant on the isRecovering and isBusy bools.

Player Combat System



The player combat system is split into offense and defence classes that are responsible for each style of combat action respectively.

The offense functions are as follows. The Light() function is a fast attack that the player has at the start of the encounter and does a small amount of damage.

The IntegrateHeavy() function does a slower and heavier hitting attack in front of the player and has a higher damage per second potential with the cost of leaving you vulnerable more.

IntegrateStun() Allows the player to temporarily stun the enemy when the attack is performed while directly behind the enemy, rewarding fast precise positioning synched to enemy attacks.

The IntegrateFinisher() function allows the player to deal massive damage the enemy when they are below a health threshold as a finisher, if they are not under the threshold the attack instead heals the enemy, rewarding the player for taking risk when guessing the enemy health level but also punishing by healing the enemy when the player guesses wrong.

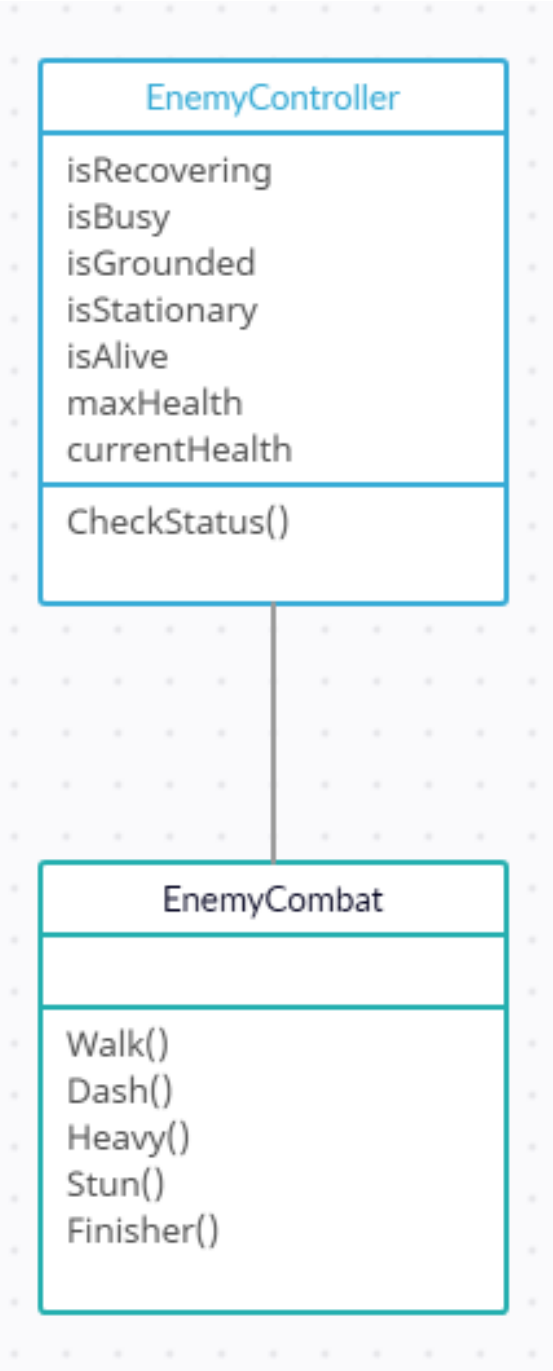
The “Integrate” attacks are only gained access to by the player through the Integrate() function which allows the player to sap energy from the opponent, the more they use this, the more the integrateLevel variable increases, which unlocks abilities at certain thresholds, unlocking more nuanced attack combos as the fight progresses. All these are reliant on the false returns of the isRecovering an isBusy variables.

The first defensive function is Counter() which stuns the enemy for a short period if the player times the attack just before they get hit, rewarding fast reaction times.

The Heal() function slows the players movement speed down drastically but heals them for small amounts of health each tick. Both rely on the same two bools as the offensive functions.

All the functions in the Offense and Defence classes cause the player to go into the recovery state.

Enemy Combat System



The enemy combat system works in a very similar way toe the player combat system in that I relies on defined attacks and actions within respective functions, some of which cause the entity to go into a recovery state and some of which do not.

The Walk() function is identical to the players Walk() function ad moves the entity around at a set speed through the environment, not causing a recovery state upon the entity.

