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MAIN EXAMINATION

JANUARY – APRIL 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

PART TIME PROGRAMME

CMT 109: DATABASE SYSTEMS

Date: APRIL 2018	Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

Q1. a) Draw an R diagram for an information science system with almost all components. Explain any assumptions you make.   **(8marks)**

b)   Consider the following relation instance that record the orders made by a customer

Order No	Date	Customer Number	Name	Location Address	Brandn umber	Description	Cost Of items	Qty
49	5/1/18	22	James	Dallas	A955	Jacket	55	4
92	5/1/18	22	Barack	Dakar	G174	Coat	120	8
11	5/1/18	22	Barack	Florida	K103	Suit	90	5
23	19/1/18	47	Zack	Doha	G176	Coat	120	9
24	19/1/18	47	zack	Bangui	D778	Shirt	35	20
38	23/3/18	25	Abdi	Rome	E306	Tie	5	25
48	23/3/18	25	Abdi	Tauzin	D770	Shirt	35	4

i)   Using the above relation, describe the THREE types of anomalies.

(6 marks)

ii) Derive a set of well normalized relations from the relation, all of which are in third Normal Form (3NF). Explain each step.   **(8 marks)**

c)   The **Non-clustered and clustered index are** said tobe distinct in tables. Explain their roles in database.   **(3 marks)**

d) Explain the following terms;

    i) Index hunting. **(2 marks)**
    ii) **Enlist THREE disadvantages of query.** **(3 marks)**

Q2. a) Describe the problems with the traditional two-tier client / server architecture and discuss how these problems were overcome with the three-tierarchitecture.
(5 marks)

b) Describe the functions that should be provided by a modern full-scale multi-user DBMS. **(5 marks)**

c) Of the functions described in your answer to question 2(b) above, which ones do you think would be needed in stand alone PcDBMS? Provide justification for your answer. **(6 marks)**

d) Discuss the advantages and disadvantages of network database.
(4 marks)

Q3. a) Give a definition of an OODBMS. What are the advantages or disadvantages of OODBMS? **(6 marks)**

b) Give a definition of dataware house. Discuss the benefits of implementing a data warehouse. **(4 marks)**

c) Describe briefly the TWO strategies of database recovery; deferred and immediate update. Give the main advantages and disadvantages of each strategy.
(6 marks)

d) Discuss how data mining can realize the value of a data warehouse.
(4 marks)

Q4. a) Explain the function of each of the below clauses of the SELECT statement. What restrictions are imposed on these clauses?

    i) DROPWHE **(2 marks)**
    ii) REGROUP **(2 marks)**
    iii) BYHAVING **(2 marks)**
    iv) ALTER **(2 marks)**

b) Describe THREE development of database technology today. Provide an example to illustrate your answer. **(6 marks)**

c) What is meant by indexes in DBMSs? Explain any TWO types of indexes in MsSQL server. **(4 marks)**

Q5. a) Explain the meaning of denormalization a relation. Give an example to illustrate your answer. **(6 marks)**

b)   Describe the TWO main approaches to participating and discuss when each
      may be an appropriate way to improve performance.   **(6marks)**

c)   What is RAID technology and how does it improve performance and reliability.
                                                                  (4 marks)

d)   Explain what is meant by a DDBMS and discuss the motivation in providing such
      a system.   **(4 marks)**

END