ASIA PACIFIC UNIVERSITY

CT046-3-2 SDM – SYSTEMS DEVELOPMENT METHODS - DEGREE – LEVEL 2

IN-COURSE ASSIGNMENT

LEARNING OUTCOMES:

- Construct the system modelling using appropriate tools and techniques (C3, PLO2)
- Demonstrate appropriate analysis, design and implementation techniques through a simple prototype (A3,PLO4)

CASE STUDY:

CyberNex Solutions: Software Development Management System

CyberNex Solutions is a software company offering cutting-edge software development services. As the company grows, the leadership sees the opportunity to enhance its services through the adoption of advanced technology. To optimize operations and prepare for future expansion, the management has engaged your team as IT consultants. The task is to assist CyberNex Solutions in creating a robust information system that can support the company's operations and accommodate its growth. During the initial meeting the management provided background information and outlined the current situation.

CyberNex Solutions employs a diverse team including software developers, project managers, quality assurance professionals and more. The company also collaborates with external vendors providing services such as cloud infrastructure, development tools and testing services. Vendors can register through a new system specifying their services and pricing. Partnership agreements with vendors require thorough verification before they are integrated into the software development process.

Clients can initiate a software development project through the system by creating an account and logging in. The client specifies the type of software solution needed (e.g., web applications, mobile apps, custom software, etc.), project timelines, desired features and any additional requirements. The system generates a project plan and the client is required to approve the proposal within a specified period. Failure to do so results in automatic cancellation of the original request. Upon client approval and initial payment, the system generates a project confirmation.

For each confirmed project the company assigns a dedicated team that includes software developers, project managers and quality assurance specialists based on the project's scope and requirements. Clients can schedule meetings with the project team through the system for regular updates and discussions during the development phase.

To build trust and maintain a positive reputation, clients have the option to provide feedback after the completion of their software project. Additionally, a service fee is charged to vendors for each successfully completed project. At the end of each month, CyberNex Solutions calculates the payments owed to each vendor based on agreed service rates, sending them statements and cheques.

Software developers, project managers and administrators have access to the system for managing projects, teams, scheduling, payments and generating various business reports. The management has allocated a budget of RM100,000 for the project with an estimated timeline of FIVE(5) months for completion. The objective is to plan, analyze, design, and develop a prototype that aligns with CyberNex Solutions requirements and objectives in software development management.

**Note: You are not only limited to the above requirements. Any other relevant requirements to ease the process of managing the CyberNex operations can be added if you think they are viable.*

TASKS:

Work with 5 (FIVE) students in a group. Assume that you are a group of software development consultants, hired to advise CyberNex on efficient development approaches for their project.

You are required to document the following:

1. **Project Planning (Group Task)**

   1.1. Introduction - Provide a brief introduction to CyberNex company including its stakeholders, users, current business process, etc.

   1.2. Problem Statements – Discuss the existing business problems of the CyberNex company.

   1.3. Suggested System – Briefly explain the suggested system that you would propose for the above project. Include a conceptual diagram to show your initial idea of the new system (you may use any diagram such as a Rich Picture, Context Diagram, etc.).

   1.4. Scopes, and Objectives – Define the Scopes and Objectives for the CyberNex project.

   1.5. Project Scheduling - Create a project schedule (such as a Gantt Chart) according to one of the system development methodologies that you have suggested in Part 2.2 below. Clearly show the duration, tasks (and sub-tasks), and predecessor (parallel, sequential, iterative, if any) recommended for the project.

2. **Agile Principles and IS Methodologies (Individual Task)**

   2.1. Agile Principles - In the initial stage, your team has decided that Agile Methods could be beneficial to be applied to the CyberNex project. **Each student** is to discuss in detail **TWO (2) Agile Principles** that you would implement to make your projects more agile. Explain the strategies that you would take to implement them.

   - *Group members are to suggest and discuss different Agile Principles with each other.*

   2.2. IS Methodologies – A system development methodology refers to the steps that are used to structure, plan, and control the process of developing an information system. **Each student** is to suggest and discuss in detail **ONE (1) of the IS methodologies**. Explain how you would carry out your CyberNex project according to the methodology.

   - *Members are to suggest and discuss different IS methodologies with each other.*
   - *Your answers in a group should include methodologies from Structured Methodology, Agile-based Methodology including Process Oriented Methodology, and People-Oriented Methodology.*

3. **System Analysis (Group Task)**

Assume that you have collected ample data and information for the CyberNex project during the 'Requirement Elicitation' stage. Describe in detail **TWO (2) system analysis methods** that you would use to analyze data gathered from your investigations. Justify your selections.

4. Design (Individual Task)

Design often comprises the modelling of the system. **Each student** is to discuss **ONE (1) modelling technique** that you would adopt for the CyberNex project and is relevant to your selected methodology (in Task 2.2). Then, based on your selected modelling technique, each student is also required to **create ONE (1) diagram** for the CyberNex project.

- *Group members are to discuss different modelling techniques and create different diagrams from each other e.g., Use Case diagram, State Machine Diagram, Class Diagram, etc.*

5. Implementation and Deployment (Group Task)

5.1. Construction – List and explain the **functions and purpose of the major software** (and tools) that you would consider in the construction of the new system for the CyberNex company.

