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Simple file-based approach

Scanner stuff

File-based approach

Data dependence – embedding the structure of the data in your application process

Duplication of data across data files – inconsistent values in the different files

Database advantages

-define standards/identify inconsistencies

-Security (login credentials)

-View: limit data that a user has access to. Provides a consistent look and feel of the database for a user.

-Simplification for the user to access data; minimize redundancy

SQL

-method to describe the structure of your data

DDL (Data Definition Language)

CREATE TABLE phone

phone int

name VARCHAR

DML (Data Manipulation Language)

SELECT phone, name

FROM phone;

Primary Key

Registration

Registration-id

Student\_id (Foreign key, Primary key)

Course\_id (Foreign key, Primary key)

Semester\_id

What is a database?

-Describe the structure of the data

-Describe the entities (attributes/relationships) of your data

-Logically related to itself

Database management System?

-Software that can store/manipulate/retrieve the data stored in our database

-Application program (View)

User roles of DB System?

-Application developers – develop applications

-End-users – naive users (customers), don’t know it’s a DB usually

Sophisticated users

-Data Administrator-asks what data we need

-Database Administrator-asks how the data will be stored

-Database conceptual (physical) developer

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DB User Roles

Application Programmer (Host Language, Programming Language, Lots of Java/DB)

Data Administrator – conceptual schema (the what, the interactions)

Database Administrator – logical schema (how you are going to represent it)

End users – naive to sophisticated users

Database Designers – logical schema to physical schema

ANSI SPAR C

DB Software Architecture

Abstraction

External Schema - User 1, 2, 3, n

to

Conceptual Schema – community schema (what people can see and derive

to

Internal Schema – tracking the structure of the DB, where does the dat live? Address, name, structure/definition, encryption/compression, filetype. Physical data, independence1

To

Data

DDL

Method for defining internal Schema

TABLES.

Non-procedural DML

Procedural DML

Record-based Modeling

Object-based Modeling (Peter Chen’s Idea of a Model)

-Structural definition of the data

-Procedures/allowed to do to data

-Constraints