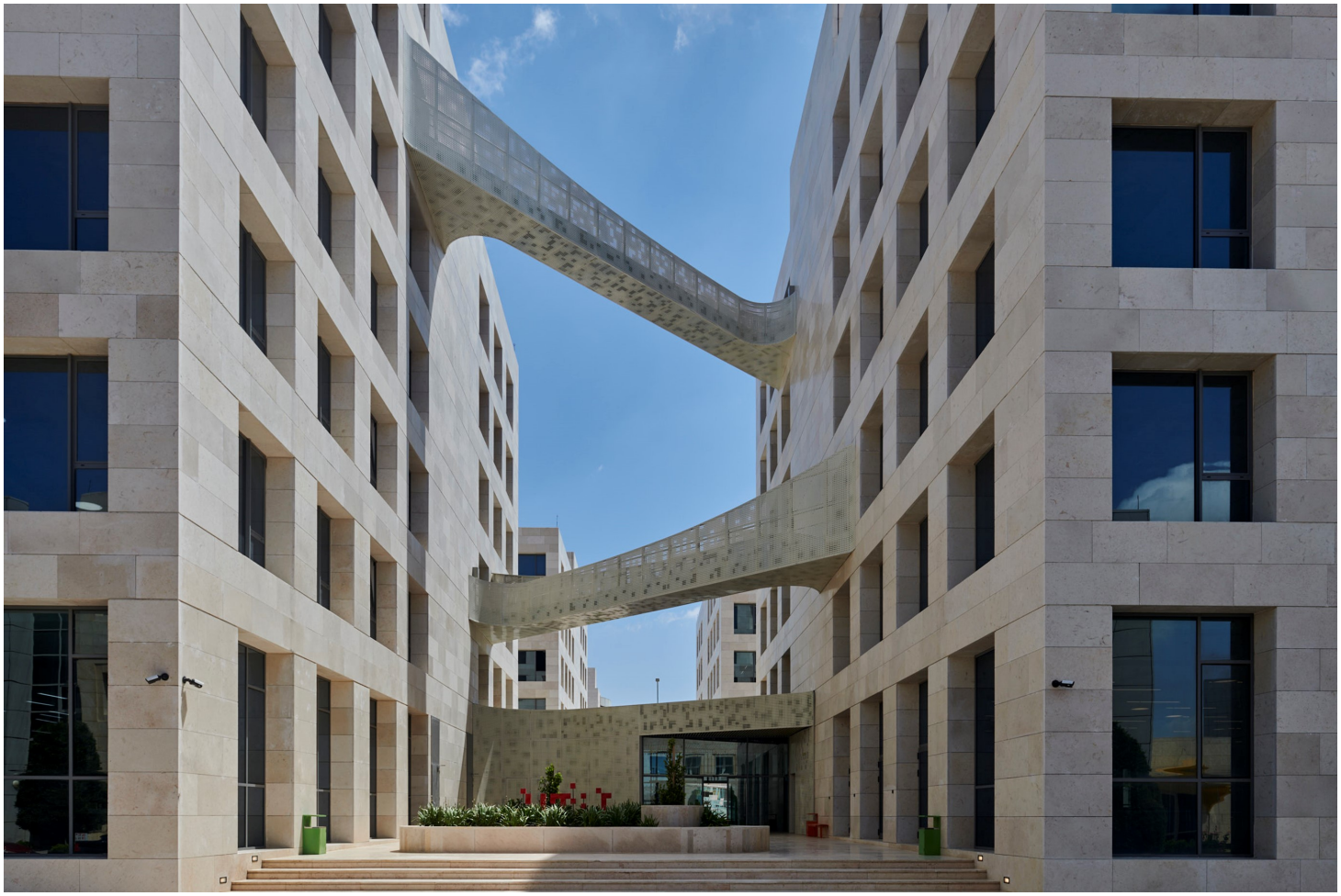
جامعة الحسين التقنية
Al Hussein Technical University

ASSIGNMENT BRIEF

HTU Course No: 10204282	**HTU Course Name:** Database Design & Development
BTEC Unit Code: A/618/7400	**BTEC UNIT Name:** Database Design & Development



