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	Assessment	Project
	Total:	100

## Introduction

The Oracle DBA is responsible for resolving issues related to the database, including performance problems, data corruption, and hardware failures. The DBA must have a deep understanding of the database architecture and be able to troubleshoot complex problems quickly and effectively. In short, the Oracle DBA plays a critical role in ensuring the reliability, scalability, and security of the Oracle Database. The DBA's duties and responsibilities include designing and implementing data models, installing and configuring the database software, monitoring and tuning performance, implementing and maintaining data security.

## Outline

### Question 1 Subtotal: [10]

You have been provided with the following information for an online bookstore. Use the information to come up with a suitable data model in the form of an Entity Relationship Diagram (ERD).

The entities for this database include:

1. **Book:** Stores information about each book, including its title, author, publisher, publication date, price, and quantity in stock.
2. **Author:** Stores information about each author, including their name and ID.
3. **Order:** Stores information about each customer order, including the date and time of the order and the customer's ID.
4. **Order Detail:** Stores information about each item ordered, including the book ID, quantity ordered, and price at the time of the order.
5. **Customer:** Stores information about each customer, including their name, address, and email.


The ERD includes relationships between the entities, such as:

- A book can have one or more authors, and an author can write one or more books.
- An order can have one or more order details, and an order detail belongs to exactly one order.
- A book can be included in zero or more order details, and an order detail includes exactly one book.
- A customer can place zero or more orders, and an order belongs to exactly one customer.

### Question 2 Subtotal: [80]

You have been hired as a Junior Oracle Database Administrator for the organisation since it relies on Oracle Database to manage their data. As someone who is learning Oracle for the first time, your task is to:

- a. Install and configure an Oracle Database on a machine running Linux or Windows machine. [10]
- b. Create a database and configure it to meet the requirements of the organisation. [20]  
This includes creating tables, views, and indexes.

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- c. Populate the database with sample data using SQL\*Loader Utility and write queries to retrieve data from the database. [20]
- d. Implement security measures to protect the database from unauthorized access. This includes creating users and roles, assigning privileges, and implementing password policies. [20]
- e. Monitor the database for a few days and document any issues that arise. This includes checking for performance issues, errors, and other issues that may impact the availability or security of the database. [10]

**Documentation** **Subtotal: [10]**

You are required to provide a document that include the following:


- a. Section that outlines the steps taken to install and configure the Oracle Database on the chosen virtual machine. This section should include screenshots of the installation process, and any configuration changes made to the database. [2]
- b. A section that outlines the requirements of the organisation and how the database was created and configured to meet those requirements. This section should include the schema diagram, descriptions of tables and views, and any indexes created. [2]
- c. A section that describes the process used to populate the database with sample data and the queries written to retrieve that data. This section should include examples of the queries used and the data retrieved. [2]
- d. A section that describes the security measures implemented to protect the database from unauthorized access. This section should include a list of users and roles created, the privileges assigned to those roles, and any password policies implemented. [2]
- e. A section that outlines the monitoring activities performed and any issues encountered during that time. This section should include a description of any performance issues, errors, or other issues that may impact the availability or security of the database, and how those issues were resolved. [2]

**PLEASE NOTE:**

All the deliverables should be well-documented and organised, with clear explanations and supporting screenshots, Oracle commands, scripts and SQL code where applicable.

**No evidence, no marks!**

Criteria	Weight
Modelling the Database	10
Installing and configuring the Oracle Database	10
Creating the database and configure it to meet the requirements	20
Populating the database using SQL*Loader and data retrieval	20
Monitoring the database	10
Implement security measures	20
Documentation (Structure, completeness, format)	10
<b>Total</b>	<b>100</b>

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### Additional Information

- This project must be done in teams of 3 to 4 members in a team.
- All work must be original.
- Submit your assignment electronically on Moodle (BC Connect) before the due date.
- Include a cover page and table of contents.
- All writing must be correctly referenced and cited.
- Belgium Campus makes use of software that can scan for plagiarism and a student caught doing this will get 0 for this assignment.
- No mark will be awarded if the assignment is not uploaded via BC Connect.
- Late assignments will not be accepted and missing the deadline is an automatic 0.