**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**
**IBRAHIMBAGH, HYDERABAD-31**
B.E 2/4 (CSE-A) II-SEMESTER
**Department of Computer Science and Engineering**
Name of the Subject: Database Management Systems
**Assignment** –II **DOS: 1-06-2023**

| Q.no. | **Question** | **Blooms Taxonomy** | Mapped | |
|---|---|---|---|---|
| | | | **CO** | **PO** |
| **Set-1 (1602-21-733-012, 013, 015, 020, 026, 029, 032, 036, 037, 069) answer the following Questions** | | | | |
| 1 | Implement a PL/SQL program to list names of Employees in Alphabetical order along with the position where position is the position of employee in the list sorted by salary in decreasing order. | 3 | 3 | 1,2 |
| 2 | Write a trigger program Insertion of an employee must be possible only on Saturday between 10 AM and 5 PM by the users having ES as last two characters. | 3 | 3 | 1,2 |
| 3 | List ename, manager chain for each employee as follows SMITH -------FORD ------ JONES ------ KING When a view is Updatable? What is materialized view? | 3 | 3 | 1,2 |
| 4 | Suppose that we decompose the schema R = (A, B, C, D, E) into (A, B, C) (A, D, E). Show that this decomposition is a lossless-join decomposition if the following set F of functional dependencies holds:<br>A → BC<br>CD → E<br>B → D<br>E → A | 3 | 3 | 1,2 |
| **Set-2 (1602-21-733-001, 002,003,004,005,006,007,008) answer the following Questions** | | | | |
| 1 | Write a trigger program Insertion of an employee must be possible only on Saturday between 10 AM and 5 PM by the users having ES as last two characters. | 3 | 3 | 1,2 |
| 2 | Suppose that we decompose the schema R = (A, B, C, D, E) into (A, B, C) (A, D, E). Show that this decomposition is a lossless-join decomposition if the following set F of functional dependencies holds:<br>A → BC<br>CD → E<br>B → D<br>E → A | 3 | 3 | 1,2 |
| 3 | Consider a schema R(A, B, C, D) and functional dependencies A -> B and C -> D. Then the decomposition of R into R1 (A, B) and R2(C, D) is | 3 | 3 | 1,2 |

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| | (a) dependency preserving and lossless join<br>(b) lossless join but not dependency preserving<br>(c) dependency preserving but not lossless join<br>(d) not dependency preserving and not lossless join | | | |
| 4 | A table has fields F1, F2, F3, F4, and F5, with the following functional dependencies where F1,F2 candidate key and F1 is primary key<br>F1->F3<br>F2->F4<br>(F1,F2)->F5<br>in terms of normalization, this table is in<br>(a) 1NF (b) 2NF (c) 3NF (d) None of these | 3 | 3 | 1,2,3 |
| **Set-3 (1602-21-733-009, 010,011,014,016,017,018,019) answer the following Questions** | | | | |
| 1 | Implement a PL/SQL program to list names of Employees in Alphabetical order along with the position where position is the position of employee in the list sorted by salary in decreasing order. | 3 | 3 | 1,2 |
| 2 | Explain how functional dependencies can be used to indicate the following:<br>• A one-to-one relationship set exists between entity sets student and instructor.<br>• A many-to-one relationship set exists between entity sets student and instructor. | 3 | 3 | 1,2 |
| 3 | Compute the closure of the following set F of functional dependencies for relation schema R = (A, B, C, D, E).<br>$A \rightarrow BC$<br>$CD \rightarrow E$<br>$B \rightarrow D$<br>$E \rightarrow A$<br>List the candidate keys for R. | 3 | 3 | 1,2 |
| 4 | Why some functional dependencies called trivial functional dependencies? | 3 | 3 | 1,2 |
| **Set-4 (1602-21-733-020,021,022,023,024,025,027,028) answer the following Questions** | | | | |
| 1 | List ename, manager chain for each employee as follows<br>SMITH -------FORD ------ JONES ------ KING | 3 | 3 | 1,2 |
| 2 | Show that it is possible to ensure that a dependency-preserving decomposition into 3NF is lossless-join decomposition by guaranteeing that at least one schema contains a candidate key for the schema being decomposed. (Hint: Show that the join of all the projections onto the schemas of the decomposition cannot have more tuples than the original relation. | 3 | 3 | 1,2 |
| 3 | Give Examples for Super key, candidate key and primary key | 3 | 3 | 1,2 |

