**Featherstone High School**



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| Unit Number and Name: | Unit 22: Developing Computer Games |
| Unit Code: | Unit 6: K/601/7324 | Credit Value: | 10 |
| QCF Level: | 3 | Guided Learning Hours: | 60  |
| Assessor: | Mr. Dawkins |

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| **Assignment Launch Date** | **February 20, 2012** |
| **Assignment Hand in Date** | Assignment 2: Designing a Game | March 12, 2012 |

**Grading Criteria – Unit 22 – Developing Computer Games**

**Aim and Purpose:** The aim of this unit is to ensure that you know about different types of computer game, understand the impact gaming has on society and are able to design, develop, test and document computer games.

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| **To achieve a pass grade you must show that you are able to:** | **To achieve a merit you must show that you are able to:** | **To achieve a distinction you must show that you are able to:** |
| **P3** – produce a design for a computer game for a given specification | **M1 -**  determine appropriate data types for a computer game and show how they areDeclared | **D2** - explain how the structure anddesign of a game can assist in maintenance and capacity forextension |

**Unit 22 – Developing Computer Games**

On completion of this unit you should be able to:

1. Understand the impact of the gaming revolution on society
2. 2 Know the different types of computer game
3. 3 Be able to design and develop computer games
4. Be able to test and document computer games

**Explanation of the Unit 22 – Developing Computer Games**

There are many different types of computer games available which vary greatly in their look and feel, style, genre and complexity. Computer games can be played in a variety of ways, for example over the internet, on mobile telephones, on personal computers and on any of a wide range of mobile or static gaming platforms/consoles that are commercially available. A computer game is essentially a highly interactive software application so, as with any complex piece of software, it requires suitable design, coding, testing and documentation.

This unit is intended to prepare you for the exciting and creative journey of designing, developing and testing computer game solutions using suitable tools, environments and techniques. It is an ideal starting point for those of you who are considering a game development career path.

The unit content is divided between designing game components, implementing these using an appropriate development environment, testing the game and producing suitable accompanying documentation for both the target audience and technical personnel. Although it is recognised that the implementation phase is often the most enjoyable for the developer, equal emphasis is purposely placed on design and testing to ensure that the game is as fault-free as possible and meets the needs of the original specification.

It is of equal importance that learners are aware of the social impact, positive and negative, that computer gaming has had on individuals and society as a whole. You will explore the issues surrounding gaming and consider some of the research that has been carried out in this area **Introduction to scenario**

You are employed by ‘FHSGames’ a local game design company. They specialize in making all genres of games for playing on a PC, Apple Macs and mobile devices. Miss Alleyn is your supervisor. She is delighted with your skills as a games programmer and has decided to allow you to lead the team to design and create a game for one of our customer.

In this assignment you will design a game for one of our clients – FHS ICT.

**Assignment 2 – Designing a computer game**

**Task 1 – Design for FHS ICT game – P3**

FHS ICT department is keen to teach students how to create computer programs. The teachers have done extensive research and have realized that gamification is a very powerful method to teach most concepts; they want you to develop a computer game that will teach teenagers the following concepts:

You are required to use the most appropriate method to present this concept in a gamified solution.

Consider using:

* Multiple choice
* Matching
* Picture association
* Animation

Use the design specification below to assist

**Topic: Programming Paradigm**

Programming paradigm is the way in which the programmer view the problem to be solved. It is often described as the solution through the programmer’s eyes. Three of the most popular programming paradigm are:

1. Procedural programming paradigm
2. Object oriented programming paradigm
3. Event Driven programming paradigm

**Procedural Programming** – The problem is seen as a series of task to be performed, normally in sequential order, but can be altered by using selection statements and loops.

Examples of procedural programming language are:

* C
* COBOL
* Basic
* Pascal

Procedural programming is also called imperative programming paradigm.

**Object Oriented Programming Paradigm:**  - The problem is seen as a set of objects with attributes and behaviours. The objects interact by sending and receiving messages.

Example of object oriented programming language are:

* Java
* C++
* Small Talk

**Event Driven Programming Paradigm:** A task is performed as a result of some action, for example. A page is displayed as a result of someone clicking a button.

Examples of event driven programming languages are:

* C#
* Visual Basic
* Objective C

You are at liberty to choose how the game will look, the other specifications follows:

* The game should have at least **TWO** levels
* You must use at least **THREE** variables
* You must include instructions on how to play the game, but it must be short and effective

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| P3: Guidance (Taken from the unit specification)*Design*: tools eg storyboards, pseudo code, narratives, action lists, graphical tools*Program design*: purpose; modularity; systematic approach; data dictionary eg data types/structures, methods/procedures, parameters passed, return values, scope, visibility (private, public, static, friend, etc); other eg objects, instantiation algorithm design**P3 – Produce a design for a computer game for a given specification** |

***What to Submit:***

1. Design specification.

**Design Specification**

1. **Design Document**

**2. Design of the User Interface**

Use Balsamiq for wireframing

<http://www.balsamiq.com/>

**3. Objects and Possible Code**

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| --- | --- | --- | --- |
| **Object** | **gameName** | Real Name | Possible Code |
|   | enemy1 | Enemy Plane | Check if the plane is in viewIf it is then set the vertical speed to 8Else set the y co-ordinate to a random(-20, -65) set the vertical speed to 8ENDIF |
|   |   |   |   |

**4. List of Variables**

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| Lives | Keeps count of the number of lives |
|   |   |
|   |   |

1. Questions used in the game

**Task 2 – Data Types –M1**

Create a table outlining **ALL** the data types that were used in your game, you should also show where these were declared.

Example

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Declared | Comment |
| canShoot | Boolean |  | Variable used to determine if the plane can shoot |
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| M1: Guidance (Taken from the unit specification)*Data representation*: types eg integers, real numbers, Booleans, characters, strings; declaring eg assigning constants, variables.**M1 – Determine appropriate data types for a computer game and show how they are declared** |

***What to Submit:***

1. Data Types.

**Task 3 – Structure and Design - D2**

Explain how your design catered for maintenance of the game. In particular how did you think about the following when making your design?

* Purpose of the game
* Modularity
* Systematic approach
* Data dictionary
* Objects (sprites, events and actions)

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| D2: Guidance (Taken from the unit specification)*Program design*: purpose; modularity; systematic approach; data dictionary eg data types/structures, methods/procedures, parameters passed, return values, scope, visibility (private, public, static, friend, etc); other eg objects, instantiation algorithm design.**D2 – Explain how the structure and design of a game can assist in maintenance and capacity for extension.** |

***What to Submit:***

1. Report on design for maintenance