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Identification of Requirements

Our group project follows the theme of procedurally generated creatures; the player must be able to control a species, nurture and raise them. This could include things like changing their skills and abilities depending on how the player looks after the creature. This would mean that the project we create should be built on code and software that could morph appropriately, as well as give suitable interaction with the user. Most programming languages at the moment support procedurally written code, so being able to create randomly generated creatures is achievable, and would only be as complex as we code it.

The creatures in the game, human or AI controlled must be procedurally generated using a genetic code. From this we know that our player must be able to change what their creature can do, or how it acts, depending on what they do with it. Similarly the AI controlled creatures should also be able to change their own behaviour, and appearance depending on their environment, and how they react within it. To do this will require each AI creature to have the smarts to get around the area it is in, and how it changes depending on that, this could be a tricky one to code, due to the player having no real input on how they live. The AI would also have to provide some challenge to the player otherwise the actual game play would provide no challenge to the user.

In the game there should be a mechanism that genetically generates unique and new species that can inherit features of others. This will eventually create different creatures through game play, and/or AI interaction. This also means that whenever the game is picked up, or replayed the outcome will almost always be different. The genetic representation should be sophisticated enough to support a large variation of creatures, this could be done by assigning attributes such as strength and defence or health and attack, etc. The random outcome of the game could be coded in a variety of ways, for example random number generators, could power the AI and their interaction with other AI.

The brief also requires a natural selection mechanism so that there is some sort of competition between creatures, this could be for food, or just a fight for survival/dominance. The stronger creatures should be able to pro create and become a more dominant species, whereas inferior creatures or creatures that are to slow to develop will eventually be picked off by superior, eventually becoming extinct. In code this could be done by using collision of the creatures, once two collide the code should be able to distinguish what will happen depending on the situation, the AI will more than likely be the most complex part of the project all together, but will also be the defining feature of the game which fits most of the requirements.

The game should also have a suitable UI, which will relay information to the user so that they can play the game effectively. Most game engines feature a HUD which is easy to implement, and if the software doesn't they are usually easy to find or implement. The main issues we could face with a HUD is laying out information in a way that easy to understand and provides the information necessary to progress.  
 The final artefact must feature all of the features mentioned previously to suit the clients requirements. The main issues the requirements creates is the way we implement AI, and how the players own creature will grow and develop, but procedurally generated code is easily achievable now a days with modern programming languages. AI can be coded as complex as we make it so this should also be possible for us to overcome any problems we face when creating it.

**Milestones**

* **Prototype of First Stage**

**Gant Chart (Individual Requirements)**