Student Name/ID Number/Section	
HTU Course Number and Title	10204282 Database Design & Development
BTEC Unit Code and Title	A/618/7400 Database Design & Development
Academic Year	2024-2025 1
Assignment Author	Salem Alemaishat
Course Tutor	Ashraf Alsmadi - Samir Tartir - Mohammad Yahia - Salem Alemaishat - Fadia - Rami Ibrahim
Assignment Title	Designing a Database System
Assignment Ref No	1
Issue Date	30/11/2024
Formative Assessment dates	From 15/12/2024 to 22/12/2024
Submission Date	29/01/2025
IV Name & Date	Balqis Aldabaibeh 29/11/2024

Submission Format

The assignment should be submitted to the university's eLearning system within the deadline specified above from the link: https://elearning.htu.edu.jo/login. The assignment is in the form of:

1- A technical document (.docx)
2- A user document (.docx)
3- A copy of your actual database (.sql file)
4- The source code of the user interface (.zip)

The technical and user document must follow the below guidelines, and contains the sections described in the assignment brief. In your documents, you should make use of headings, paragraphs, and subsections as appropriate. The expected word limit is 5000-10000 words, although you will not be penalized for exceeding the total word limit, do your best to be within the word limit. Your report should be:

• In the form of word soft copies submitted to the university's eLearning system.
• Written in a formal business style using single spacing and font size 12, of times roman.

Must be supported with research and referenced using the Harvard referencing system.

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

Assignment Brief and Guidance

You are working as a Junior Database at "EDU Youth Foundation", an organization thriving to make quality education a reality for every child/youth locally and regionally. Currently, EDU Youth Foundation has a system that handles basic Donor tracking. But it is not great at keeping up with detailed records, event participation, or communication efforts. A proper Donor database will solve these issues, acting as a one-stop shop for everything related to your Donor and their ongoing connection to your Foundation. The foundation has tasked you to build a database that helps them track donor information, events and such.

Their needs are as follows:
A donor database stores detailed information about your donors, including names, contact information, career details. It also tracks engagement, such as participation in events, donations, and any relevant updates about your Donor.

The new database must track things like event participation, and Donor's contributions. Additionally, you can monitor communication history and manage efforts to maintain strong relationships with your Donor network.

- You are assigned to produce a comprehensive design for a fully functional system which includes interface and output designs, data validations, and data normalization. You should provide the needed design as a report, including requirement gathering and database design. The report should show the design of the relational database system using appropriate design tools and techniques. It should contain at least four interrelated tables. It also should show a clear statement of user and system requirements. In your report, you should evaluate the effectiveness of the database design in relation to user and system requirements. Your design tasks should encompass the following key elements:

Part1(Design):

1. Identify user and system requirements for designing a database based on the provided scenarios.
2. Identify entities and attributes relevant to the selected scenario and create a relational database system using conceptual design (ER Model).
3. Include identifiers (primary key) for entities and specify cardinalities and participations of relationships.
4. Convert the ER Model into a logical database design using the relational database model, incorporating primary keys, foreign keys, and referential integrities. Ensure that the design comprises at least five interrelated tables.
5. You should explain data normalization with examples. Evaluate whether the provided logical design in the previous task is normalized and, if not, normalize the database by removing anomalies.
6. Finally, assess the effectiveness of the design in relation to user and system requirements by examining whether the given design (ERD and Logical design) accurately represents the identified user and system requirements.

- Your responsibility as a Junior Developer is to develop a database and a user interface based on the requirements that are gathered from the liaison officers as part of the agreement. You are assigned to provide the needed system and documentation including user and technical documentation, database development, the system user interface, and testing.

Part 2(Development)

1. Develop the database system using evidence of user interface, output and data validations and querying across multiple tables including system security and database maintenance. You have decided to implement a query language into the relational database system.
2. Assessing whether meaningful data has been extracted by query tools to produce appropriate management information.

Part 3(Development)

1. Evaluating the effectiveness of the database solution in relation to user and system requirements.
2. Suggest improvements for your database system.
3. Suggest how is your database system is flexible and can handle improvements in the future to ensure the continued effectiveness of the system.
4. Unit testing that tests the relation between interrelated tables against user requirements. In addition, the testing plan must check the effectiveness of the security like privileges granted to users.
5. Assess how the testing was effective.
6. Explain the choice of data used.

Part 4(Development)

1. A Technical documentation showing the developed database solution including system security and database maintenance features. The documentation should include diagrams that show movement of data through the system and flowcharts describing how the system works. The documentation shall include the user interface, output, and data validations, and querying across multiple tables.

Produce documentation for users showing an overview of the system, how to use the system, the frequently asked questions, and the contact information.

Learning Outcomes and Assessment Criteria			
Learning Outcome	**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 normalization.	**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.	
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.