DATABASE MANAGEMENT SYSTEMS

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2015 – 2016

Points to Cover

❖ **Database System**

❖ **Users of a DBMS**

❖ **Administrators**

❖ **Designers**

❖ **End Users**

❖ **Components of DBMS**

❖ **Advantages of DBMS**

Department of Computer Science & IT _ UHD
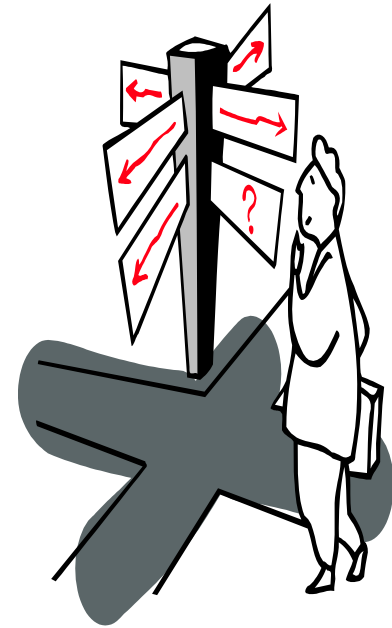
Database System

Database System:

DBMS + Database

Example of a Database

- Example of a Database: Part of a University Environment.

- **Some of *entities*:**
  - **Students**
  - **Courses**
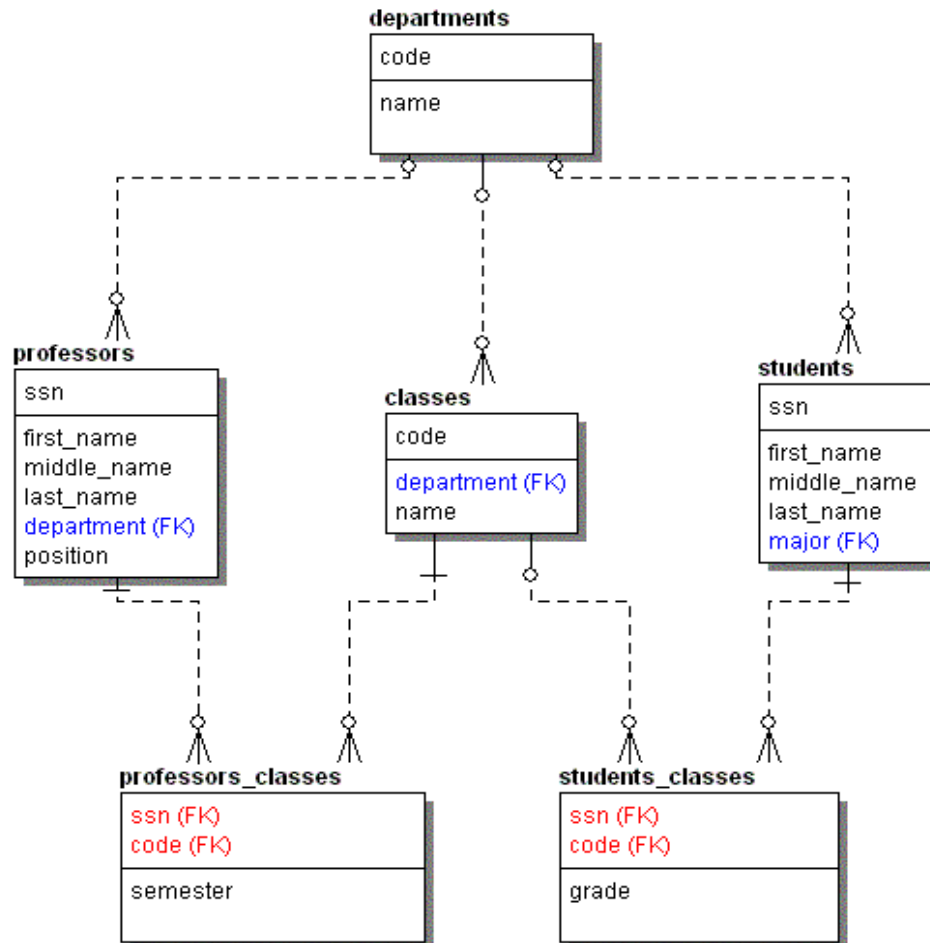 - **Sections (of Courses)**
  - **Departments**
  - **Instructors**

Example of a Database

The Relationships of Entity-relationship Data Model.

