

ADIKAVI NANNAYA UNIVERSITY
CBCS/SEMESTER SYSTEM
IV SEMESTER
BACHELOR OF COMPUTER APPLICATIONS
(w.e.f. 2015-16 Admitted Batch)

Database Management Systems

- Unit-I: Database Systems Introduction and Fundamentals:
Database Systems: Introducing the database and DBMS, Why the database is important, Historical Roots: Files and File Systems, Problems with File System Data Management, Database Systems.
- Unit-II: Data Models: The importance of Data models, Data Model Basic Building Blocks, Business Rules, The evaluation of Data Models, Degree of Data Abstraction.
The Relational Database Model: A logical view of Data, Keys, Integrity Rules, Relational Set Operators.
- Unit-III: Data Modeling and Normalization:
Entity Relationship Model: The ER Model, Developing ER Diagram.
Advanced Data Modeling: The Extended Entity Relationship Model, Entity clustering, Entity integrity: Selecting Primary keys, Design Cases: Learning Flexible Database Design.
- Unit-IV: Normalization of database tables: Database Tables and Normalization, The need for Normalization, The Normalization Process, Improving the design, Surrogate Key Considerations, High level Normal Forms.
- Unit-V: Interaction with Databases and Construction of Information System:
Introduction to SQL: Data Definition Commands, Data Manipulation Commands, Select queries, Advanced Data Definition Commands, Advanced Select queries.

Text Book:

1. Peter Rob, Carlos Coronel, *Database Systems Design, Implementation and Management*, Seventh Edition, Thomson, 2007.

Books for Reference:

1. Elimasri / Navathe, *Fundamentals of Database Systems*, Fifth Edition, Pearson Addison Wesley , 2007.
2. Raman A Mata – Toledo/Panline K Cushman, *Database Management Systems*, Schaum's Outlibe series, Tata McGraw Hill, 2007.
3. C.J.Date, A.Kannan, S.Swamynathan, *An Introduction to Database Systems*, Eight Edition, Pearson Education, 2006.
4. Michel Kifer, Arthur Bernstein, Philip M. Lewis, Prabin K. Pani Graphi, *Database Systems: An application oriented Approach*, second edition, pearson education, 2008.
5. Atul Kahate, *Introduction to Database Management Systems*, Pearson Education , 2006.

Relational Database Management Systems Lab

Lab Cycle

Order Tracking Database:

The Order Tracking Database consists of the following defined six relation schemas.

EMPLOYEES(ENO,ENAME,ZIP,HDATE) PARTS (PNO,PNAME, QOH,PRICE,LEVEL)

(HINT: QOH: QUALITY ON HAND)CUSTOMERS(CNO,CNAME,STREET,ZIP,PHONE)

ORDERS(ONO,CNO,ENO,RECEIVED ATE,SHIPPED DATE) ODETAILS (ONO, PNO,

QTY) ZIPCODES(ZIP,CITY).

Solve the following queries:

1. GET ALL PAIRS OF CUSTOMER NUMBERS FOR CUSTOMERS BASED ON SAME ZIP CODE.
2. GET PART NUMBERS FOR PARTS THAT HAVE BEEN ORDERED BY AT LEAST TWO DIFFERENT CUSTOMERS.
3. FOR EACH ODETAIL ROW, GET ONO, PNO, PNAME, QTY AND PRICE VALUES ALONG WITH THE TOTAL PRICE FOR THE ITEM. (TOTAL PRICE=PRICE*QTY)
4. GET CUSTOMER NAME AND EMPLOYEE PAIRS SUCH THAT THE CUSTOMER WITH NAME HAS PLACED AN ORDER THROUGH THE EMPLOYEE.
5. GET CUSTOMER NAMES LIVING IN FORT DODGE OR LIBERAL.
6. GET CNAME VALUES OF CUSTOMERS WHO HAVE ORDERED A PRODUCT WITH PNO 10506.
7. GET PNAME VALUES OF PARTS WITH THE LOWEST PRICE.
8. GET CNAME VALUES OF CUSTOMERS WHO HAVE PLACED AT LEAST ONE ORDER THROUGH THE EMPLOYEE WITH NUMBER 1000.
9. GET THE CITIES IN WHICH CUSTOMERS OR EMPLOYEES ARE LOCATED.
10. GET THE TOTAL SALES IN DOLLARS ON ALL ORDERS.
11. GET PART NAME VALUES THAT COST MORE THAN THE AVERAGE COST OF ALL PARTS.
12. GET PART NAMES OF PARTS ORDERED BY AT LEAST TWO DIFFERENT CUSTOMERS.

