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Exercise 1

1. Responsibilities of any database management system
   1. Interaction with the file manager
      1. Without a file manager, nothing stored can ever be retrieved.
   2. Integrity enforcement
      1. Without integrity enforcement, consistency constraints would not be satisfied.
   3. Security enforcement
      1. Without security the data would not be secure and anyone could access or mess with the data.
   4. Backup and recovery.
      1. Without backup and recovery, data could easily become lost.
   5. Concurrency control
      1. Consistency constraints would be, not consistent, as multiple writes in a short time could corrupt the data.
2. 3 Non-Relational Data Models
   1. NoSQL
      1. Data-Model Supported
         1. Non-relational
      2. Database product supported
         1. MongoDB
      3. Features supported
         1. Simple design
      4. Types of problmes/applications it is good for
         1. Big data
         2. Real time web applications
      5. Types of problems/applications it is bad for
         1. Can often compromise consistency
      6. Example of production system
         1. Facebook, Google
      7. Related user group
   2. Network Model
      1. Data-Model Supported
         1. Records and sets
      2. Database product supported
         1. COBOL
      3. Features supported
         1. Multiple parents
         2. Many to many relationships
      4. Types of problems/applications it is good for
         1. Many to many relationships
         2. Multiple parents needed
         3. Quick reterival
      5. Types of problems/applications it is bad for
         1. Loading, reorganization of data
      6. Example of production system
         1. Cullinets IDMS
      7. Related user group
         1. Usergroup is parent to user and group
   3. Hierarchical-based Model
      1. Data-Model Supported
      2. Database product supported
         1. XML
      3. Features supported
         1. Parent child relations
      4. Types of problmes/applications it is good for
         1. Real world relationships like receipts and table of contents, basically any nest and sorted information
      5. Types of problems/applications it is bad for
         1. Many to many relationships
      6. Example of production system
         1. Information Management System (IMS)
      7. Related user group
         1. One is parent of the other