**To do:** Make a submission

**Opened:** Thursday, 19 September 2024, 12:05 AM
**Due:** Thursday, 26 September 2024, 11:55 PM

**This assignment will assess your knowledge and skills about:**

1. Applying normalization techniques to transform a relation into first, second, third and Boyce-Codd normal forms.

**Assignment Information**

Given the following unnormalized relation representing a library database:

**Books (Book_ID, Title, Author, Genre, Publisher, Publication_Year, ISBN, Price)**

a) Define normalization in the context of database management systems (DBMS). Explain why normalization is essential for database design.

b) Normalize this relation into First Normal Form (1NF), Second Normal Form (2NF), Third Normal Form (3NF) and Boyce-Codd Normal Form (BCNF).

c) For each normalization step (1NF, 2NF, 3NF, BCNF) performed in Part (b), explain the specific functional dependencies present in the original relation and how they are addressed through normalization.

d) Discuss the advantages and potential drawbacks of achieving higher normal forms (3NF and BCNF) compared to lower normal forms (1NF and 2NF) in terms of database design, querying efficiency, and data integrity.

**Submission Instructions**

- Read the **rubric** on how you are going to be graded before you start to work on this assignment.
- Submit the assignment in **MS Word.**
- Your assignment should be:
  - At least **250** words and not more than **750** words (not including the reference list or the title).
  - **Double-spaced** in **Times New Roman** font, which is no greater than **12** points.
- Support your arguments with **sources** and **evidence**.
- Use high-quality, credible, relevant sources to develop ideas appropriate for the discipline and genre of writing. Explore additional details on the **INFORMATION LITERACY** page (located on the right-hand side of this page). Please consider using references and in-text citations from textbooks and any other sources used in this assignment from our library.

**This assignment will be assessed by your instructor using the rubric below.**

Add submission

## Submission status

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| **Attempt number** | This is attempt 1. |
| **Submission status** | No submissions have been made yet |

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| **Grading status** | Not graded |
| **Time remaining** | 2 days 17 hours remaining |

**Grading criteria**

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| **a) Definition of Normalization and its importance** | Provides a clear and comprehensive definition of normalization in the context of database management systems (DBMS) along with their importance. ***20 points*** | Provides a basic definition of normalization with a brief explanation of its importance. ***16 points*** | Provides the definition but fails to mention its importance. ***10 points*** | Provides no information/ Incorrect information. ***0 points*** |
| **b) Normalization Process** | Accurately normalizes the relation into 1NF, 2NF, 3NF, and BCNF with clear justification. ***30 points*** | Normalizes the relation into 1NF, 2NF, 3NF, and BCNF with some inaccuracies in normalization steps. ***24 points*** | Partially normalizes the relation into 1NF, 2NF, 3NF, and BCNF but with significant inaccuracies. ***15 points*** | Provides no information/ Incorrect information. ***0 points*** |
| **c) Explanation of Functional Dependencies** | Provides a detailed explanation of the specific functional dependencies present and accurately explaining how they are addressed through normalization. ***20 points*** | Explains most of the specific functional dependencies present with brief explanation of how they are addressed through normalization. ***16 points*** | Identifies few of the specific functional dependencies present but fails to address it through normalization. ***10 points*** | Provides no information/ Incorrect information. ***0 points*** |
| **d) Discussion of Advantages and Drawbacks** | Provides a comprehensive discussion of the advantages and potential drawbacks in terms of database design, querying efficiency, and data integrity. ***20 points*** | Explains some advantages and potential drawbacks with limited discussion in terms of database design, querying efficiency, and data integrity. ***16 points*** | Discusses a few of the advantages and potential drawbacks but lacks depth in terms of database design, querying efficiency, and data integrity. ***10 points*** | Provides no information/ Incorrect information. ***0 points*** |

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| **Sources and Evidence** | Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the discipline and genre of the writing. ***10 points*** | Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the discipline and genre of the writing. ***8 points*** | Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for the discipline and genre of the writing. ***5 points*** | Demonstrates an attempt to use sources to support ideas in writing. Yet, most sources provided are not credible / relevant to the discipline and genre. ***2 points*** | Used no sources to support ideas in writing. ***0 points*** |