	Subject:	Database Development 271/281
	Assessment:	Assignment 1
	Total:	50 Marks

Assignment 1

Introduction

The relational data model introduced by Dr Edgar F. Codd in 1970 of IBM is the most widely used data model. There are many different relational database management systems (RDBMS) on the market today. Oracle and Microsoft SQL Server remain the two most popular and widely used DBMS products in industry, but there are many other enterprise RDBMS software products such as Sybase, MySQL, IBM DB2, SAP HANA, and PostgreSQL.

Dr Codd, after his extensive research on the Relational Model of database systems, came up with twelve rules of his own, which according to him, a database must obey in order to be regarded as a true relational database. He published the list out of concern that many vendors were marketing their database software as “relational” even though those products did not meet minimum relational standards.

All RDBMS products support Structured Query Language (SQL) as the standard query language. Initially created in the 1970s, SQL is a powerful and flexible relational database language composed of commands that enable users to create database and table structures, perform various types of data manipulation and data administration, and query the database to extract useful information. An official SQL standard was adopted by the American National Standards Institute (ANSI) in 1986 and then by the International Organization for Standardization, known as ISO, in 1987.

Although compliance with the ANSI and the ISO/IEC SQL standard is usually a requirement for all RDBMS software, many RDBMS vendors add their own special enhancements. For example, Microsoft SQL Server uses Transact SQL or T-SQL, while Oracle uses Procedural Language/SQL or PL/SQL. Both are different extensions or “dialects” of the standard SQL and have different syntax and capabilities.

Outline

You are required to provide an answer to the following questions, these answers need to be submitted in Microsoft Word or pdf format. These questions will aid you in properly understanding some of the concepts covered in this module.

Question 1


Subtotal: [10]

Discuss the implications of Codd’s 12 rules for relational databases. **Do not just copy and paste the rules.** You must demonstrate an understanding of the rules and their implications on managing database.

Question 2

Subtotal: [15]

Compare Transact-SQL (T-SQL) to the Procedural Language/SQL (PL/SQL) by highlighting five fundamental differences in terms of their capabilities and syntax. Use code examples to highlight the how the same operations are performed differently in each language.

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Question 3

Subtotal: [20]


SQL Server provides various tools that are used for different purposes, such as installation, configuration, auditing, and performance tuning. As a potential future Database Administrator, it is important that you understand SQL Server utilization.

Discuss in detail how an SQL Server, in particular the latest version, provides the database user and programmers with the following services:

- a) Optimized Data Storage [4]
- b) Security and Authentication [4]
- c) Backup and Recovery Support [4]
- d) Performance Monitoring and Tuning [4]
- e) Cloud Support [4]


Mark Allocation:

Requirements	Weight
Layout, Cover Page and Table of Contents	2
QUESTION 1:	10
Codd's 12 rules for relational databases	
QUESTION 2:	15
Five Differences between T-SQL and PL/SQL	
QUESTION 3:	20
Security and Authentication	
Data Recovery Support	
Performance Monitoring and Tuning	
Optimized Data Storage	
Cloud Services	
Referencing	3
Total	50

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Additional Information

- This is an individual assignment. All work must be done on your own.
- Submit your assignment electronically on Teams before the due date.
- Include a cover page and table of contents.
- All writing must be correctly referenced and cited. *See the guidelines on the next page.*
- 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 Teams Assignments.
- Late assignments will not be accepted and missing the deadline is an automatic **0**.

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ACADEMIC STYLE OF WRITING

An academic style of writing has the following characteristics:

- Formal
 - avoid using contractions such as isn't or can't;
 - no slang or colloquial terms;
 - formal phrasing e.g.
 - There are a lot of schools that don't have electricity.
 - Many schools are without electricity.
- Do not use first person
 - I looked at the different systems
 - Different systems were investigated
- Everything you state must be supported with evidence through referencing and citations. Objectivity must be maintained.
 - If you are stating your opinion, you must be able to support it logically.
- Paraphrasing is not merely retyping something in your own words. It is a restatement of the original **idea**. You need to show that you understand the core meaning of the original text.
- Use either Calibri or Times New Roman, font size 11, with a line spacing of 1.5, black text on a white background, justified alignment. All headings are size 16.
- Ensure you have a cover page with the assignment title, subject, lecturer details, date, and your own details; a professional appearance is important.
- Cover page, table of contents, body, and a reference list are required.
- Depending on the assignment you can also have a list of figures, a glossary, a list of abbreviations, a list of tables, and appendices.

REFERENCING AND CITATION GUIDE


Referencing and citations are how we prove and support our statements. They are absolutely crucial, vital, critical, imperative, fundamental, and essential!

REFERENCING

There are many different styles of referencing. These styles depend on your educational institution and on the field you are in. At Belgium Campus, we use Harvard referencing which is an author-date type of referencing.

Important notes:

- The most important information is the author, the date, and the title of the article

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- If your source does not have an author and is instead published by an institution e.g. the Massachusetts Institute of Technology, use the corporate author feature in Word.
- Use the tools provided by Microsoft Word. You can find a guide [here](#).
- The reference list is automatically populated using MS Word's tools. It is alphabetical and not numbered. It has its own page at the end of your document.
- If you are using an image, diagram, table, or figure, the source also needs to be referenced and you need to add a citation. You can use Microsoft Word's caption tool for this.
- If you are creating a PowerPoint presentation, referencing and citations still apply.

Here is an example of a reference list:

References

- Aarons, D. and P. Akach. 1998. South African Sign Language-one language or many? A sociolinguistic question. *Stellenbosch Papers in Linguistics* 31: 1-28.
- Al-Fityani, K. and C. Padden. 2008. A lexical comparison of sign languages in the Arab world. In R.M. de Quadros (ed.). *Sign Languages: Spinning and unraveling the past, present and future. TISLR9, forty-five papers and three posters from the 9th Theoretical Issues in Sign Language Research Conference, Florianopolis, Brazil, December 2006*, 2-13. Petropolis, Brazil: Editora Arara Azul.
- Baker, A., B. van den Bogaerde, R. Pfau and T. Schermer (eds.). 2016. *The linguistics of sign languages: An introduction*. John Benjamins Publishing Company.
- Clark, B. 2017. Sign Language Varieties in Lima, Peru. *Sign Language Studies* 17(2): 222-264.
- Crowley, T. and C. Bower. 2010. *An introduction to historical linguistics*. Oxford University Press.

CITATIONS


If the information we are typing is not general knowledge within the field or is not our own work we need to state where this information came from. We do this through a citation. A citation is a link to one of the references on our list.

For example:

Here I paraphrase what I found on the internet:

Despite several experiments, there does appear to be a consistent link between the ZPD and acrimony.

This is not my own information. In my reference list is the reference to the source:

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Vygotsky, L., 1978. *Mind in Society*. London: Harvard University Press.

This means I *need to use a citation*. It is simple to insert a citation from my sources using the MS Word tools. The paraphrase with my citation is:

Despite several experiments, there does appear to be a consistent link between the ZPD and acrimony (Vygotsky, 1978).

I can also directly refer to the author. For example,

Vygotsky (1978) pioneered the research in pedagogy and didactics through the Zone of Proximal Development theory.

Here my citation only has the year since I already stated the author. This is also made straightforward with the MS Word tools.

If I am using specific information from a book or article, I need to include the page numbers. I can't expect my reader to search through a book for a piece of information. You can do this using the MS Word tools. For example:

Within the field of robotically assisted surgery, Davis (2018, p. 204-207) found that patient trust in the doctor was the deciding factor.