Unit 22: Application Development

Assignment 1 Brief

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| **Programme Title** | **Pearson BTEC Level 5 Higher National Diploma in Computing** |
| Student Name/ID Number |  |
| Unit Number and Title | Unit 22: Application Development |
| Academic Year |  |
| Unit Tutor |  |
| Assignment Title | Produce a software design document and research design and development tools for the creation of a business application |
| Issue Date |  |
| Submission Date |  |
| Submission Format | |
| *Format:*   * **This assignment is group assignment. However, there are some sections that have to be done individually**. * **A presentation specified in Activity 1** * **A report specified in Activity 2, 3 and 4** * You must use font *Calibri size 12, set number of the pages and use multiple line spacing at 1.5. Margins must be: left: 1.25 cm; right: 1 cm; top: 1 cm and bottom: 1 cm.* * You should use in text references and a list of all cited sources at the end of the essay by applying Harvard referencing style. * The recommended word limit is *1500-2000 words (+/-10%)*, excluding the tables, graphs, diagrams, appendixes and references. You will not be penalized for exceeding the total word limit. * The cover page of the report has to be the Assignment front sheet 1 (to be attached with this assignment brief).   *Submission:*   * Students are compulsory to submit the assignment in due date and in a way requested by the Tutor. * The form of submission will be a soft copy posted on <http://cms.btec.edu.vn/>. * Remember to convert the Word file into PDF file before the submission on CMS. Students are advised to use latex to write the assignment.   *Note:*   * The individual Assignment *must* be your own work, and not copied by or from another student or from anywhere. * If you use ideas, quotes or data (such as diagrams) from books, journals or other sources, you must reference your sources, using the Harvard style.   Make sure that you understand and follow the guidelines to avoid plagiarism. Failure to comply this requirement will result in a failed assignment. | |
| Unit Learning Outcomes | |
| LO1 Produce a software design document for a business-related problem based on requirements  LO2 Research design and development tools and methodologies for the creation of a business application | |
| Transferable skills and competencies developed | |
| Computing-related cognitive skills   * Demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications * Use such knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs * Recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solutions * Analyse the extent to which a computer-based system meets the criteria defined for its current use and future development * Deploy appropriate theory, practices and tools for the design, implementation and evaluation of computer-based systems.   Computing-related practical skills   * The ability to evaluate systems in terms of quality attributes and possible trade-offs presented within the given problem * The ability to plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget * The ability to recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context * The ability to deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems * The ability to critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions, within the constraints of a budget.   Generic skills for employability   * Intellectual skills: critical thinking; making a case; numeracy and literacy * Self-management: self-awareness and reflection; goal setting and action planning, independence and adaptability; acting on initiative; innovation and creativity * Contextual awareness, e.g. the ability to understand and meet the needs of individuals, business and the community, and to understand how workplaces and organisations are governed. | |
| **Vocational scenario** | |
| **The CampusExpense Manager Mobile Application**  Overview:  BudgetWise Solutions is a small development team with limited experience in mobile app development. They have taken on a project to create a mobile application called "CampusExpense Manager," tailored for university students. The goal is to develop an easy-to-use app that helps students manage their expenses effectively while staying within their budgets. The CampusExpense Manager aims to simplify expense tracking for students, whether they are living on or off-campus.  **Functional Requirements:**   1. User Registration and Authentication:  * Users can create accounts with a username and password. * Authentication should be secure and allow users to log in and access their expense data.  1. Expense Tracking:  * Users can add, edit, and categorize expenses (e.g., rent, groceries, transportation). * Each expense entry should include a description, date, amount, and category.  1. Budget Setting:  * Users can set monthly budgets for various expense categories (e.g., food, entertainment, education). * The app should allow users to adjust budget amounts as needed.  1. Expense Overview:  * The app should provide a summary of monthly expenses, including total spending, remaining budget, and a breakdown by category. * Users can view expense trends over time.  1. Recurring Expenses:  * Users can add recurring expenses (e.g., monthly rent) with start and end dates. * The app should automatically add these expenses to the user's monthly budget.  1. Expense Reports:  * Users can generate detailed expense reports for specific time periods (e.g., monthly, annually). * Reports should include a breakdown of expenses by category.  1. Expense Notifications:  * The app should send reminders or notifications when users approach or exceed their budget limits for specific categories.   **Non-Functional Requirements:**   1. Performance:  * The app should provide a smooth and responsive user experience, even with a large amount of expense data.  1. User-Friendly Interface:  * The user interface should be intuitive, with clear labels and easy navigation for effortless expense tracking.  1. Platform Compatibility:  * The app should be developed for both Android and iOS platforms to reach a wider user base.  1. Data Security:  * User data, including expenses and budget information, should be securely stored and protected with encryption. * Data privacy practices should be followed to ensure user information is kept confidential.  