R09

Code No: 54013

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May - 2019
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Draw the database system structure and explain.
b) Explain about database users and administrators. [8+7]

2.a) A university registrar's office maintains data about the following entities:
i)courses, including number, title, credits, syllabus, and prerequisites;
ii) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
iii) students, including student-id, name, and program and
iv) instructors, including identification number, name, department, and title.
Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.
Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.
b) Briefly explain about conceptual database design with the ER model. [8+7]

3.a) Explain the following:
i) Key constraints
ii) Enforcing integrity constraints
b) Let $R = (A, B)$ and $S = (A, C)$, and let $r(R)$ and $s(S)$ be relations. Write relational-algebra expressions equivalent to the following domain-relational calculus expressions:
i) $\{< a > \mid \exists\ b\ (< a,b > \in r \wedge b = 17)\}$
ii) $\{< a, b, c > \mid < a,b > \in r \wedge < a,c > \in s\}$
iii) $\{< a > \mid \exists\ b\ (< a,b > \in r) \vee \forall\ c\ (\exists\ d\ (< d,c > \in s) \Rightarrow < a,c > \in s)\}$
iv) $\{< a > \mid \exists\ c\ (< a,c > \in s \wedge \exists\ b1, b2\ (< a,b1 > \in r \wedge < c,b2 > \in r \wedge b1 > b2))\}$
[7+8]

4. Explain the following:
a) The form of a basic SQL query
b) Aggregate operators and examples. [8+7]

5.a) Define decomposition. Explain decomposition using functional dependencies.
b) Define multivalued dependency. Explain decomposition using multivalued dependencies. [8+7]

6.a) Define the concept of schedule for a set of concurrent transaction. Give a suitable example.
b) Explain read-only, write-only & read-before-write protocols in serialazability. [8+7]

7.a) Explain about the remote backup systems.
b) What is the role of operating system in buffer management? [8+7]

8.a) Describe about the Dynamic Index structure.
b) Differentiate between Hash based Indexing and Tree based Indexing. [3+6+6]

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