STUDENT ASSESSMENT SUBMISSION AND DECLARATION

When submitting evidence for assessment, each student must sign a declaration confirming that the work is their own.

Student name:	Assessor name: **Eng. A.L. Jubailah Begum**	
Issue date: **16.05.2024**	Submission date:	Submitted on:
Programme: **Pearson BTEC HND in Computing**		
Unit no. & Title: **04. Database Design and Development**		
Assignment title: **Database system for "Dickwella Beach Hotel and Resort"**		

Plagiarism

Plagiarism is a particular form of cheating. Plagiarism must be avoided at all costs and students who break the rules, however innocently, may be penalised. It is your responsibility to ensure that you understand correct referencing practices. As a university level student, you are expected to use appropriate references throughout and keep carefully detailed notes of all your sources of materials for material you have used in your work, including any material downloaded from the Internet. Please consult the relevant unit lecturer or your course tutor if you need any further advice.

Student Declaration

Student declaration

I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.

Student signature: Date:

Assessment Tracking

Programme:	HND Computing	**Student Name:**			
Unit No. & Title:	Unit 4: Database Design and Development	**Assessment Issue Date:**		**Submission Date:**	
Assessor Name:	Eng. A.L. Jubailah Begum	**Completion Date:**		**IV Signature:**	nismy@bcas.lk

Tasks	Sub tasks	Criteria Targeted	Date Issued	Hand In Date	Formative Feedback	Resubmission Date
01	**1.1**	**P1**	16.05. 2024	21.05. 2024	22.05. 2024	25.05. 2024
	1.2	**P1, M1**				
02	**2.1**	**P2**		05.06. 2024	06.06. 2024	10.06. 2024
	2.2	**P3**				
	2.3	**P3, M2, M3, D2**				
03	**3**	**P4, M4**		19.06. 2024	20.06. 2024	25.06. 2024
04	**4.1**	**P5, M5, D3**		10.07. 2024	11.07. 2024	15.07. 2024
	4.2	**M1, D1**				

Assignment Brief

Unit 4: Database Design and Development

Student Name & Zoho ID:	
Programme:	HND Computing
Unit Number and Title	**Unit 4: Database Design and Development**
Academic Year	2024
Batch	Batch 22
Unit Assessor	Eng. A.L. Jubailah Begum
Assignment Title	**Database system for "Dickwella Beach Hotel and Resort"**
Issue Date	16.05.2024
Submission Date	21.07.2024

Submission Format
Pdf document of the report, database log files, SQL files, GUI .exe file and dataedo documentation file.
Unit Learning Outcomes
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.**
Transferable skills and competencies developed
Determining user and system requirements, entity relationship modelling, referential integrity, data normalisation to third normal form, database and platform options for system development. Implementation of the physical data model based on the logical model and linking code to data sets, Data manipulation using appropriate query tools, including complex queries to query across multiple tables and using functions and formulae. Database maintenance and data manipulation: inserts, updates, amendments, deletions, data backup and recovery.

Test procedures to be used: test plans, test models, e.g. white box, black box; testing documentation.

User documentation, including how to use the system, outputs produced by the system, menu operations and other functions.

Vocational scenario

Database System for "Dickwella Beach Hotel and Resort"

The management is proud of new owners of **Dickwella Beach Hotel and Resort** with its 100 en-suite rooms, bar and restaurant. They have asked you to develop a system that will manage the room booking processes, keep details of additional services that guests purchase during their stay and produce the final bill for a stay. **The Manager describes the processing involved as follows**:

• A booking or visit starts with a room request coming in from a potential guest. We take details of the reservation request and search for availability by looking in the desk-diary to see which rooms are available for the required dates. We have 20 single, 60 double and 20 family rooms that can accommodate up to 5 persons in each.

• If the required rooms are available we create a record of the reservation and include details of the room allocated to the reservation, start and end dates and the number of guests staying in the room. At this stage we also check to see if the potential guest has stayed with us before or not. If they have, we find their details, check they are still accurate and then add their details to the reservation. If they haven't stayed with us before, we take the name of the guest making the reservation and their contact details and add these to our records.

• If a guest wants to reserve more than one room we create a separate reservation record for each room reserved.

• In reservation Guest should make payment for reservation.

• When guests arrive at the start of their stay, we find their reservation and personal details, checking that their personal details are still correct and updating them as necessary. We then book them in for their stay, we call this an 'occupancy'. Local laws require that we record the names and age of all guests and which room they are staying in.

• We provide a restaurant and theatre booking service for our guests. This process involves little more than a telephone call to the organization and a verbal agreement being reached between the Hotel and the organization.

• During their stay at the Guest House guests may purchase or hire additional services and products from us, such as newspapers, cycles, maps, food and drinks. We need to record all of these so that we can charge for them at the end of the stay.

• At the end of their stay guests request their final bill. We would like the system to calculate and produce this final bill. Reservation payment will deduct from the full payment. We then give it to the guest so that payment can be made. We keep a record of how much each stay in a particular room was billed for so that we can calculate income per room over a given period of time.

• Guest can cancel the reservation before the reservation start date. In cancellation the payment for reservation will not be refunded.

• For each room a room boy and waiter are assigned. Room boys and waiters can provide services for many rooms.

• In the event of Guest dissatisfactions about the rooms and services, they can complain to the manager of this hotel. This complains are recorded for further actions.

