**BTEC Assignment Brief**

| **Qualification** | | Pearson BTEC Level 3 National Foundation Diploma in Information Technology |
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| **Unit number and title** | | **Unit 4: Programming** |
| **Learning aim(s)** (For NQF only) | | **B:** Design a software solution to meet client requirements  **C:** Develop a software solution to meet client requirements |
| **Assignment title** | | Programming Development |
| **Assessor** | |  |
| **Issue date** | |  |
| **Hand in deadline** | |  |
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| **Vocational Scenario or Context** | | You are a junior employee at a small software development company. You have been asked to plan and implement a new programming project  The Project is to produce a program that can be used by a building company to produce estimates for new building projects.  The Program will allow a user to enter information about a building project, to calculate the cost of the project, and then to output this as an estimate sheet that can be presented to a client. The requirements are as follows:   * The Program will allow the user to enter the cost of the materials for the project. * The user can then enter the number of miles travelled to the job, and the rate of pay for each mile travelled, and the number of days the project will take. This will be used to calculate the cost of travelling for the project duration. * The program user will be able to enter the number of days that the project may take, the number of men needed, and the rate of pay for each man per day This will allow the labour cost of the project to be calculated and included on the estimate sheet * Because a building client will be looking for a cheaper price than that quoted, the system needs to have an option that will calculate a discount on the total price of the project. The user should be able to select options for the following price discounts: * 0%, 5%, 10%, 20% * When any of these are selected, the calculation will deduct the discount from the total price of the project, giving a new total price. * When the new total price is calculated, the final costs can be output, including a breakdown of all the costs, so the client can see the breakdown of the costs, and the discount applied. * The final costs need to be stored in a file, including a breakdown of all the costs, so the client can see the breakdown of the costs, and the discount applied. |
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| **Task 1** | | **Design and develop**  Produce a design for the Building project estimator application including clear and effective diagrams, illustrations and algorithm designs. You will produce a design report in which you will:   * discuss software development life cycle stages, considering what areas of design and development should happen in which stages. You will produce an assessment of the Building Estimator requirements and a design specification before any code is developed * document the design of the system you will create, including descriptions of the tasks your program needs to fulfil, algorithms your program will use, data structures and data storage needed by the system * you should ensure that all of your diagrams and illustrations are relevant and accurately describe the programs you intend to create * analyse the design options for the system, considering the features of the software you will create * you should consider the advantages and drawbacks of using certain programming languages, identify any pre-defined code and assets available for use and how it could be integrated into the new system * review your designs with others to obtain feedback and identify areas for improvement to evaluate and justify your final design * using appropriate methods, compile a test plan with test data for the system to be tested against once development is complete.   Following the design, you will develop the Building Project Estimator application. You will implement the program to provide the functionality required by the company. You will produce a development report in which you will:   * demonstrate your use of a development environment and the chosen programming language, including the use of any pre-defined code and library routines within your program identifying how they improve program efficiency * run your test plans from the design stage, ensuring that the program is thoroughly tested and that any errors found are documented with reasons why the error occurred and suggestions for repair * repair errors found during the testing process with clear documentation for how repairs were made and results of retesting * document errors that cannot be repaired, giving reasons why this is the case and suggest repairs for future reference * review your program following feedback from users to identify areas for improvement and optimisation and prioritise which improvements to make with regard the time frame available to you. * evaluate your final product covering how the decisions from all stages of the design and development process have ensured that the computer program produced, in comparison to other possible solutions, resulted in solutions that fully meet the company’s requirements and the impact these processes had on the effectiveness of the development of the final outcomes.     You also need to show how you have taken individual responsibility and effectively managed yourself while completing this assignment. For example, you need to show how you have:   * planned and managed your time and met targets. * reviewed and responded to outcomes including the use of feedback from others * behaved appropriately while completing the assignment – including professionalism, etiquette, supportive of others, timely and appropriate leadership, accountability and individual responsibility * evaluated outcomes to help inform high-quality justified recommendations and decisions * used appropriate methods of communication effectively |
| **Checklist of evidence required** | | You should include:   * all of your design documents such as, diagrams, pseudo-code and illustrations. * records of review discussions (what was discussed and what decisions were made?) * test plans (what will be tested and how?) * program code * program files (your working program) * test logs (results of your test) * error reports (what went wrong and how it was fixed) * optimisation logs (what was improved) * your evaluation of the development and the completed program * a document which demonstrates that you have shown individual responsibility and effective self-management |
| **Criteria covered by this task:** | | |
| Unit/Criteria reference | To achieve the criteria you must show that you are able to: | |
| 4/BC.D3 | Demonstrate individual responsibility, creativity and effective self-management in the design, development and review of the computer program | |
| 4/BC.D2 | Evaluate the final design and optimised software application against client requirements | |
| 4/B.M2 | Justify design decisions, showing how the design will result in an effective solution | |
| 4/C.M3 | Optimise the computer program to meet client requirements | |
| 4/B.P4 | Produce a design for a computer program to meet client requirements | |
| 4/B.P5 | Review the design with others to identify and inform improvements to the proposed solution | |
| 4/C.P6 | Produce a computer program that meets client requirements | |
| 4/C.P7 | Review the extent to which the final computer program meets client requirements | |
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| **Sources of information to support you with this Assignment** | | Programming tutorials: http://www.tutorialspoint.com/sdlc/ [Stroustrup](https://www.google.co.uk/search?tbo=p&tbm=bks&q=inauthor:%22Bjarne+Stroustrup%22) B. "Programming: Principles and Practice Using C++", Addison-Wesley Professional, 2014, 9780133796742 |
| **Other assessment materials attached to this Assignment Brief** | |  |