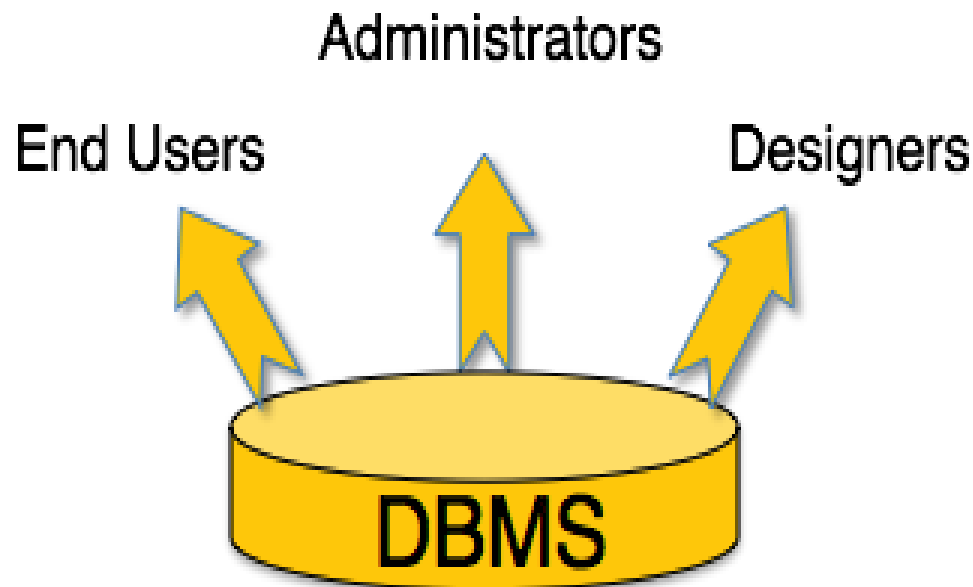- Sections are of specific Courses
- Students take Sections
- Instructors teach Sections
- Courses are offered by Departments
- Students major in Departments

Example of a Database

Database Management System (DBMS) Users

The users of a DBMS can be broadly categorized as follows :-
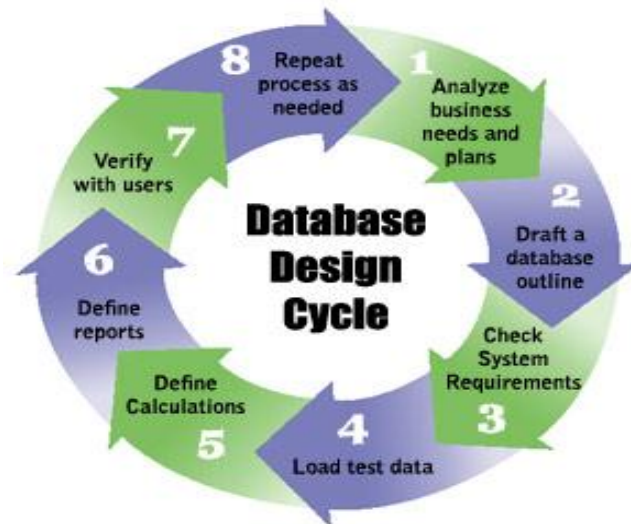
Administrators

- **Administrators** − Administrators maintain the DBMS and are responsible for administrating the database. They are responsible to look after its usage and by whom it should be used.
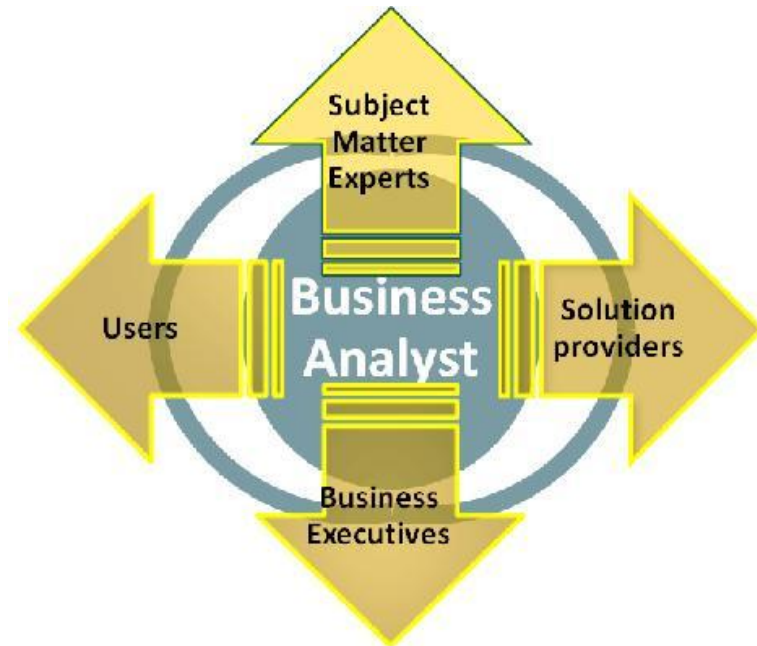
Designers

- **Designers** − Designers are the group of people who actually work on the designing part of the database. They keep a close watch on what **data should be kept** and **in what format**.

End Users

- **End Users** − End users are those who actually reap the benefits of having a DBMS. End users can range from **simple viewers** who pay attention to **sophisticated users** such as business analysts.

