01 - Course Introduction & Relational Model

1. Database
    A. Collection of inter-related data
    B. DBMS : DataBase Management System
        i. Designed to allow the definition, creation, querying, update, administration of database
2. Problems
    A. Implementation
        i. How to find particular record?
        ii. How to use database with other application
        iii. How to control two threads using same file
    B. Durability
        i. How to deal with crashes occurred during update
        ii. How to deal with replication in multiple machines

3. Relational Model
    A. Data model
        i. Collection of concepts for describing data
    B. Schema
        i. Description of a particular collection of data
    C. Releational data model
        i. Structure : relation(table) and contents(records)
            1. Primary key : uniquely identifies a single record
            2. Foreign key : specifies attributes that has to be mapped from other table
        ii. Integrity : ensure satisfying constraints
        iii. Manipulation : how to manipulate data
            1. DML
                A. Procedural : relational algebra(query description)
                B. Non-procedural : relational calculus(query optimization)
4. What is it?
    A. Volcano-style Query Processing