Database Administration (DBA)

- DBA is a resource that supervises both the database and the use of the DBMS.

- DBA is usually a group, but sometimes it refers to the database administrator.

Figure 8.1
Responsibilities of DBA

FIGURE 8.1

Responsibilities of DBA

1. Policy Formulation and Implementation
   a.   Access privileges
   b.   Security
   c.   Disaster planning
   d.   Archives
2. Data Dictionary Management
3. Training
4. DBMS Support
   a.   DBMS evaluation and selection
   b.   DBMS responsibility
5. Database Design

Policy Formulation and Implementation

- Access Privileges
  - Users should access the database only in ways in which they are entitled.

- Security
  - Access restrictions ensure that the database is secure.
  - Passwords, encryption, and views implement security.
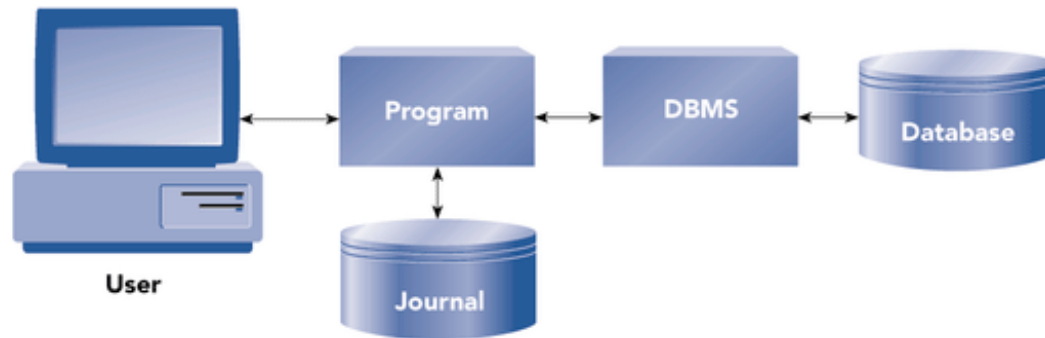 - Effective password protection is critical.

Planning for Disaster

- Databases can be harmed from hardware and software malfunctions, and outsides forces like floods and power outages.

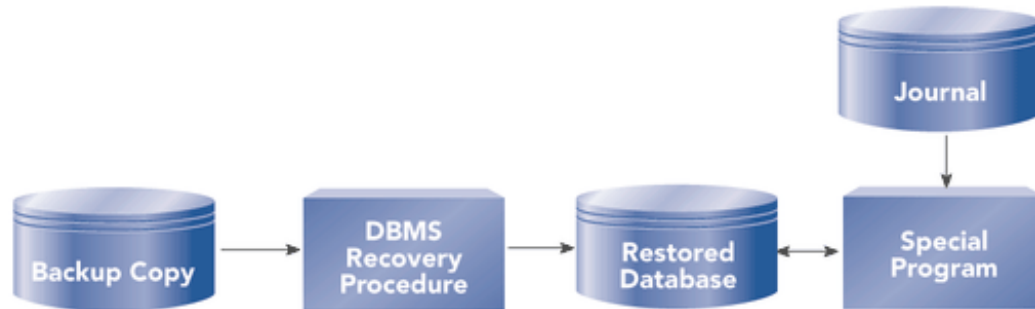- DBA's must take active role in formulating disaster recovery plans.

Figure 8.8
Disaster Recovery

FIGURE 8.8a

Programs involved in database processing also maintain a journal

User

Program

DBMS

Database

Journal

FIGURE 8.8b

Journal is used in recovery

Backup Copy

DBMS Recovery Procedure

Restored Database

Special Program

Journal

Archives

- An archive is a place where corporate data is kept.
- Information in an archive is removed from the database and stored in the archive for future reference.
- Archives are usually kept in a mass-storage device like a disk, tape, CD, or a DVD.
- It is important such archives be kept off-site to allow recovery should disaster strike

Data Dictionary Management

- Essentially the catalog, but it contains a wider range of information, including information on tables, fields, indexes, and programs.

- The DBA manages and updates the data dictionary, which establishes naming conventions for tables, fields, etc., and data integrity rules.

Additional responsibilities of DBA

- Training
  - DBA gives training on the DBMS and how to access the database

- DBMS Support
  - The DBA is charged with all aspects of a DBMS, including selection and management
  - DBA must evaluate each prospective DBMS using a checklist like that shown in Figure 8.10.

Additional Responsibilities of DBA

- Database design
  - DBA is responsible for tuning the design, i.e., making changes that improve system performance.

- A database administrator's responsibilities can include the following tasks:
- Installing and upgrading the database server and application tools
- Allocating system storage and planning future storage requirements for the database system
- Modifying the database structure, as necessary, from information given by application developers
- Enrolling users and maintaining system security
- Ensuring compliance with database vendor license agreement
- Controlling and monitoring user access to the database
- Monitoring and optimizing the performance of the database
- Planning for backup and recovery of database information
- Maintaining archived data
- Backing up and restoring databases
- Contacting database vendor for technical support
- Generating various reports by querying from database as per need