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06CS54

Fifth Semester B.E. Degree Examination, June/July 2015
Database Management Systems

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Briefly discuss the advantages of using DBMS. **(10 Marks)**

b. Discuss the main characteristics of the database approach. How does it differ from the traditional file systems? **(10 Marks)**

2 a. List the summary of the notations of ER diagram. Include symbols used ER diagram and their meanings. **(10 Marks)**

b. Define an entity and an attribute. Explain the different types of attributes that occur in an ER model with an example. **(10 Marks)**

3 a. Explain SELECT and PROJECT operations in relational algebra with an example. **(10 Marks)**

b. Explain different types of JOIN operations in relational algebra with example. **(10 Marks)**

4 a. With respect to SQL, explain with example :
i) DROP command ii) ALTER command. **(10 Marks)**

b. Given the schema,
EMP (fname, Lname, ssn, bdate, address, sex, salary, supperssn, dno)
DEPT (dname, dnumber, mgrssn, mgrstartdate)
DEPT_LOC (dnumber, dloc)
PROJECT (pname, pnumber, ploc, dnum)
WORKS_ON (essn, pno, hours)
DEPENDENT (essn, dependent - name, sex)
Write the SQL queries for the following :
i) List female employees from dno = 20 earning more than 50000.
ii) List 'CSE' department details.
iii) Retrieve the firstname, lastname and salary of all employees who work in department no. 50
iv) Select the name of employee whose 1st letter is R and 3rd letter is M.
v) Retrieve the name of the manager of each department. **(10 Marks)**

PART – B

5 a. Explain the following :
i) Aggregate functions in SQL ii) Insert, update and delete commands **(10 Marks)**

b. How are triggers and assertions defined in SQL? Explain with example. **(10 Marks)**

6 a. What is functional dependency (FD)? Write an algorithm to find a minimal cover for a set of functional dependencies. Construct minimal cover M for the set of functional dependencies which are :
$B \rightarrow A$, $D \rightarrow A$, $AB \rightarrow D$. **(10 Marks)**

b. Explain INF, 2NF and 3NF with examples. **(10 Marks)**

7 a. Explain multi valued dependency and fourth normal form, with an example. **(10 Marks)**

b. Explain: i) Inclusion dependencies and ii) Domain key normal form **(10 Marks)**

8 a. Briefly discuss the 2 phase locking (2PL) protocol used in concurrency control. **(10 Marks)**

b. Explain all the phases involved in ARIES algorithm with an example. **(10 Marks)**

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10CS52

Fifth Semester B.E. Degree Examination, June/July 2015
Systems Software

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Give any two differences between SIC and SIC/XE machine architecture. **(04 Marks)**

b. Explain in detail the architecture of a SIC/XE machine. **(10 Marks)**

c. Write a subroutine in SIC/XE to read a 100-byte record from a device 'F5' into BUFFER use immediate and register-to-register instructions. **(06 Marks)**

2 a. What is a forward reference? How to solve this forward reference in assembler? **(04 Marks)**

b. What are the 3 different records used in object program and write their formats? **(06 Marks)**

c. Generate the object code for the instructions shown below: **(10 Marks)**

1) 0006 CLOOP	+JSUB	RDREC
2) 0017	J	CLOOP
3) 0020	LDA	#3
4) 103C	+LDT	#4096
5) 002A	J	@RETADR

Note: JSUB = 8, J = 3C, LDA = 00, LDT = 74, RDREC = 1036, RETADR = 0030

3 a. Enlist the various machine independent assembler features. **(05 Marks)**

b. With suitable example, explain the use of LTORG assembler directive. **(05 Marks)**

c. Explain the multi pass assembler with example. **(10 Marks)**

4 a. What are basic functions of a loader? Develop an algorithm for a bootstrap loader. **(10 Marks)**

b. What is the difference between linkage editor and linking loader? **(04 Marks)**

c. Explain various data structures used for a linking loader. **(06 Marks)**

PART – B

5 a. Explain the relationship between editing and viewing buffers with relevant diagram. **(10 Marks)**

b. Differentiate between tracing and traceback functions in a debugging system. **(04 Marks)**

c. Mention the different precessions for future assembler and compiler consistent interface with debugging system. **(06 Marks)**

6 a. List the different tables used for a macroprocessor. Explain their functions. **(08 Marks)**

b. Explain with example, concatenation of macro parameter and generation of unique lables. **(12 Marks)**

7 a. Explain the structure of LEX specification with example. **(10 Marks)**

b. What is symbol table? Write a LEX program to implement symbol table. **(10 Marks)**

8 a. What is YACC? Explain the different sections used in writing the YACC specification. **(10 Marks)**

b. Explain conflicts in YACC with example. **(05 Marks)**

c. Write YACC program to check whether the given string $b^n a^n (n > 0)$ is accepted by grammar or not. **(05 Marks)**

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