Business and ICT Department

OAKLANDS COLLEGE

Assignment front sheet

Learner Name	Assessor Name
	Dr Derek Peacock

Date issued	Completion date	Submitted on
3rd November 2014	**Task 1: 17th November 2014** **Task 2: 28th November 2014**	

Qualification	Unit number and title
BTEC Level 3 Extended Diploma in IT	**Unit 6: Software Design and Development**

Assignment title	**Assignment 2 – Application Design**

In this assessment you will have opportunities to provide evidence against the following criteria.

Criteria reference	To achieve the criteria the evidence must show that the student is able to:	Task no.
P5	Explain the role of software design principles and software Structures in the it systems development lifecycle	**Task 1**
P6	Use appropriate tools to design a solution to a defined requirement	**Task 2**
M1	Explain the importance of the quality of code	**Task 1**
M2	Justify the choice of data types and software structures used in a design solution	**Task 2**
D1	Discuss the factors that can improve the readability of code	**Task 1**
D2	Develop algorithms to represent a design solution	**Task 2**

Learner declaration

I certify that the work submitted for this assignment is my own and research sources are fully acknowledged. I am happy with the grade awarded.

Learner signature: Date:

Final Grade (if appropriate)		**Points**	

	Assessment Criteria Achieved (indicate with ✓ and initial)							
	P5	**P6**	**M1**	**M2**	**D1**	**D2**		
1st attempt Date								
Final attempt Date								

Business and ICT Department

Assessor's comments

Qualification	BTEC Level 3 Extended Diploma in IT	Assessor name	
Unit number and title	Unit 6: Software Design and Development	Learner name	

Grading criteria		Assessor Feedback
P5	Explain the role of software design principles and software Structures in the it systems development lifecycle	
P6	Use appropriate tools to design a solution to a defined requirement	
M1	Explain the importance of the quality of code	
M2	Justify the choice of data types and software structures used in a design solution	
D1	Discuss the factors that can improve the readability of code	
D2	Develop algorithms to represent a design solution	

Additional Assessor Feedback (including feedback for upgrade) and Action Plan	Action completed by date

Learner Feedback

Learner		Signature		Date	
Assessor		Signature		Date	
Internal Verifier		Signature		Date	
Lead Internal Verifier (if appropriate)		Signature		Date	

Business and ICT Department

OAKLANDS COLLEGE

Assignment brief

Qualification	**BTEC Level 3 Extended Diploma in IT**
Unit number and title	**Unit 6: Software Design and Development**
Start date	**Monday 7ᵗʰ November 2014**
Deadline	**Task 1: 17ᵗʰ November 2014** **Task 2: 28ᵗʰ November 2014**
Assessor name	

Assignment title	**Assignment 2 – Application Design**

The purpose of this unit is to:

- Know the features of programming languages
- Understand the principles of software design
- Be able to use tools to demonstrate software designs

Scenario

You work as a junior software designer for Softech, a small software house which specialises in writing bespoke software for small and medium sized companies. As there is a shortage of skilled programmers in the IT industry, the company has just hired five IT apprentices whom they would like to train in the processes of producing software.

P5 explain the role of software design principles and software structures in the IT systems development lifecycle
M1 explain the importance of the quality of code
D1 discuss the factors that can improve the readability of code

Task 1 (P5, M1, D1) – DEADLINE Monday 17ᵗʰ November 2014

You have been tasked with the job of introducing the apprentices to software design. Prepare a short teaching session which will help the apprentices to understand the following topics: -   **(P5)**

- Design Principles
- Software Structures
- Systems Development Lifecycle

This session could be in the form of a presentation with extensive notes or as a series of interactive worksheets or tasks.