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| 4 | Suppose that we decompose the schema R = (A, B, C, D, E) into (A, B, C) (A, D, E). Show that this decomposition is a lossless-join decomposition if the following set F of functional dependencies holds:<br>A → BC<br>CD → E<br>B → D<br>E → A | 3 | 3 | 1,2 |
| **Set-5 (1602-21-733-030,031,032,033,034,035,038,039) answer the following Questions** | | | | |
| 1 | List names of Managers (to whom somebody report) and the number of persons report in words. | 3 | 3 | 1,2 |
| 2 | Write a PL/SQL program to print employee number of an employee as well as the Corresponding MGR | 3 | 3 | 1,2,3 |
| 3 | A functional dependency a → b is called a partial dependency if there is a proper subset g of a such that g → b. We say that b is partially dependent on a. A relation schema R is in second normal form (2NF) if each attribute A in R meets one of the following criteria: • It appears in a candidate key. • It is not partially dependent on a candidate key. Show that every 3NF schema is in 2NF. (Hint: Show that every partial dependency is a transitive dependency.) | 3 | 3 | 1,2 |
| 4 | What is loss-less Decomposition How it can be implemented. | 3 | 3 | 1,2,3 |
| **Set-6 (1602-21-733-040 to 047) answer the following Questions** | | | | |
| 1 | List the names of top earners in each dept along with salary in words. | 3 | 3 | 1,2 |
| 2 | Consider a schema R(A, B, C, D) and functional dependencies A -> B and C -> D. Then the<br>decomposition of R into R1 (A, B) and R2(C, D) is<br>(a) dependency preserving and lossless join<br>(b) lossless join but not dependency preserving<br>(c) dependency preserving but not lossless join<br>(d) not dependency preserving and not lossless join | 3 | 3 | 1,2 |
| 3 | Give an example of a relation schema R and a set of dependencies such that R is in BCNF but is not in 4NF | 3 | 3 | 1,2 |
| 4 | Which normal form is considered adequate for normal relational database design?<br>(a) 2NF (b) 5NF (c) 4NF (d) 3NF | 3 | 3 | 1,2,3 |
| **Set-7 (1602-21-733-048 to 055) answer the following Questions** | | | | |
| 1 | Write a PL/SQL program to update salary of an employee for whom increments are sanctioned. Also record such updations in a log table with entries {empno, ename, old sal, new sal, date of updations}. | 3 | 3 | 1,2 |
| 2 | A table has fields F1, F2, F3, F4, and F5, with the following functional dependencies | 3 | 3 | 1,2 |

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| | F1->F3<br>F2->F4<br>(F1,F2)->F5<br>in terms of normalization, this table is in<br>(a) 1NF (b) 2NF (c) 3NF (d) None of these | | | |
| 3 | The relation schema Student_Performance (name, courseNo, rollNo, grade) has the following FDs:<br>name,courseNo->grade<br>rollNo,courseNo->grade<br>name->rollNo<br>rollNo->name<br>The highest normal form of this relation scheme is<br>(a) 2NF (b) 3NF (c) BCNF (d)4NF | 3 | 3 | 1,2 |
| 4 | What is a cursor? How an explicit cursor can be created explain with an example | 3 | 3 | 1,2 |
| **Set-8 (1602-21-733-056 to 062,064) answer the following Questions** | | | | |
| 1 | Write a PL/SQL program to list names of Employees in Alphabetical order along with the position where position is the position of employee in the list sorted by salary in decreasing order. | 3 | 3 | 1,2 |
| 2 | The relation schema Student_Performance (name, courseNo, rollNo, grade) has the following FDs:<br>name,courseNo->grade<br>rollNo,courseNo->grade<br>name->rollNo<br>rollNo->name<br>The highest normal form of this relation scheme is<br>(a) 2NF (b) 3NF (c) BCNF (d)4NF | 3 | 3 | 1,2 |
| 3 | Write a trigger, Salary of an employee must be modified only on Monday in a month with an entry in the log table. | 3 | 3 | 1,2,3 |
| 4 | Describe embedded SQL with an example | 3 | 3 | 1,2 |
| **Set-9 (1602-21-733-065,066,067,135,136 ,301) answer the following Questions** | | | | |
| 1 | Write a PL/SQL program to list employee names whose salary is more than their Manager (to whom the/report) salary. | 3 | 3 | 1,2 |
| 2 | Consider a file system such as the one on your favorite operating system. a. What are the steps involved in creation and deletion of files, and in writing data to a file? b. Explain | 3 | 3 | 1,2,3 |

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| | how the issues of atomicity and durability are relevant to the creation and deletion of files and to writing data to files. | | | |
| 3 | Distinguish between the terms serial schedule and serializable schedule. | 3 | 3 | 1,2 |
| 4 | Suppose that there is a database system that never fails. Is a recovery manager required for this system? | 3 | 3 | 1,2 |
| **Set-10 (1602-21-733-302 to 307) answer the following Questions** | | | | |
| 1 | Write a trigger, Insertion of an employee must be possible only on Saturday between 10 AM<br>and 5 PM by the users having ES as last two characters. | 3 | 3 | 1,2,3 |
| 2 | List ename, manager chain for each employee as follows<br>SMITH -------FORD ------ JONES ------ KING | 3 | 3 | 1,2,3 |
| 3 | The definition of a schedule assumes that operations can be totally ordered by time. Consider a database system that runs on a system with multiple processors, where it is not always possible to establish an exact ordering between operations that executed on different processors. However, operations on a data item can be totally ordered. Does the above situation cause any problem for the definition of conflict serializability? Explain your answer. | 3 | 3 | 1,2 |
| 4 | The relation schema Student_Performance (name, courseNo, rollNo, grade) has the<br>following FDs:<br>name,courseNo->grade<br>rollNo,courseNo->grade<br>name->rollNo<br>rollNo->name<br>The highest normal form of this relation scheme is<br>(a) 2NF (b) 3NF (c) BCNF (d)4NF | 3 | 3 | 1,2,3 |