Department of CSE, Stamford University Bangladesh

CSI 223: Database Management System

Midterm Exam

Full Marks: 5@20=100 **Time: 2 Hours**

1(a) Explain key aspects of the course Database Management System (DMS). Hint: First mention general aspects/features of individual terms (i.e., Database, Management and System) and then explain aspects/importance of DMS.

1(b) 'Data is a valuable commodity in this digital era and database is like Commercial Bank Vault to secure the Data' – Justify the statement comparing functions/operations of Bank Vault with Database features/functions.

2(a) 'A major purpose of a database system is to provide users with an abstract view of the data.' Explain different levels of abstraction with pictorial view. Mention different distinct roles/access of different database users.

2(b) For any enterprise/company automation, data are stored in a database and end users access through desktop/web based database application. Compare and contrast between two-tier architecture and three-tier architecture of database application. Which one most secure and why?

3(a) Mention several popular database software and default application software of the individual database software.

3(b) Elaborate and explain naming significance of SQL, DDL, DML? What are the basic DDL and DML commands? Demonstrate DDL and DML with a few SQL commands regarding creation/manipulation of sample tables related to university database.

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Consider the relational database given in Fig 01, where the primary keys are underlined. Give an expression in the relational algebra to express each of the following queries

i) Find the names of all employees in the database who live in the same city and on the same street as do their managers.

ii) Find the names of all employees in the database who do not work for First Bank Corporation.

iii) Find the names of all employees who earn more than every employee of Small Bank Corporation.

employee(person-ID, person-name, street, city)
works(person-ID, company-name, salary)
company(company-name, city, minm-salary, maxm-salary, sales)
manager(person-ID, manager-name)

5 Suppose CSE department of Stamford University wants to develop own automation system for student course registration and result. Deign different tables for the database to store student information, course information, result information assigning appropriate keys.