Assume you are appointed as a Database Administrator for **Dickwella Beach Hotel and Resort** and it is your responsibility is to design a database system for **Dickwella Beach Hotel and Resort**.

Assignment activity and guidance

Task 1

Task 1.1

Analyse and **design a relational database system** for **Dickwella Beach Hotel and Resort** with clear explanations and indicate the designing steps (Conceptual, Logical, and Relational Mapping). Make Any Valid Assumptions.

Use Microsoft Visio tool or any other tool to visualize the ER Model.

Task 1.2

a. Create **at least four interrelated tables** for the above designed ER diagram, **with clear statements of user and system requirements**.

   Give at least five rows for each table. Data entries to the tables can be your own assumed values. Evaluate the **data validations** on the data that you insert.

b. Apply the **Normalization rules** on the above created tables up to third normal form. Mention each step to be followed along with the rules. The primary keys and the foreign keys must be indicated clearly.

Task 2

Task 2.1

Develop the physical relational database by creating the tables for the above designed ER Model with MSSQL Server. The tables created for above task can be utilized.

Identify and enforce all necessary constraints on the tables which include primary key, foreign key constraints and domain constraints etc.

Task 2.2

Implement the query language to insert data to the above created tables. So as to show your knowledge in SQL apply the queries to update and delete.

Task 2.3

a. **Implement complex queries** in the above created tables to retrieve meaningful data and make the data entry very easy for the users.
Note: use the comment making facility in the MSSQL Server when querying to indicate your step by step process clearly.

b. Make sure that you create a database system **which includes system security and database maintenance.**

c. **Assess whether meaningful data has been extracted through the use of query tools to produce appropriate management information.**

d. **Evaluate the effectiveness of the database solution in relation to user and system requirements and suggest improvements.**

Task 3

Task 3

Critically review and **test the developed database system against user and system requirements.** Address your findings, errors and problems encountered in implementing the database **including test plan and the possible test cases**.

Note: Test procedures to be used: test plans, test models e.g. white box, black box; testing documentation.

Task 4

Task 4.1

a. **Produce a technical user documentation** for developed database system explaining how to use the database system.

Note: include a **flow chart** showing movement of data through the system and **data flow diagram describing how the system works.**

b. State the **future improvements** that can be undertaken to **ensure the continued effectiveness of the database system.**

Task 4.2

a. Produce a **comprehensive design for the fully-functional database system**, which includes user interface design.

b. Evaluate the reasons that the user interface **design** will meet the **requirements as given effectively**.

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.

- Churcher, C. (2012) Beginning Database Design: From Novice to Professional. 2nd edn. Apress.
- Connolly, T. and Begg, C. (2014) Database Systems: A Practical Approach to Design, Implementation and Management. 6th edn. Global Edition. Pearson.
- Flejoles, R. P. (2018) Database Theory and Application. Arcler Press.
- Karwin, B. (2017) SQL Antipatterns: Avoiding the Pitfalls of Database Programming Pragmatic Programmers, LLC.
- Kroemke, D. and Auer, D. (2012) Database Concepts: International Edition. 6th edn. Pearson.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Use an appropriate design tool to design a relational database system for a substantial problem		
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.	**M1** Produce a comprehensive design for a fully-functional system, which includes interface and output designs, data validations and data normalisation.	**D1** Evaluate the effectiveness of the design in relation to user and system requirements.
LO2 Develop a fully-functional relational database system, based on an existing system design		
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.	**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.	**D2** Evaluate the effectiveness of the database solution in relation to user and system requirements and suggest improvements.
LO3 Test the system against user and system requirements		
P4 Test the system against user and system requirements.	**M4** Assess the effectiveness of the testing, including an explanation of the choice of test data used.	**D2** Evaluate the effectiveness of the database solution in relation to user and system requirements and suggest improvements.
LO4 Produce technical and user documentation		
P5 Produce technical and user documentation.	**M5** Produce technical and user documentation for a fully-functional system, including data flow diagrams and flowcharts, describing how the system works.	**D3** Evaluate the database in terms of improvements needed to ensure the continued effectiveness of the system.

Guidance for Students

Deliverable: Report should be submitted as a **soft copy** of word processed Report.

NOTE:

- You should include the **COVER PAGE**, **Assessment Declaration form and Unit Review Plan** of this assignment when you submit your final report.

- If submitted after the extended deadline, the assignment will not be accepted whereas you shall be asked to go for a **NEW assignment**.

- Late Submission is not permitted until otherwise recommended by the Assessor /Course Coordinator.
- Plagiarism will be treated as a very **serious academic misconduct**.

Instructions to students:

1. All assignment should comprise of the standard **Front Cover** given**. No other front page will be accepted.**

2. **Report Writing Guidelines:**

    1. Every Assignment should have an **Introduction** and **Conclusion.**
    2. The standard **Table of Contents** should be generated.
    3. All the **Figures, Tables, Diagram** etc. should be numbered.
    4. **Main Heading** Font: **Arial**; Size 16
    5. **Sub heading:** Font**: Arial;** Size 14
    6. **Body text:** Font: **Arial**; Size 11
    7. **Paragraph:** 1.5 spacing
    8. **Margins: Top: 1" Bottom: 1" Left: 1" Right: 1"**
    9. **Header –** include the module name on the right hand side
    10. **Footer –** include the page number on the right hand side
    11. All sections should have continuity and pages should be clearly ladled.
    12. **References –** clear references for all the materials, books, articles, website etc should be given in accordance with Harvard Reference style (Harvard Anglia 2008)