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Question Paper Code : 90457

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fifth Semester

OIT 551 – DATABASE MANAGEMENT SYSTEMS

(Common to Aeronautical Engineering/Agriculture Engineering/Automobile Engineering/Electrical and Electronics Engineering/Industrial Engineering/Industrial Engineering and Management/Materials Science and Engineering/Mechanical Engineering/Medical Electronics/Robotics and Automation Engineering/Food Technology/Pharmaceutical Technology/Biomedical Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Mechanical and Automation Engineering/Mechatronics Engineering/Production Engineering/Bio-Technology
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Mention any four advantages of DBMS over file processing.
2. What are stored and derived attributes ?
3. Give the equivalent relational algebraic notations and suitable example for each of the following relational operations : Project, Rename.
4. What is correlated subquery ? Give example.
5. State the purpose of materialized view ?
6. List the disadvantages of using MySQL triggers ?
7. Differentiate 3NF from BCNF.



8. Exemplify multivalued dependency.
9. Mention any four major database security vulnerabilities.
10. Mention two techniques used to evaluate the effectiveness of a retrieval method.

PART - B

(5×13=65 Marks)

11. a) i) With a neat diagram explain the architecture of database management system. (9)
ii) Compare super and candidate keys. (4)
(OR)
b) Compare the following in terms of ER model :
i) Simple attribute and composite attribute. (3)
ii) Weak entity and strong entity. (4)
iii) Total participation and partial participation. (3)
iv) N : 1 relationship and M : N relationship. (3)
12. a) What are aggregate functions ? List and exemplify each of them briefly. (13)
(OR)
b) Discuss the various Data Manipulation Language commands of SQL. (13)
13. a) What is Stored Procedures in SQL ? Give the syntax for writing procedure. Illustrate the same with an example. (2+6+5)
(OR)
b) Discuss the purpose, syntax and usage of MySQL Triggers with example. (13)
14. a) Exemplify the four major types of functional dependencies in detail. (13)
(OR)
b) Brief on the three database anomalies. Define and exemplify how the three normal forms : 1NF, 2NF and 3NF, remove the anomalies. (6+7)
15. a) Elaborate the encryption and key management schemes of database security. (13)
(OR)
b) Explain the characteristics of the statistical retrieval approach, which includes the vector space and the probabilistic model and list the issues of each of the models. (13)



PART - C

(1×15=15 Marks)

16. a) Notown Recording company has decided to store information about musicians who perform on its albums (as well as other company data) in a database. The company has wisely chosen to hire you as a database designer (at your usual consulting fee of \$2500/day). Each musician that records at Notown has an SSN, a name, an address, and a phone number. Poorly paid musicians often share the same address and no address has more than one phone. Each instrument used in songs recorded at Notown has a unique identification number, a name (e.g., guitar, synthesizer, flute) and a musical key (e.g., C, B-flat, E-flat). Each album recorded on the Notown label has a unique identification number, a title, a copyright date, a format (e.g., CD or MC) and an album identifier. Each song recorded at Notown has a title and an author. Each musician may play several instruments and a given instrument may be played by several musicians. Each album has a number of songs on it, but no song may appear on more than one album. Each song is performed by one or more musicians and a musician may perform a number of songs. Each album has exactly one musician who acts as its producer. A musician may produce several albums, of course.

Identify the entities, attributes and relationship types and their participation and finally draw an ER diagram that captures these information. (15)

(OR)

b) Consider the following relations containing airline flight information :
Flights(fino : integer, from : string, to : string, distance : integer, departs : time, arrives : time)
Aircraft(aid : integer, aname : string, cruisingrange: integer)
Certified(eid : integer, aid : integer).
Employees(eid : integer, ename : string, salary : integer)
Note that the Employees relation describes pilots and other kinds of employees as well; every pilot is certified for some aircraft (otherwise, he or she would not qualify as a pilot) and only pilots are certified to fly. Write the following queries in SQL.

- 1) Find the eids of pilots certified for some Boeing aircraft. (2)
 - 2) Find the names of pilots certified for some Boeing aircraft. (2)
 - 3) Find the aids of all aircraft that can be used on non-stop flights from Bonn to Madrid. (2)
 - 4) Identify the flights that can be piloted by every pilot whose salary is more than \$100,000. (2)
 - 5) Find the eids of employees who make the highest salary. (2)
 - 6) Find the eids of employees who make the second highest salary. (2)
 - 7) Find the eids of employees who are certified for the largest number of aircraft. (3)
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