13. GET FOR EACH PART GET PNO, PNAME AND TOTAL SALES.
14. FOR EACH PART, GET PNO, PNAME, TOTAL SALES, WHOSE TOTAL SALES EXCEEDS 1000.
15. GET PNO, PART NAMES OF PARTS ORDERED BY AT LEAST TWO DIFFERENT CUSTOMERS.
16. GET NAME VALUES OF CUSTOMERS WHO HAVE ORDERED PARTS FROM ANY ONE EMPLOYEE BASED IN WICHITA OR LIBERAL.

SHIPMENT DATABASE:

AN ENTERPRISE WISHES TO MAINTAIN THE DETAILS ABOUT HIS SUPPLIERS AND OTHER CORRESPONDING DETAILS. FOR THAT IT USES THE FOLLOWING TABLES

TABLE S (SID, SNAME, ADDRESS)

PRIMARY KEY : SID

TABLE P (PID, PNAME, COLOR)

PRIMARY KEY : PID

TABLE CAT (SID, PID, COST)

PRIMARY KEY : SID+PID

REFERENCE KEY : SID REFERENCES S.SID
PID REFERENCES P.PID

Solve the following queries

1. FIND THE P NAMES OF PARTS FOR WHICH THERE IS SOME SUPPLIER.
2. FIND THE S NAMES OF SUPPLIERS WHO SUPPLY EVERY PART.
3. FIND THE S NAMES OF SUPPLIERS WHO SUPPLY EVERY RED PART.
4. FIND THE P NAMES OF PARTS SUPPLIED BY LONDON SUPPLIER AND BY NO ONE ELSE.
5. FIND THE SIDS OF SUPPLIERS WHO CHARGE MORE FOR SOME PART OTHER THAN THE AVERAGE COST OF THAT PART.
6. USING GROUP BY WITH HAVING CLAUSE GET THE PART NUMBERS FOR ALL THE PARTS SUPPLIED BY MORE THAN ONE SUPPLIER.
7. GET THE NAMES OF THE SUPPLIERS, WHO DO NOT SUPPLY PART P2.
8. FIND THE SIDS OF SUPPLIERS WHO SUPPLY A RED AND A GREEN PART.
9. FIND THE SIDS OF SUPPLIERS WHO SUPPLY A RED OR A GREEN PART.
10. FIND THE TOTAL AMOUNT HAS TO PAY FOR THAT SUPPLIER BY PART LOCATED FROM LONDON

Employee Database:

An enterprise wishes to maintain a database to automate its operations. Enterprise divided into to certain departments and each department consists of employees. The following two tables describes the automation schemas.

DEPT (DEPTNO, DNAME, LOC) EMP(EMPNO,ENAME,JOB,MGR,HIREDATE, SAL, COMM,DEPTNO)

1. CREATE A VIEW, WHICH CONTAIN EMPLOYEE NAMES AND THEIR MANAGER NAMES WORKING IN SALES DEPARTMENT.
2. DETERMINE THE NAMES OF EMPLOYEE, WHO EARN MORE THAN THEIR MANAGERS.
3. DETERMINE THE NAMES OF EMPLOYEES, WHO TAKE HIGHEST SALARY IN THEIR DEPARTMENTS.
4. DETERMINE THE EMPLOYEES, WHO LOCATED AT THE SAME PLACE.
5. DETERMINE THE EMPLOYEES, WHOSE TOTAL SALARY IS LIKE THE MINIMUM SALARY OF ANY DEPARTMENT.

