

Module Name: Advanced Windows Game Programming

Module Number: CE00391-6

Title of Assignment: Development of Windows game software

**Module Learning Outcomes for This Assignment**

1. CRITICALLY EVALUATE OPTIONS, AND SELECT APPROPRIATE TECHNIQUES FOR THE COLLABORATIVE DEVELOPMENT OF A WINDOWS-BASED COMPUTER GAME.	Enquiry Problem Solving
2. CRITICALLY APPRAISE THE PERFORMANCE OF WINDOWS-BASED COMPUTER GAMES.	Enquiry
3. SYSTEMATICALLY UNDERSTAND AND EXPLAIN MODERN GAME DEVELOPMENT CONCEPTS AND TECHNIQUES.	Knowledge & Understanding
4. APPLY OR EXTEND KNOWLEDGE LEADING TO THE COLLABORATIVE IMPLEMENTATION OF WINDOWS-BASED COMPUTER GAME SOFTWARE.	Application

Hand in deadlines: 10/01/2012 (Group Report + Artefact)

Demonstration: Arranged via Tutor for week commencing 11/01/2011.

**Assignment description**

See the attached document.

**Assessment criteria**

See the attached document.

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## **Advanced Windows Game Programming CE00391-6**

### **Assignment**

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#### **Specification**

The assignment consists of three components that you will complete in groups of three:

- Game Engine
- Group Report
- Demonstration

#### **Game Engine**

Develop a game engine that implements at least three distinct components. Components may include, but not limited to:

- Graphics
- Input
- Sound
- Physics
- AI
- Resource Management

This game engine will be used to develop three game prototypes of different genres. The computer game prototypes will be used as a vehicle to demonstrate the versatility of the game engine. Groups may create any game type they wish, including but not limited to Role Playing Games, Motor sport racing, simulation, first person shooter or platform. It is your responsibility to ensure that your prototype runs on your chosen target execution platform. Should your execution platform be unavailable in the Faculty of Computing, Engineering and Technology, it will be your responsibility to provide one for the demonstration. You will be expected to produce a set of videos showcasing your game demos as part of the demonstration assessment.

#### **Group Report**

A written report, in hard-copy form, will be submitted, together with a disk that must contain a soft-copy of the report and the source and executable of your game engine and prototypes. The report should be no more than 6000 words including appropriate diagrams. The report must include the following:

- An introduction
- Component design – include diagrams (E.g. UML diagrams) of your components and the design choices/patterns utilised
- Testing Plan – describe and document the testing process undertaken to ensure quality of coding, including details of any unit, integration and/or regression testing undertaken.
- A critical evaluation of the engine produced in comparison to the design – you should discuss critical issues related to the implementation, performance bottle necks and limitations.
- Explain how the project was managed from design to implementation, including the division of work amongst the group.
- A brief overview of how the engine was utilised for each game prototype.

## Code Use

You may re-use any of the code that you developed in the tutorials. Your report must clearly identify which parts of the software were developed by the group and the source of any code developed by others must be acknowledged. Unacknowledged borrowing or sharing of code (which implements any item specified in the marking scheme) is not allowed. The course work which you submit for assessment must comply with University regulations on plagiarism.

## Marking scheme

The objectives of this assignment are:

- To demonstrate a solid understanding of Windows game programming concepts and collaborative software engineering techniques.
- To show evidence of applying the above concepts and techniques in the development of a computer game engine, demonstrated via game prototypes and portfolio videos.
- To demonstrate the ability to critically appraise and evaluate software patterns, designs and techniques used in team based software development.

The assessment will focus on the technical merit of your implementation, and on the technical content of your report. The assessment of the technical merit of your implementation will gauge: (i) your ability to select appropriate design patterns and techniques, (ii) the overall level of challenge in implementing the game engine and its components, (iii) software functionality, technical quality and optimisation. The assessment of the content of the report will judge the accuracy and completeness of your descriptions, and the incisiveness of your appraisal of functionality and performance of your implementation and group management. The assessment will be based on a demonstration and a written report. You **must** demonstrate your work to receive a grade. You will be expected to clearly show, in the demonstration and in the report, that you understand the techniques that underlie your implementation. Implementation without understanding will result in a fail grade for the assignment. The marks allocated to each component of your assignment are shown in the following table.

Assessment module		Allocation of marks
<b>Technical merit of implementation (40)</b>	Selection of patterns and techniques	(10)
	Software functionality and technical quality	(20)
	Testing & Optimisation	(10)
<b>Technical content of report (30)</b>	Technical quality of design and testing	(15)
	Evaluation of artefact and group management	(15)
<b>Miscellaneous (30)</b> <i>(options are given in the next column; any combination is allowed up to a maximum of 30)</i>	Additional game components (beyond the required minimum number <sup>*</sup> )	(20)
	Other features (e.g. game storage, resource management, ...)	(10)

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<sup>\*</sup> Note: You are required to implement **three** of the computer game engine components listed on p. 2. However, each additional component that you implement can be awarded up to 10 marks under the "Miscellaneous" heading shown in the table.