The Dash() function acts the same as the player's Dash() function too. Moving the entity quicky forwards in the direction of its current vector and making it immune to hits for a short period of time.

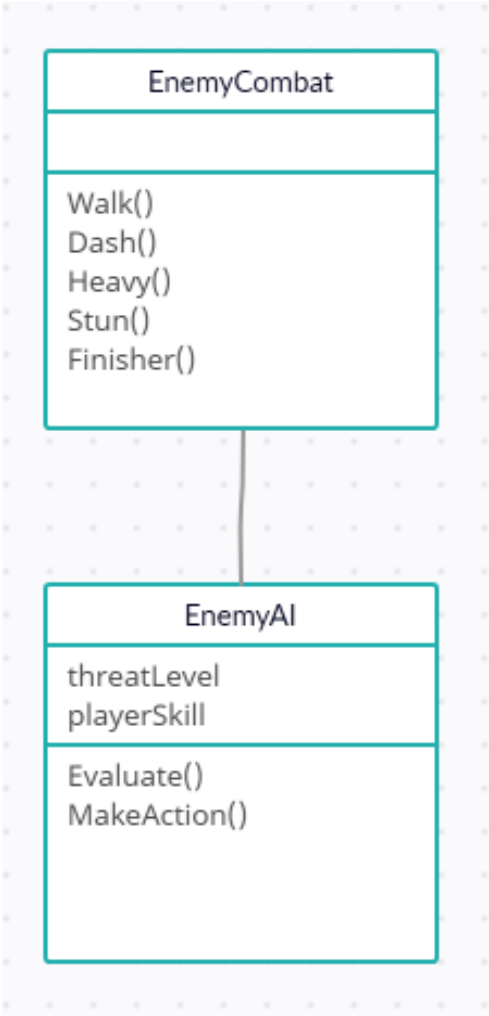
The Heavy() function is a slow heavy hitting attack in the same style and use as the players heavy attack, doing large damage but leaving the entity open for interruption.

The Stun() function is an attack that has the same stunning affect as the player variant but does not need to be hit from behind due to the restrictions of the enemy AI system being able to navigate in such a way, to compensate it is slower and able to be countered by the player, instead stunning the enemy when done successfully.

The Finisher() function is an attack that functions differently to its player variant again due to the constrains of the enemy AI system having to realistically "guess" the players health. Instead, it is guaranteed to be attempted by the enemy when the player reaches low enough health but when countered does the full damage on to the enemy regardless of their health level, balancing its inability to hit the player before the player is below the threshold.

All above actions are reliant on the false return of the isRecovering and isBusy variables however the Walk() function is the only one that does not cause the entity to enter the recovery state.

Enemy AI System



The enemy AI system is based off the GOAP (Goal Oriented Action Planning) AI model in which the entity can make relevant and appropriate actions from a defined set of instructions without relying on a complex finite state machine.

While the specifics of the model are not yet defined, the functions that make it work are.

These functions exist within the EnemyAI class and are as follows.

Evaluate() is a function that initiates a set of instructions for the entity to check its surroundings and environment and initiates the action selection from the tree where it works its way through the hierarchy and selects the appropriate action for the AI agent to take.

The MakeAction() function is called when the Evaluate() function finishes, causing the AI agent to take an action defined by the Evaluate() function through the inherited functions within the Enemy Combat class.

Once the AI entity has followed through with and completed their task, the Evaluate() method is called again and the cycle continues. Resulting in a continuous state of evaluation, decisions and action implemented using the defined methods in the EnemyCombat class which makes up the complex behaviour of the AI system that controls the enemy the player fights against.

The threatLevel variable is a value that is increased or decreased based on the current surroundings and situation that the entity is in regarding its health as well as the players health. This value represents the current threat faced to the enemy and impacts the decisions made in the GOAP tree.

Similarly, the playerSkill variable is a value that also affects this tree but is instead calculated through both the hit percentage of the player as well as its counter success rate and represents the current level of skill the player is showing. This value can also be used to dynamically adjust the difficulty of the encounter in real time by speeding up or slowing down the attacks of the enemy AI in accordance to how well the player is doing, keeping the encounter balanced on the edge of becoming chaotic but keeping it just within the players skill to potentially win.

