INTERNATIONAL SCHOOL OF MANAGEMENT AND TECHNOLOGY

NEPAL

FACULTY OF COMPUTING

UNIT TITLE	Unit 4: Database Design & Development		
UNIT CODE	A/618/7400	LEVEL	4 (Core)
STUDENT NAME		CREDIT VALUE	15
ASSESSMENT TITLE	United Limited IT Systems	WORD COUNT	
ASSESSOR	Rupak Chaudhary	I.V.	
ASSIGNMENT ISSUE DATE	12/05/2023	ASSIGNMENT SUBMISSION DATE	11/07/2023
ORIGINAL SUBMISSION		ASSIGNMENT NO.	1

ASSESSMENT CRITERIA TO BE ASSESSED IN THIS ASSIGNMENT

(Identify all criteria to be assessed in this assignment)

Assignment Criteria	P1	P2	P3	P4	P5					
Achieved										
	Merit Criteria						**Distinction Criteria**			
Assignment Criteria	M1	M2	M3	M3	M4	M5	D1	D2	D3	
Achieved										

Important:

- **Read the plagiarism notice and requirements at Page 6**
- **Word-limit- 8000 words** *(excludes cover page, table of content, figures, graphs, reference list, appendix and logbook)*
- **Accepted Sources: Research Papers** *(Journal Articles, Conference Proceedings, Thesis), Text Books, Governmental Data, Websites (only a registered organization, an educational institution, government agency)*
- **Information taken from unreliable sources will not be accepted**
- **Must follow Harvard Reference Style**
- **Assignment must be submitted through the Plagiarism Detection Tool**

Assignment submission format

Each student has to submit their assignment as guided in the assignment brief. The students are guided on what sort of information is to produce to meet the criteria targeted. You are required to make use of headings, paragraphs, and subsections as appropriate, and all work must be supported with research and referenced using the **Harvard referencing system**.

Learning outcomes covered

- LO1 Use an appropriate design tool to design a relational database system for a substantial problem
- LO2 Develop a fully-functional relational database system, based on an existing system design
- LO3 Test the system against user and system requirements
- LO4 Produce technical and user documentation.

Scenario

United Limited is a large real estate company that specialises in residential, commercial and industrial properties. It has a large IT function that supports development of raw land, property management, brokerages, lending and other professional services such as lawyers, interior designers and construction workers. Owing to further expansion, it is setting up an IT Helpdesk to handle hardware and software problems concerning the IT systems.

As a Database Developer, you have been tasked with designing and building the new system. Your role includes designing, developing and implementing database systems based on customer requirements. You are also responsible for optimising the database system for performance efficiency, as well as testing and troubleshooting and performing bug fixes.

System Required

When someone in the company has a problem, they can contact the helpdesk. One of the helpdesk operators will attempt to deal with the enquiry, but if an immediate answer cannot be given the problem is passed to one of several specialists.

An Information System is needed to log and track the helpdesk queries. This will enable analysts to see how the equipment is performing overall, whether the helpdesk specialists are sufficiently resourced to solve problems in an acceptable time and whether there are subject

areas where employee training is needed.

Proposed System Operation

- When a new call comes into the helpdesk, the names of the caller and helpdesk operator are logged, along with the time of the call, the serial number of the computer and, if relevant, the operating system and software being used
- The caller's name will be checked against a register of all personnel to retrieve the caller's ID number, job title and department
- Their equipment will also be checked against a register of equipment to find the equipment type and make. Their software will be checked to see if it is under a valid license
- Every call is logged and each problem is given a problem number, which is supplied to the caller so it can be quoted on any subsequent calls about the same problem
- The helpdesk operator will also record notes and descriptions of the problem. A reason for each call is always recorded even if it is just a note to say how desperate the caller is getting (e.g. in the case of a follow-up call)
- When a problem is first reported, the helpdesk operator will also allocate a problem type, selecting it from a list of problem types. It is the skill of the operator to know what problem type is most relevant and how specific the problem is
- Some problem types are refinements of more general problem types and so it is possible that the problem type allocation may be altered later if more information becomes available
- When the problem area is identified the helpdesk operator can look up previous problems of the same type to see if the problem has occurred before and, if so, how it was resolved
- It is also possible to look up previous problems with the same equipment or from the same caller to see if there were other related problems
- If the problem can't be solved immediately, the helpdesk operator will use the system to look up which specialist to refer the problem to
- Each specialist will be an expert in one or more problem types
- If there is no specialist listed for a more specific problem type, then a specialist from the more general problem type will be used
- The system will also list how many problems the specialist is currently working on so that if there is more than one specialist for a problem type, the specialist who is currently the least loaded can be allocated
- When a problem is eventually resolved, the helpdesk operator or the specialist will log the date and time it is resolved and record some indication of how the problem was resolved and the time taken to resolve the problem.