5.2. Proof of Concept - Create a **'throw-away' prototype** for the CyberNex system (a simple form of a prototype that is for demonstration purposes).

5.3. Testing - Discuss in detail any **TWO (2) testing methods** that are suitable for the CyberNex system. Explain in detail how these tests will be carried out for your system.

5.4. System Deployment – Compare any **TWO (2) types of 'system change over–method(s)'** available. Based on your comparison, **choose only ONE (1)** change-over-method that is best suited for the CyberNex project. Explain in detail how and why the selected method is carried out.

ASSIGNMENT DELIVERABLES AND CONDITIONS:

- Final Documentation must be word-processed; submission is done online through Moodle. A maximum of 10,000 words in length is recommended.

  Note: Please exclude the cover page, table of contents, workload matrix, and references pages when you do a word count. Make sure to **only count words/answers to the questions**.

- Include a 'Workload Matrix' (to be given by the lecturer), indicating the contribution of each individual for each required component (shown in percentage), and should be signed off by each team member, attached to the APPENDIX part of the final document.

- Citation of facts is mandatory. Obtain your facts from credible sources in references/bibliography. Avoid 'dumping of data'. Instead, the facts that you discuss should be made relevant to your case/project. Kindly use the **7th Edition of APA referencing style**.

- It is acceptable for the discrete activities of this assignment to be undertaken by individual group members. However, all group members must understand the presentation in its entirety. At the end of the submission, your group might be asked a series of questions to explore your understanding and analysis of the given problem.

- Late submissions will not be assessed unless extenuating circumstances are upheld.

- Acceptable Turnitin similarity results in a maximum of 10%.

- Font setup: use 1.5 spacing, justify paragraph alignment, 12-pt font size, Times New Roman.

- Page setup: Margin for top, left, right, and bottom = 2.54 cm. A4 page size. Portrait page orientation.

Submission Date

Components	**Submission Date and Time**
1. Project Planning	20th May 2024 Monday Before 11:59 PM
2. Agile Principles and IS Methodologies	
3. System Analysis	
4. System Design	
5. Implementation and Deployment	

Marking Criteria

Components	**Allocated Marks**
Project Planning (Group Task)	10
Agile Principles and IS Methodologies (Individual Task)	20
System Analysis (Group Task)	10
System Design (Individual Task)	25
Implementation and Deployment (Group Task)	30
Documentation & Report (Layout, writing, formatting, referencing, etc.) (Group Task)	5
Total	**100**

Performance Criteria

Distinction (75% and above)

This grade will be assigned to work where the documentation is complete and describes in detail, with little or no errors, the following components: Introduction, Agile Principles, System Development Methodology, System Design, and Implementation. To obtain this grade, the candidate's assignment should show all techniques of process applied with little or no errors. All deliverables of the individual component should be coherent with detailed descriptions to explain the diagrams. Overall documentation standards for both the group project as well as the individual assignment should be of excellent quality. To obtain a grade at this level, individuals should be able to address all issues concerning not only their component of the module but also those of the other group members. Individual's contribution to the project, at this level, should be more than 75% and overall peer evaluation should indicate excellent standards.

Credit (56% – 69%)

This grade will be assigned to work where the documentation is complete and describes briefly, with some errors, the following components: Introduction, Agile Principles, System Development Methodology, System Design, and Implementation. To obtain this grade, the candidate's assignment should show all techniques of the methodology applied but some errors. All deliverables of the individual component should be coherent with detailed descriptions to explain the diagrams. Overall documentation standards for both the group project as well as the individual assignment should be of excellent quality. To obtain a grade at this level, individuals should be able to address most issues concerning not only their component of the module but also those of the other group members. Individual's contribution to the project, at this level, should be more than 65% and overall peer evaluation should indicate excellent standards.

Pass (40% - 55%)

This grade will be assigned to work where, most of the basic requirements of the documentation listed above, such as Introduction, Agile Principles, System Development Methodology, System Design, and Implementation are of an adequate standard which is evident in the softcopy of the documentation. The physical design of the system in terms of the interactive screen design and report maps adequately against the logical design presented in the documentation. The documentation should be of adequate standard in terms of language, layout, and flow. Some accurate, relevant, and up-to-date referencing was visible. Group presentation the team should have adequate visual aids with relevant information presented and adequate coordination among group members. Individuals should display an adequate level of professionalism and project knowledge. Peer-to-peer evaluation of an individual's contribution should be adequate.

Fail (Below 40%)

This grade will be assigned to work where, most of the basic requirements of the documentation listed above, such as Introduction, Agile Principles, System Development Methodology, System Design, and Implementation are of a poor standard which is evident in the softcopy of the documentation. The physical design of the system in terms of the interactive screen design and report shows little or no mapping/linking with the logical design presented in the documentation. The documentation is of poor standard in terms of language, layout, and flow. Minimal or no referencing was done. The group presentation of the team has poor visual aids with irrelevant information presented and poor coordination among group members. Individuals display on average a poor level of professionalism and project knowledge. Peer-to-peer evaluation of an individual's contribution is poor.