Enemy Design

The design of the mechanics that go along with the enemy are done in such a way as to address the aim of the project. The archetype known as the “Shadow” which represents all within the human psyche that has been repressed consciously or otherwise has been used as the inspiration for this enemy and its mechanics.

In Jungian psychology the act of individuation involves the integration of the shadow. This involves consciously unearthing the repressed parts of one’s personality and embracing them into the self. This idea is recreated through the “Integrated” attacks which are useful tools in battling the enemy.

The only way to gain access to them is through the “Integrate” action which saps the enemy shadow of that which it is made up of giving you its unique powers and integrating that which was the enemy into your conscious arsenal of tools.

This serves two functions. The first is that it represents an archetype in an interactive form, moving it forward into a context outside of just primordial images, a context in which the archetype is a being that is once must actively pursue, a narrative element that embraces archetypal expression through the individual’s actions in relation to the primordial image. The second is that it bridges the gap between narrative aspects of the game, and its gameplay mechanics.

The function addresses the ludo narrative dissonance that has been discussed within this project already. The aspects and themes of the integration of the shadow have been woven into the gameplay itself. Instead of playing a character that defeats an enemy and in turn successfully integrates narratively after the fact, the player feels their direct actions contributing to this narrative element on a moment-to-moment basis. The player is no longer a passive viewer of the story that interacts with a sandbox between narrative developments, but actively pushes the narrative pieces together themselves through the gameplay with tools designed specifically to server said purpose.

Development (Approx. 1500 Words):

YOUR TEXT HERE

Testing (Approx. 850 Words):

YOUR TEXT HERE

Implementation (Approx. 850 Words):

YOUR TEXT HERE

Conclusions (Approx. 300 Words):

YOUR TEXT HERE

Recommendations for Further Work (Approx. 200 Words):

YOUR TEXT HERE

Software Artefact Download

YOUR TEXT HERE

Glossary (Unlimited Words):

Archetypes – Archetypes are universal models of concepts that are representations of thought patterns and lived experience of humanity present in the unconscious mind.

Archetypal Images – A conscious representation of archetypes, commonly in the form of images and ideas.

Consciousness – The state of being in which one is aware of one's existence and surroundings.

Collective Unconscious – The part of the mind whose contents are derived from past human experience.

Personal Unconscious – The part of the mind whose contents are derived from personal experience.

Individuation – The process of self-realisation, commonly through the process of the personal and collective unconscious being elevated into consciousness.

Bicameral mind – A theoretical model of the human mind in which one hemisphere of the brain is "speaking" and one is "listening".

Default Mode Network – A system of connected areas of the brain that show increased activity when not focusing on the outside world, and decreased activity when they are.

Tabula Rasa Theory – A theory of epistemology that states people are not born with pre-imprinted ideas, concepts or mental content, and that all psychic contents are derived from experience and perception.

The Self – The totality of the psychic happenings of an individual.

The Shadow – The repressed contents of the psyche.

The Anima – The unconscious feminine side of a man.

The Animus – The unconscious masculine side of a woman.

The Persona – The proverbial "mask" that an individual wears socially to both imprint a certain impression on others, as well as to conceal some nature of the individual (Jung, 1991).

Ludo narrative dissonance – The conflict between a video games narrative, and its gameplay elements.

Corpus callosum – A bundle of nerve fibres that connects, and is responsible for the communication between, the left and right hemispheres of the human brain.