Your training session was very successful and as a result you have been asked to deliver another training session on coding. This session should contain the following topics:-

- The importance of quality code **(M1)**
- The factors that can improve the readability of code **(D1)**

You may decide to use the same format as you previous training session but you will be expected to provide exemplar examples of code.
__Evidence__
Training materials

P6 use appropriate tools to design a solution to a defined requirement
M2 justify the choice of data types and software structures used in a design solution
D2 develop algorithms to represent a design solution

Task 2 (P6, M2, D2) – DEADLINE Friday 28th November 2014

Softech has recently won a contract from the restaurant chain 'Pizza Shed' to supply software which will allow waiters to take orders from tables using a hand held computer. You have been tasked with the design elements of this contract.

Write a Requirement Specification for the application requested from Pizza Shed. You should check this with your sales manager before having it signed off by the client.

- Using the agreed Requirement Specification, produce necessary documentation required to design the application. This must include the structure of the program, any diagrams required and a review against the client requirements. **(P6)**

- Your documentation must include a justification for the data types you have chosen. This is very important as the working program will need to work quickly on handheld devices. **(M2)**

- You also need to develop algorithms as part of your design documentation. These should be annotated to make it clear what you are doing and how you are doing it. **(D2)**

Evidence

Requirement Specification (Reviewed)
Design documentation (Reviewed)

This brief has been verified as being fit for purpose			
Assessor			
Signature		Date	
Internal verifier			
Signature		Date	

Appendix 1

Softech has recently won a contract from restaurant chain 'Pizza Shed' to supply software which will allow waiters to take orders from tables using a hand held computer.

You have been asked to design and develop a prototype of the user interface, which runs on a PC, and is ported to the handheld computers later.

The software needs to allow the waiter to record the table number (1 to 25), and order up to a maximum of ten of any item on the menu. The items required on the menu for this prototype are:

- cheese and tomato   £8.50
- ham and pineapple   £9.20
- vegetarian   £10.20
- meat feast   £10.80
- seafood   £11.60

Each pizza can be ordered with a 'thin and crispy' or 'traditional' base.
Extra toppings (extra cheese, pepperoni, onions or peppers) can be added at £1.95 pence each.

Drinks:
- cola   £1.99
- lemonade   £1.89
- fizzy orange   £1.99

A textbox should be provided for additional customer requests.

The system should display the total bill when the order is complete. There is no requirement at this prototype stage for this system to communicate with the system in the kitchen which displays the orders to be cooked.

P6 use appropriate tools to design a solution to a defined requirement
M2 justify the choice of data types and software structures used in a design solution
D2 develop algorithms to represent a design solution

Task 2 (P6, M2, D2) – DEADLINE Friday 28th November 2014

Following your training session, your client has decided that she would like to see a game designed; she said that she would like to have a 2D labyrinth game with a birds-eye view called "Zombies Escape". The game should be playable on 7-10" tablets.

The game needs to include:

- a menu at the beginning with simple instructions explaining the controls

- At least 3 levels of game play.

- Energy capsules which increase the abilities of the hero of the game in some way.

- At least three different zombies who will appear in the game who the hero needs to either avoid or eliminate after eating an energy capsule.

The rest of the game design in up to you, but you need to ensure that your design is realistic and achievable.

The client is also prepared to be surprised and said that another game can be created if it is designed well with detailed client requirements.

2.1 Create a Requirements Specification of your game for the client. You will need to make sure that you plan the whole game and decide exactly how to play it. You will need to make decisions about the health, power ups and scoring. These will help you to plan any necessary variables and constants that you need. Please make sure that the requirements are signed off and agreed by the client. **(P6 part 1)**

2.2 Create a Software Design from the requirements specification. This must include the structure of the program, any diagrams required and a review against the client requirements. **(P6 part 2)**

2.3 Create a table to explain the choice of data types and software structures used for your computer game. Show how they are declared explaining why it was done like this. **(M2)**

2.3 Develop algorithms as part of your game design and explain how they will work to meet the requirements and make the game more interesting and playable. **(D2)**

Evidence

Requirement Specification
Software Design Documentation
Algorithm Design