6. UPDATE THE EMPLOYEE SALARY BY 25%, WHOSE EXPERIENCE IS GREATER THAN 10 YEARS.
7. DELETE THE EMPLOYEES, WHO COMPLETED 32 YEARS OF SERVICE.
8. DETERMINE THE MINIMUM SALARY OF AN EMPLOYEE AND HIS DETAILS, WHO JOIN ON THE SAME DATE.
9. DETERMINE THE COUNT OF EMPLOYEES, WHO ARE TAKING COMMISSION AND NOT TAKING COMMISSION.
10. DETERMINE THE DEPARTMENT DOES NOT CONTAIN ANY EMPLOYEES.
11. FIND OUT THE DETAILS OF TOP 5 EARNER OF COMPANY.
12. DISPLAY THOSE MANAGERS NAME WHOS SALARY IS MORE THAN AVERAGE SALARY OF HIS EMPLOYEES.
13. DISPLAY THOSE EMPLOYEES WHO JOINED THE COMPANY BEFORE 15TH OF THE MONTH?
14. DISPLAY THE MANAGER WHO IS HAVING MAXIMUM NUMBER OF EMPLOYEES WORKING UNDER HIM?
15. PRINT A LIST OF EMPLOYEES DISPLAYING 'LESS SALARY' IF LESS THAN 1500 IF EXACTLY 1500 DISPLAY AS 'EXACT SALARY' AND IF GREATER THAN 1500 DISPLAY 'MORE SALARY'?
16. DISPLAY THOSE EMPLOYEES WHOSE FIRST 2 CHARACTERS FROM HIRE DATE-LAST 2 CHARACTERS OF SALARY?
17. DISPLAY THOSE EMPLOYEES WHOSE 10% OF SALARY IS EQUAL TO THE YEAR OF JOINING?
18. IN WHICH YEAR DID MOST PEOPLE JOIN THE COMPANY? DISPLAY THE YEAR AND NUMBER OF EMPLOYEES.
19. DISPLAY THE HALF OF THE ENAMES IN UPPER CASE AND REMAINING LOWERCASE.
20. DISPLAY ENAME, DNAME EVEN IF THERE NO EMPLOYEES WORKING IN A PARTICULAR DEPARTMENT(USE OUTER JOIN).

University Database:

University wishes to computerize their operations by using the following relations. Student (snum:Integer, sname: string, major: string, level: string, age: integer) Class (name: String, Hour:Integer, room: string, fid: integer) Enrolled (sum: integer, cname: string)

Faculty (fid: Integer, fname: String, deptid: Integer)

Depart (deptid: Integer, dname: String, loc: integer)

By using above schema definitions, resolve the following queries.

1. FIND THE NAMES OF ALL JUNIORS (LEVEL=JR) WHO ARE ENROLLED IN A CLASS TAUGHT BY SMITH.
2. FIND THE AGE OF THE OLDEST STUDENT WHO IS EITHER A HISTORY MAJOR OR IS ENROLLED IN THE COURSE OF SMITH.
3. FIND THE NAMES OF ALL CLASSES THAT EITHER MEET R128 OR HAVE FIVE OR MORE STUDENTS ENROLLED.
4. FIND THE NAMES OF ALL STUDENTS WHO ARE ENROLLED IN TWO CLASSES THAT MEET AT THE SAME HOUR.
5. FIND THE NAMES OF FACULTY MEMBERS WHO TEACH IN EVERY ROOM IN, WHICH SOME CLASS IS TAUGHT.
6. FIND THE NAMES OF FACULTY MEMBERS FOR WHOM THE COMBINED ENROLLMENT OF THE COURSES THAT THEY TEACH IS LESS THAN FIVE.

7. PRINT THE LEVEL AND AVERAGE AGE OF STUDENTS FOR THAT LEVEL, FOR EACH LEVEL.
8. PRINT THE LEVEL AND AVERAGE AGE OF THE STUDENT FOR THAT LEVEL, FOR ALL LEVELS EXCEPT JR.
9. FIND THE NAMES OF STUDENTS WHO ARE ENROLLED IN THE MAXIMUM NUMBER OF CLASSES.
10. FIND THE NAMES OF THE STUDENTS WHO ARE NOT ENROLLED IN ANY CLASS.