**Sub: Distributed Database System Class: T.E Comps B**

**ASSIGNMENT NO: 1 (Chapter 1, 2 and 3 )**

1. What is Distributed Database System? Different Features, Its advantages and Dis advantages of DDBS. **(Chapter 1)**
2. Explain Peer-to-Peer Distributed DBMSs Architecture in detail? **(Chapter 1)**
3. Given the relation Project perform horizontal Fragmentation given the **Application 1 as** Queries Project Table looking for those projects which are located work in NY and UK. The set **“Pr= {P1: Loc=“NY”, P2: Loc=“UK”}”** shows all the required simple predicates used by AP1. Therefore the min terms set is: **M= {m1: Loc=“NY”, m2: Loc<> “NY”, m3: Loc=“UK”, m4: Loc<> “UK”, m5= “<=30000”, m6= “>30000”}”**. Provide all possible combinations to get a minimal and complete set of min-term predicates for AP1. Also in addition AP1 should include Projects whose funds is less than or equal to 30000 i.e. **“Pr= {P3: Funds= “<=30000”}”.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PNo** | **PName** | **Funds** | **Dno** | **Loc** |
| P1 | Requirements | 235,000 | D002 | NY |
| P2 | Design | 410,000 | D003 | NY |
| P3 | Code | 300,000 | D001 | UK |
| P4 | Testing | 350,000 | D001 | UK |

Hint to Find Min-terms Combination: (3 predicates make use of 23=8 combinations) **(Chapter 2)**

1. Assume that the relational scheme:

**Project (Pno, PName, Budget, Loc)** is Fragmented as follows, where F1 is the first copy created at Site 1, F2 is the second copy created at Site 2 and F3 is the first copy created at Site 3:

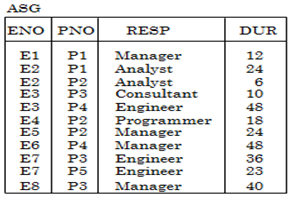
**F1:Proj1:σ Loc=’NY’ (Employee)**

**F2:Proj2:σ Loc=’UK’ (Employee)**

**F3:Proj3:σ Loc=’INDIA’ (Employee)**

Consider a retrieve request is generated in the distributed system to retrieve all project details where budget is greater than equal to 50000. Provide SQL Queries for different levels of Transparency such as Fragmentation, Location, Replication and Local Mapping Transparency. **(Chapter 2)**

1. For the following relation Asg: **(Chapter 2)**



Given is the set of queries as Follows

**Q1= Select PNO from ASG where Dur>24;**

**Q2=Select ENo from ASG where Resp=”Engineer”;**

**Q3= Select Resp from ASG where ENO in (E1, E2, E3, E4, E5);**

**Q4= Select ENO, PNO from ASG where Dur<24;**

Find Attribute Usage Matrix and Attribute affinity Matrix, and state the possible fragments using Bond Energy Algorithm.

**Given-** Application Access Frequency at different sites given as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **S1** | **S2** | **S3** | **Sum** |
| Q1 | 10 | 20 | 0 | 30 |
| Q2 | 5 | 0 | 10 | 15 |
| Q3 | 0 | 35 | 5 | 40 |
| Q4 | 0 | 10 | 0 | 10 |

1. What is a distributed Transaction? Explain ACID Properties of Transaction? **(Chapter 3)**
2. Explain model for transaction Management at each site in a Distributed DBMS? **(Chapter 3)**
3. Explain Concurrency Control Anomalies. **(Chapter 3)**
4. Compare and Contrast Pessimistic and Optimistic Concurrency Control Techniques. **(Chapter 3)**
5. Compare Locking Based Protocols and Timestamp Based Protocols. **(Chapter 3)**

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