ASSIGNMENT TASKS

Task
Based on the Help Desk scenario you will need to: 1) Create a formal business proposal for United Limited. It should include user and system requirements that develop a fully functional design of the relational database for the IT helpdesk system, including ERDs, normalisation, data validation, output designs and interface diagrams evaluating the reasons that the design will meet the requirements as given effectively 2) Create and fully implement the database Help Desk system for United Limited, according to your design, including user interface, inputs, outputs, data validation, and querying across multiple tables using a query language. The system must also be fully secure and maintainable 3) Develop and action a test plan with effective tests: a) This must include effective data, and extreme and erroneous data in order to build an accurate picture of the viability of the database b) Tests must assess the breadth and usability of the programme as well as the requirements in the brief c) Tests must include meaningful data and elements that would be in a successful implementation. 4) Produce a written report: a) Evaluating the effectiveness of the database against user requirements and suggesting improvements b) Include an assessment of the queries and data extracted in order to produce meaningful management information c) Assess the effectiveness of testing, including an explanation of the choice of the test data used. 5) Produce a series of user videos as follows: a) Technical: showing the backend of the system and its associated setup, including data flow diagrams and flowcharts, describing how the system works b) User: showcasing the system from a user perspective.

LEARNING OUTCOMES AND ASSESSMENT CRITERIA

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Use an appropriate design tool to design a relational database system for a substantial problem</td><td rowspan="2">LO1

D1 Evaluate the effectiveness of the design in relation to user and system requirements.</td></tr>
<tr><td>P1 Design a relational database system using appropriate design tools and techniques, containing at least four interrelated tables, with clear statements of user and system requirements.</td><td>M1 Produce a comprehensive design for a fully-functional system, which includes interface and output designs, data validations and data normalisation</td></tr>
<tr><td colspan="2">LO2 Develop a fully-functional relational database system, based on an existing system design</td><td rowspan="4">LO2 & LO3

D2 Evaluate the effectiveness of the database solution in relation to user and system requirements and suggest improvements.</td></tr>
<tr><td>P2 Develop the database system with evidence of user interface, output and data validations, and querying across multiple tables.

P3 Implement a query language into the relational database system.</td><td>M2 Implement a fully functional database system, which includes system security and database maintenance.

M3 Assess whether meaningful data has been extracted through the use of query tools to produce appropriate management information.</td></tr>
<tr><td colspan="2">LO3 Test the system against user and system requirements</td></tr>
<tr><td>P4 Test the system against user and system requirements.</td><td>M4 Assess the effectiveness of the testing, including an explanation of the choice of test data used.</td></tr>
<tr><td colspan="2">LO4 Produce technical and user documentation</td><td rowspan="2">LO4

D3 Evaluate the database in terms of improvements needed to ensure the continued effectiveness of the system</td></tr>
<tr><td>P5 Produce technical and user documentation.</td><td>M5 Produce technical and user documentation for a fully-functional system, including data flow diagrams and flowcharts, describing how the system works.</td></tr>
</table>

Plagiarism Notice

You are reminded that there exist **Academic Misconduct Policy and Regulation** concerning **Cheating and Plagiarism**.

Extracts from the Policy:

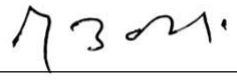
Section 3.4.1: Allowing others to do assignments / Copying others assignment is an offence

Section 3.4.2: Plagiarism, using the views, opinion or insights / paraphrasing of another person's original phraseology without acknowledgement

Requirements

- It should be the student's own work – **Plagiarism is unacceptable**.
- Clarity of expression and structure are important features.
- Your work should be submitted as a **well presented**, word-processed document with headers and footers, and headings and subheadings.
- You are expected to undertake research on this subject using books from the Library, and resources available on the Internet.
- Any sources of information should be **listed as references** at the end of your document and these sources should be referenced within the text of your document using **Harvard Referencing** style
- Your report should be illustrated with screen-prints, images, tables, charts and/or graphics.
- All assignments must be typed in **Times New Roman**, **font size** 12, 1.5 **spacing**.

The center policy is that you must submit your work within due date to achieve "Merit" and "Distinction". Late submission automatically eliminates your chance of achieving "Merit and Distinction". Also, 80% attendance is required to validate this assignment.

Assignment Prepared By	**Signature**	**Date**
Sheela Paudyal		11/01/2023
Brief Checked By	**Signature**	**Date**
Dhruba Babu Joshi		13/01/2023