The basic components of DBMS

- **There are four basic components of Database Management System:**

✓ **Data**: Raw facts which we want to feed in the computer.

✓ **Hardware**: On which the data to be processed.

✓ **Software**: The interface between the hardware and user, by which the data will change into the information.

✓ **User**: There are so many types of users some of them are application programmer, end case users and database administrator.

Advantages of DBMS

The database management system has promising potential advantages, which are :-

1. Controlling Redundancy

Sometimes there are sound business and technical reasons for maintaining multiple copies of the same data files. In a database system, however this redundancy can be controlled.

Controlling Redundancy

❖ **For example:** In case of college database, there may be the number of applications like General Office, Library, Account Office, Hostel etc. Each of these applications may maintain the following information into own private file applications:

Controlling Redundancy

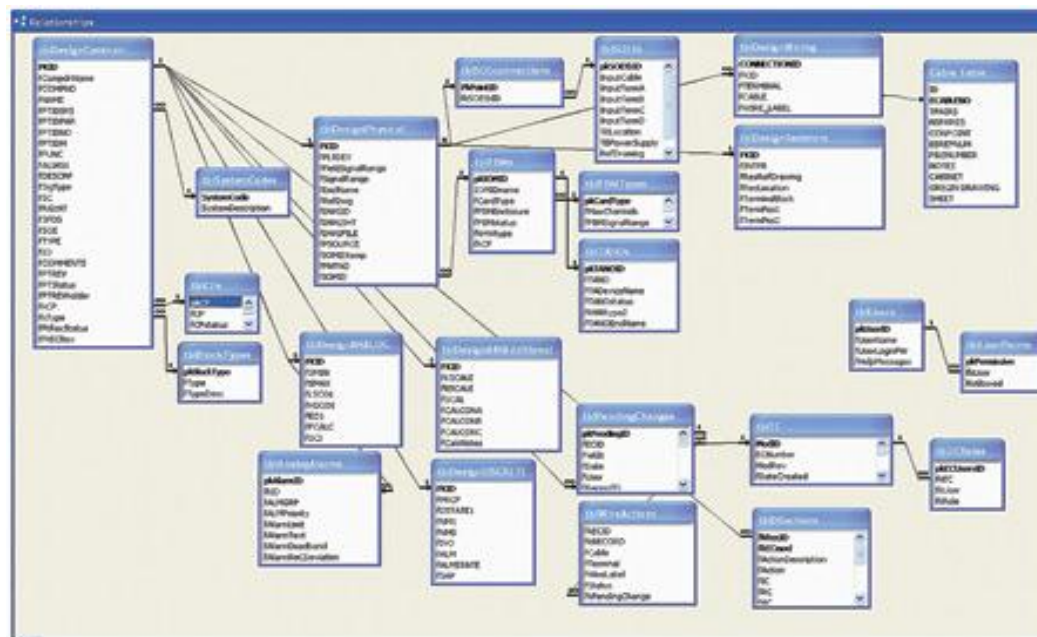| General Office	Library	Hostel	Account Office
Roll No	Roll No	Roll No	Roll No
Name	Name	Name	Name
Class	Class	Class	Class
Father_Name	Address	Father_Name	Address
Date_of_Birth	Date at Birth	Date of Birth	Phone No
Address	Phone No	Address	Fee
Phone No	No of books issued	Phone No	Installments
Previous Record	Fine	Mess bill	Discount
Attendance	etc	RoomNo	Balance
Marks		etc.	Total
etc.			etc.

Controlling Redundancy

It is clear from the above file systems, that there is some common data of the **student** which has to be mentioned in each application, like Rollno, Name, Class, Phone_No , Address etc. This will cause the **problem of redundancy** which results in **wastage of storage space** and **difficult to maintain.**

General Office	Library	Hostel	Account Office
Rollno	Rollno	Rollno	Rollno
Name	No_of_books_issued	RoomNo	Fee
Class	Fine	Mess_Bill	Installments
Father_Name	etc.	etc.	Discount
Address			Balance
Phone - No			Total
Date_of_birth			etc.
Previous_Record			
Attendance			
Marks			
etc.			

Controlling Redundancy

Each application, need not be stored repeatedly in case of database, because every other application can access this information by joining of **relations** on the basis of common column i.e. Rollno.

Advantages of DBMS

1. Controlling Redundancy
2. Inconsistency can be avoided
3. Data can be shared
4. Standards can be enforced
5. Restricting unauthorized access
6. Providing Backup and Recovery
7. Data Model can be developed

Disadvantages of DBMSs

Although there are many advantages of DBMS, the DBMS may also have some minor disadvantages. These are:

1. Complexity (The provision of the functionality of a good DBMS)
2. Size (The complexity of functionality makes the DBMS an extremely large)
3. Cost of DBMS (Hardware, Software and Staff Training)
4. Cost of data conversion (data file into database)
5. Performance
6. Additional hardware costs
7. Database Damage

Thank you

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