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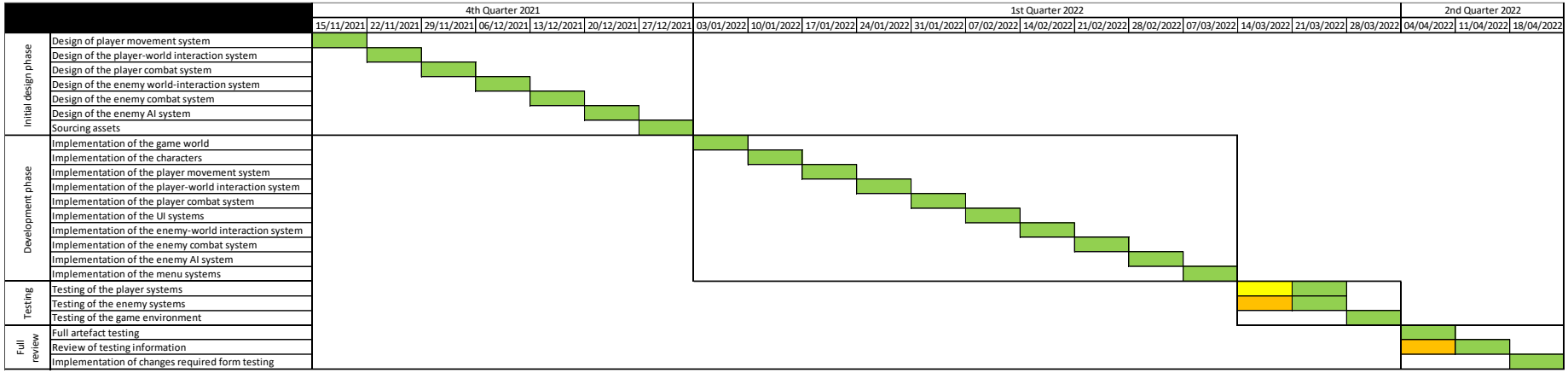
Appendix A: Project Plan (Unlimited Words):



Quantity of work being done on a given task	Colour
Some work / progress	
Most of the work / progress	
All of the work / progress (Or the remaining work)	

Appendix B: Ethics Checklist (Unlimited Words):

A checklist should be completed for every research project. This is used to identify whether a full application for ethics approval needs to be submitted to the University Ethics Panel or one of its sub-committees. Further guidance can be found on the Ethics Blackboard shell.

1 Applicant details	
Name of Lead Researcher (applicant):	Owen Perry

2 Project details
Project title: How has the application of the Jungian theory of Archetypes on narratives changed over the last 4,000 years into modern interactive narratives, and what does it mean for game design?
Please provide a brief description of the project: The project will aiming to gain insights on the changing nature of narratives and its effect on game design in relation to lugo-narrative dissonance.

3 Research checklist Please answer each question by checking the appropriate box:			
Research that may need to be reviewed by an NHS Research Ethics Committee or another external Ethics Committee		YES	NO
1	Will the study involve recruitment of patients or staff through the NHS or Social Care, or the use of NHS data or premises and/or equipment?	☐	☒
2	Does the study involve participants age 16 or over who are unable to give informed consent (e.g. people with learning disabilities: see Mental Capacity Act 2005)? NHS	☐	☒
3	Will tissue samples (including blood) be obtained from participants?	☐	☒
If you have answered 'Yes' to questions 1, 2 or 3 please refer to http://www.hra.nhs.uk/ for guidance. If external ethical approval is not needed, University ethical approval will still be required.			
Research participants		YES	NO
4	Does the study involve students within the University?	☐	☒
5	Does the study involve employees of the University?	☐	☒
6	Does the research involve potentially vulnerable groups: children, those with cognitive impairment, or those in unequal relationships? (eg your own students)	☐	☒

7	Does the research involve members of the public or people worked with in a professional capacity?	☐	☒
8	Will the study require the co-operation of a 'gatekeeper' for initial access to the groups or individuals to be recruited and/or to give permission for initial contact? (e.g. children, students, members of self-help group, residents of nursing home, employees).	☐	☒
Research methods		YES	NO
9	Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people in non-public places)	☐	☒
10	Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?	☐	☒
11	Will the study involve discussion of sensitive topics or illegal activity (e.g. sexual activity, drug use)?	☐	☒
12	Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	☐	☒
13	Is physical pain or more than mild discomfort likely to result from the study?	☐	☒
14	Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?	☐	☒
15	Will the study involve prolonged or repetitive testing?	☐	☒
16	Is there a possibility that the safety of the researcher may be in question?	☐	☒
17	Will any of the research take place outside the UK (excluding on-line surveys)?	☐	☒
Data and confidentiality			
18	Will the research involve administrative or secure data that requires permission from the appropriate authorities before use?	☐	☒
19	Will the research involve visual/vocal methods where respondents may be identified?	☐	☒
20	Will research involve the sharing of data or confidential information beyond the initial consent given?	☐	☒
21	Will the research involve security-sensitive data? (eg commissioned by the military or under an EU security call; involve the acquisition of security clearances; concerns terrorist or extremist groups).	☐	☒

If any item is checked “YES” you will need to seek advice from your supervisor / course leader regarding the appropriate sub-committee for ethical approval.

