

[illegible]

# Database System Concept (CSE 3103)

Lecture 01-Day 01

Nazmus Sakib, Assistant Professor, Dept. of CSE, AUST

# Course Outline SPRING 2017,CSE, AUST

- Course Name : Database System Concept
- Course Number : **CSE 3103**
- Credit Hour : **3.0 hours per week**
- Year & Semester : **3rd Year & 1st Semester**

# Course Outline SPRING 2017,CSE, AUST

- **Text Books:**

- Database System Concepts, Siberschatz- Korth (6th Edition).
- Database System : The Complete Book , Molina -Ulman(3rd Edition).

- **Instructions:**

- Attendance will be based on Class Performances & Assignments.
- There will be regular 4 quizzes. Best of 3 will be in an account.

- **Assessment Criteria:**

- Attendance      10%
- Class Test      20%
- Final Exam      70%
- Total              100%

# Course Faculty Outline

- Course Teacher : **Nazmus Sakib**  
Assistant Professor,  
Dept. of CSE, AUST
- Contact Info : **Room : 7A01/M, Block-A, AUST**
- Website: <https://sites.google.com/site/nazmussakib009/>
- Email : [nazmussakib009@gmail.com](mailto:nazmussakib009@gmail.com)
- Cell : +880 193 99 00 271 [ Available from **8AM – 8PM**]

# What is a Database ?

- To Know about the Database first think about the types of Data
- Make them a relation or interrelate each data items
- Now think how much data are you maintaining each day in Social Network
- Databases touch all aspects of our lives
- DB is basically huge amount of interrelated data collection which is ease to retrieve and having very good speed for access and search.
- Database Applications:
  - Banking: transactions
  - Airlines: reservations, schedules
  - Universities: registration, grades
  - Sales: customers, products, purchases
  - Online retailers: order tracking, customized recommendations
  - Manufacturing: production, inventory, orders, supply chain
  - Human resources: employee records, salaries, tax deductions

# Database Management System (DBMS)

- DBMS contains information about a particular enterprise . DBMS is a software package to store and manage database.
  - Set of programs to access the data
  - An environment that is both *convenient* and *efficient* to use
- Database system allow users to store, update ,retrieve ,organize, protect their data by providing an environment.

## Drawbacks of using file systems to store data

- Data redundancy and inconsistency
  - Multiple file formats, duplication of information in different files
- Difficulty in accessing data
  - Need to write a new program to carry out each new task
- Data Isolation
  - Multiple files and formats
- Integrity problems
  - Integrity constraints (e.g., account balance  $> 0$ ) become “buried” in program code rather than being stated explicitly
  - Hard to add new constraints or change existing ones
- Security Concerns



## Drawbacks of using file systems to store data (Cont.)

- Atomicity of updates
  - Failures may leave database in an inconsistent state with partial updates carried out
  - Example: Transfer of funds from one account to another should either complete or not happen at all
- Concurrent access by multiple users
  - Concurrent access needed for performance
  - Uncontrolled concurrent accesses can lead to inconsistencies
    - Example: Two people reading a balance (say 100) and updating it by withdrawing money (say 50 each) at the same time
- Security problems
  - Hard to provide user access to some, but not all, data

**Database systems offer solutions to all the above problems**

[illegible]