Programming Principles for 2D/3D Animation (PROGPAN)
Coursework - Assessment Artefact 2

School of Creative Technologies
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1. Instructions

This is an individual coursework assignment worth 60% of the unit mark. This coursework should be handed in to the Admin Office (Eldon Building) no later than **Friday 22 May 2009**. No submissions will be accepted via email. You should submit your documentation in hardcopy and on a CD. All files pertaining to the artefact should also be included on the CD, and you should label it by using your surname and initial(s).

2. Artefact

For the specification given in the appendix, do an object-oriented design in UML notation and then implement your design using an object-oriented programming language.

Requirements:

a) You should employ well-documented and presented class and state diagrams.
- class diagrams (5%)
- state diagrams (5%)
- documentation / presentation (5%)

b) Implement part of your design in an object-oriented programming language. You do not need to implement the full specification to get a high mark. It is sufficient to show that you are able to relate your UML design to the programming language and that you would be able to implement the entire design if more time was available.

- code listing and documentation (10%)
- object-oriented coding (10%)
- code functionality (10%)
- testing (5%)
- animation (10%)

c) You should include a critical evaluation (no more than 3000 words) of your design and implementation from an object-oriented perspective and discuss the procedures that worked well and the procedures that were ineffective. Conclude with a list of recommendations for effective future development of similar artefacts.

(40%)

Appendix: Game Specification

The planet WtrWrld is submersed under water. There are three life forms - Algons, Zoons and Superzoons.

Algons are small static life forms. They are very common. Although they don't move, they do replicate - at regular intervals they explode into two, and the four new algons are randomly placed round the original. The rate of replication depends on the amount of nutrients in the environment. Algons don't die.

Zoons and Superzoons consist of a head and a body. The body gets longer as they eat. Their speed depends on the viscosity of the environment. They will die if a certain time has elapsed without them eating.

Zoons eat algons when their head moves over the algon. They move around the environment quite slowly. They sense algons when they get close (how close depends on light conditions) and reorient towards them. When they reach a certain size, they split into two with the two new zoons moving in opposite directions.

Superzoons only eat zoons, and this happens when their head moves over the zoons head. They are similar to Zoons in every other way, but are faster and are rare - in fact, there is only one at the start of the game.

The player is the Planetary Ecologist and is able to:

- ***plant algons in the environment by clicking on the environment***
- ***go harpooning - that is, move a harpoon round the environment, and 'shoot' a zoon or superzoon.***
- ***control the light level, the viscosity and the amount of nutrients in the environment.***

The player wins if they can achieve a stable environment with the three populations reaching equilibrium.