SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME : 19CS402 - DATABASE MANAGEMENT SYSTEMS

II YEAR / IV SEMESTER

Unit 1- Introduction to Data Base

Topic 1 : Introduction to Data Base

Problem

- High Cost.
- Huge Size.
- Database Failure.
- Complexity.
- Increased Staff Cost.
- Requirement of Technical Staff.
- Cost of Data Conversion.
- Performance.

•In the example mentioned above, such as ID, Age, Gender, First, Middle, Last, Street, Area, etc. are elementary data items, whereas (Name, Address) is group data items.

Problem –Cont..

- **Answer: D**atabase .

DATABASE MANAGEMENT SYSTEM SYLLABUS

➢Unit -1

➢Purpose of Database System -– Views of data – Data models, Database Management system - Three-schema architecture of DBMS, Components of DBMS. Entity – Relationship Model - Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, E/R diagram notations, Examples

➢Unit-2

➢Relational Data Model - keys, referential integrity and foreign keys, Relational Algebra - SQL fundamentals- Introduction, data definition in SQL, table, key and foreign key definitions, update behaviors-Intermediate SQL-Advanced SQL features - Embedded SQL- Dynamic SQL, CASE Studies- Oracle:Database Design and Querying Tools; SQL Variations and Extensions

Syllabus –Cont..

•Unit-3

•Dependencies and Normal forms - Functional Dependencies, Armstrong's axioms for FD's, closure of a set of FD's, minimal covers-Non- loss decomposition-First,Second,Third Normal Forms, Dependency Preservation-Boyce/Codd Normal Form-Multivalued Dependencies and Fourth Normal Form- Join Dependencies and Fifth Normal Form

•Unit-4

•Transaction Concepts – ACID Properties – Schedules – Serializability – Concurrency Control – Need for Concurrency – Locking Protocols – Two Phase Locking – Deadlock – Transaction Recovery – Save Points – Isolation Levels – SQL Facilities for Concurrency and Recovery

Syllabus –Cont..

Unit-5

•Data Storage and Indexes – RAID- File organization-Indexing and Hashing –Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing. Query Processing Overview. MongoDB, Database creation and manipulation, Indexing and ordering CASE Studies- Oracle,DB2: Storage and Indexing

•**TEXT BOOKS**

1.Abraham Silberschatz, Henry F. Korth, S. Sudharshan, - Database System Concepts||, Sixth Edition, Tata McGraw Hill, 2011.

2.Ramez Elmasri, Shamkant B. Navathe, —Fundamentals of Database Systems, Sixth Edition, Pearson Education, 2011.

3.C.J.Date, A.Kannan, S.Swamynathan, —An Introduction to Database Systems, Eighth Edition, Pearson Education, 2006.

4.Raghu Ramakrishnan, —Database Management Systems||, Fourth Edition, McGraw-Hill College Publications, 2015.

5.G.K.Gupta,"Database Management Systems, Tata McGraw Hill, 2011.

6.S.K.Singh, "Database Systems Concepts, Design and Applications", First Edition,Pearson Education, 2009.

DBMS –Con..

- Introduction of DBMS
- Primary Goal
- Task
- Application
- Advantage and Disadvantage
- Activity

Introduction of DBMS

- Data
- Data is distinct pieces of information, usually formatted in a special way.
- All software is divided into two general categories: data and programs.
- Programs are collections of instructions for manipulating data.
- Database

✓Database– a collection of information related to a particular topic or purpose.

✓Database Management System

A program such as Access, that stores, retrieves, arranges, and formats information contained in a database.

Or

"DBMS is a collection of interrelated data and various program that are used to handle that data"

Primary Goal

DBMS is to provide a way to Store and retrieve the required information from the database in convenient and efficient manner

Task

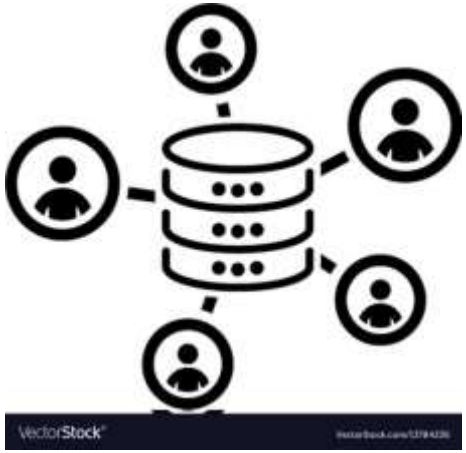
- Define the structure for storage of information
- Provide mechanism for manipulation of information
- In addition , database system must ensure the safety of information stored

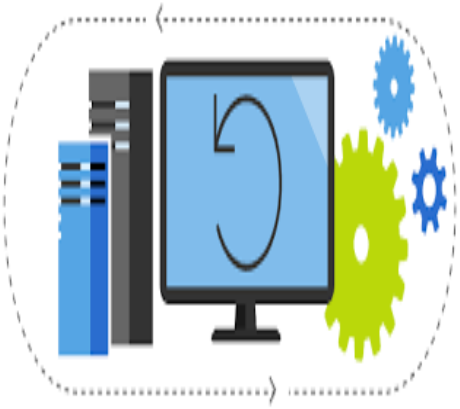
Application

- Accounting – Maintaining record of employee salary , taxes
- Manufacturing - Supply Chain and tracking production items in factories
- Banking - Maintaining record of customer details and employee details
- Universities - Maintaining record of students and staff details in
- departments
- Reservation systems – Airlines and Railway Reservation System –
- maintain the reservation and schedule information.
- Telecommunication – Keeping records of the calls made , generating bills,

Activity

CONNECTION





Ans : Database Management System

ORACLE REDUNDANCY INCONSISTENCY
ISOLATION INTEGRITY ATOMICITY SECURITY QUERY
PROCESSOR
CONCURRENT VIEW ABSTRACTION
ATTRIBUTES
STORAGE MANAGER SCHEMA INDICES
PROJECT
DATA DICTINORY FILE MANAGER JOIN
DIVISION
INSTANCE ADMINISTRATOR QUERYTOOLS
COUNT
HIERARCHICAL TUPLES RELATIONAL
PROJECT
UNION SET DIFFERENCE AVERAGE ERMODEL
CARTESIAN PRODUCT MINIMUM COUNT
SUM
ENTITY SELECT INTERSECTION RENAME
AGGREGATE FUNCTION MAXIMUM

Activity – Read the color not the word

Advantages

- ✓Providing backup and recovery services.
- ✓Providing multiple interfaces to different classes of users.
- ✓Enforcing integrity constraints on the database.
- ✓Drawing Inferences and Actions using rules

Disadvantages

- ✓Complexity
- ✓Size
- ✓Cost of DBMS
- ✓Additional hardware costs
- ✓Cost of conversion and Performance , Higher impact of a failure

Assessment 1

1. List out the advantages of data base

a)_____

b)_____

c)_____

d)_____

2. Identify the disadvantages of data base

a)_____

b)_____

c)_____

d)_____

REFERENCES

1. 1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, - Database System Concepts||, Sixth Edition, Tata McGraw Hill, 2011.
2. Ramez Elmasri, Shamkant B. Navathe, —Fundamentals of Database Systems, Sixth Edition, Pearson Education, 2011.
3. C.J.Date, A.Kannan, S.Swamynathan, —An Introduction to Database Systems, Eighth Edition, Pearson Education, 2006.
4. Raghu Ramakrishnan, —Database Management Systems||, Fourth Edition, McGraw-Hill College Publications, 2015.

THANK YOU