1. Feedback and Support:  * Include a feedback form within the app for users to report issues or provide suggestions. * BudgetWise Solutions should actively monitor user feedback and address issues promptly.  1. Monetization (Optional):  * Monetization features, such as in-app ads or premium features, can be explored in future updates. * Initial development should prioritize core expense management functionality.   BudgetWise Solutions is dedicated to developing the CampusExpense Manager app to help university students effectively manage their finances. By simplifying expense tracking and budgeting, the app aims to empower students to make informed financial decisions and maintain financial stability during their academic journey.  **Stakeholders**:   * **Students**: The primary users of the CampusExpense Manager app, university students, will rely on the application to track their expenses, set budgets, and gain insights into their financial habits. * **BudgetWise Solutions Team**: The development team is responsible for designing, coding, testing, and maintaining the CampusExpense Manager app. * **University Administrators**: University administrators may have an interest in promoting the use of financial management tools among students to encourage responsible financial behavior.   **Project Constraints**:   1. **Development Timeline**: Due to the limited experience of the development team, the project has a strict timeline of 12 weeks from concept to launch. This constraint is essential to ensure that the project stays on track and within the scope. 2. **Budget**: The project has a limited budget allocated for development and marketing. Cost-effective solutions and resource management are crucial to stay within budget. 3. **Resource Availability**: The development team consists of junior developers with a moderate level of expertise. Training and skill development will be necessary during the project. 4. **Data Privacy Compliance**: The app must adhere to data privacy regulations, ensuring the security and privacy of user data. This requirement may impact the project's development and compliance costs. 5. **Offline Capability**: A fundamental constraint is that the CampusExpense Manager app must function effectively without an internet connection to cater to students in areas with limited connectivity. 6. **Platform Compatibility**: The app should be developed for both Android and iOS platforms, which may require additional development effort and testing. 7. **Monetization Strategy**: While monetization is optional, if pursued, it must be implemented in a way that does not compromise the user experience or privacy. | |
| Assignment activity and guidance | |
| **Activity 1**  **Produce a presentation** that explores how the needs of BudgetWise Solutions, through the development of a mobile application.  Your presentation should include the following.   * Produce a well-defined problem statement that outlines the user and system requirements that must be met (Approximately 25 slides)   + Identify stakeholders and what they want in this scenario.   + Provide information about the difficulties that BudgetWise Solutions might encounter when it starts the project   + Highlighting and describing the issues that need to be addressed in the given scenario.   + Consider possible business application solutions which address problem. For example, a desktop app or a mobile application. * Preview areas of risk pertaining to this software project, and explore strategies for managing these risks. (Approximately 5 slides)   **Activity 2**   * Have research on software development tools and techniques would be suitable to implement the solution (Approximately 400 words)   + Discovering SDLC models with their strengths and weaknesses could be applicable to developing the "CampusExpense Manager" app.   + Identifying development tools for executing the project, such as Android Studio, Microsoft Project, etc.   + Justifying development tools and development methodology selected   **Activity 3**  Analyze the business problem to proposed solution including relevant details on requirements, system analysis, system design, coding, testing and implementation (Approximately 400 words not including diagrams).   * Utilizing OOAD approach to produce a software design document for the given scenario including some UML diagrams, such as use case diagrams, class diagrams, etc. * Create a test plan for the "CampusExpense Manager".   **The following part each team member must be done individually**  With the previous design as a team member, debate why this design will work well for the project "CampusExpense Manager".  **Activity 4**  **The following part each team member must be done individually**  Evaluate your team's solution by comparing it with other solutions. The evaluation might include (the list is not definitive - Approximately 400 words) :   * The selected SDLC model versus other SDLC models * The selected tools versus other development tools * .. | |
| **Recommended Resources**  **Please note that the resources listed are examples for you to use as a starting point in your research –** **the list is not definitive.** | |

**Learning Outcomes and Assessment Criteria**

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| Pass | Merit | Distinction |
| **LO1** Produce a software design document for a business-related problem based on requirements | |  |
| **P1** Produce a well-defined problem definition statement, supported by a set of user and system requirements for a business problem.  **P2** Review areas of risk related to the successful development of a proposed application. | **M1** Analyse a business- related problem using appropriate methods to produce a well-structured software design document. | **LO1 and LO2**  **D1** Evaluate the solution to a business-related problem and the preferred software development methodology by comparing the various software development tools and techniques researched. |
| **LO2** Research design and development tools and methodologies for the creation of a business application | |
| **P3** Research the use of software development tools and techniques for the development of a proposed application. | **M2** Justify the software development tools and development methodology selected. |