4. Declarations

I have read and will abide by the University’s *Ethics Policy*.

I have read and will abide by the University’s *Code Research Practice*.

I am aware of, and will abide by the ethical guidelines published by the relevant subject and/or professional associations most appropriate to my topic.

The responses given above are an accurate and true reflection of the nature of my research project.

Applicant:

Name (please print): Owen Perry
Signed: Owen Perry
Date: 8th November 2021

Project supervisor / Line manager

I confirm that the above details are accurate, the proposed methods are appropriate, ethical concerns have been considered and that time and resources are available for the research to take place.

Name (please print):
Signed:
Date:

Note: Electronic approval by above signatories is acceptable

Appendix C: Participant Consent Form (Unlimited Words):

BUCKINGHAMSHIRE NEW UNIVERSITY
EST. 1891

Notes

1. Black text forms the standard content of a consent form
2. **[**Insert specific information in the highlighted square brackets**]**
3. Text notes in the grey boxes provide guidance only and are to be removed in the final consent form

Informed Consent for [name of study]

Please tick the appropriate boxes

1. Taking part in the study

I have read and understood the study information dated **[**DD/MM/YYYY**]**, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction. ☐

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason. I can withdraw my data up until [DD/MM/YYYY] which is the final date before data is analysed. ☐

I understand that taking part in the study involves **[**……**]**. ☐

Describe in a few words how information is captured, using the same terms as you used in the information sheet, for example: an audio-recorded interview, a video-recorded focus group, a survey questionnaire completed, an experiment, etc.].

For interviews, focus groups and observations, specify how the information is recorded (audio, video, written notes).

If there is a potential risk of participating in the study, then provide an additional statement:
I understand that taking part in the study has [……] as potential risk. ☐

2. COVID-19 safety

I confirm that I have not had any of the following symptoms in the last 14 days: fever, dry, persistent cough or a loss of sense of taste or smell. ☐

I confirm that I am not in the clinically extremely vulnerable category and therefore advised to shield at home by the government. ☐

I confirm that to the best of my knowledge, I have not been in close contact with anyone with confirmed COVID-19 in the last 14 days. ☐

I confirm I am aware of the requirement for social distancing whenever possible, hand decontamination, and use of face-covering during the research and that the researcher may also use further PPE. ☐

I confirm I have been told about the cleaning of the venue and equipment before/after my attendance. ☐

It has been confirmed by the researcher that they have not shown any of the above-named symptoms of COVID-19 nor, to the best of their knowledge, been in close contact with anyone with confirmed COVID-19 in the last 14 days. ☐

3. Use of the information in the study

I understand that information I provide will be used for **[**……**]**. ☐

List the planned outputs, e.g. reports, publications, website, video channel etc., using the same terms as you used in the study information sheet.

I understand that personal information collected about me that can identify me, such as my name or where I live, will not be shared beyond the study team. ☐

I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with current UK Data Protection legislation. ☐

If you want to use quotes in research outputs, add: I agree that my information can be quoted in research outputs. ☐

If you want to use named quotes, add: I agree that my real name can be used for quotes. ☐

If written information is provided by the participant (e.g. diary), add: I agree to joint copyright of the [specify the data] to [name of researcher]. ☐

4. Future use and reuse of the information by others

I give permission for the [specify the data] that I provide to be used for future research and learning. ☐

Specify in which form the data will be stored, e.g. de-identified (anonymised) transcripts, audio recording, survey database, etc.. If needed, repeat the statement for each form of data you plan to store. Specify whether stored data will be de-identified (anonymised), and how. Make sure to describe this in detail in the

5. Signatures

Name of participant [IN CAPITALS] Signature Date

For participants unable to sign their name, mark the box instead of signing ☐

I have witnessed the accurate reading of the consent form with the potential participant and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness [IN CAPITALS] Signature Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Name of researcher [IN CAPITALS] Signature Date

6. Study contact details for further information

[Name, phone number, email address]

One copy to be kept by the participant, one to be kept by the researcher

Other Appendixes (D, E, F etc. as required) (Unlimited Words):