CS 327E Lecture 1

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Agenda

- Announcements
- Homework for today
- Reading Quiz
- Concept Questions
- Homework for next time

Announcements

- Reading quizzes and class participation grades
- Absences
- Eric's office hours will be Fridays 12:00pm - 2:00pm in GDC 2.112
- Daniel's office hours will be Tuesdays 1:30pm - 3:00pm in GDC 3.302
- Please review Eric's MySQL install instructions for OS X
- Please go see Daniel or Eric during their office hours you are still not able to get MySQL server installed on your machine

Homework for Today

- Read Chapter 2 from the Learning SQL book
- Installed MySQL server on your machine
- Created the bank database
- Populated the bank database

Quiz Question 1

Although the text is system-agnostic, what relational database system is used in the examples of Beaulieu's *Learning SQL*?

A. PostgreSQL
B. MySQL
C. Microsoft SQL Server
D. Oracle Database

Quiz Question 2

What MySQL data type is used to store fixed-length strings?

A. `CHAR`
B. `VARCHAR`
C. `STRING`
D. `STR`

Quiz Question 3

Why would you choose a `TIMESTAMP` over a `DATE` type?

A. `TIMESTAMP` is more precise than a `DATE`
B. Only for representing the time
C. `TIMESTAMP` is for representing a date and time (year, month, day, hour, minute, second) while `DATE` is for representing a date (year, month, day)
D. Never—`DATE` should always be used instead of `TIMESTAMP`

Quiz Question 4

What SQL statement would you use to create a new row in a table?

A. `APPEND`
B. `NEW`
C. `INSERT`
D. `ALTER`

Quiz Question 5

Below is the output from executing a MySQL command:

```
mysql> ?????????????
+-----------+----------------------+------+-----+---------+----------------+
| Field     | Type                 | Null | Key | Default | Extra          |
+-----------+----------------------+------+-----+---------+----------------+
| branch_id | smallint(5) unsigned | NO   | PRI | NULL    | auto_increment |
| name      | varchar(20)          | NO   |     | NULL    |                |
| address   | varchar(30)          | YES  |     | NULL    |                |
| city      | varchar(20)          | YES  |     | NULL    |                |
| state     | varchar(2)           | YES  |     | NULL    |                |
| zip       | varchar(12)          | YES  |     | NULL    |                |
+-----------+----------------------+------+-----+---------+----------------+
```

What is the command that was executed?

A. `SHOW CUSTOMER;`
B. `DESCRIBE CUSTOMER;`
C. `SELECT * FROM CUSTOMER;`
D. `UPDATE CUSTOMER;`

Basic Concepts

- Relational model
- Relation / Entity / Table
- Field / Attribute / Column
- Row / Tuple / Record
- Cell / Value
- Primary key
- Composite primary key
- Foreign key
- Constraint

Product

PName	Price	Category	Manufacturer
iPhone	$119.99	Cellphone	Apple
Android	$299.99	Cellphone	Samsung
iPad	$149.99	Tablet	Apple
iClicker	$20.99	Classroom	iClicker

Tables Explained

- A tuple = a record
- A table = a set of records
- The schema of a table is the table name and attributes
- A key is an attribute whose value is unique (by convention, we underline the key)

Common Data Types

- CHAR, VARCHAR
- INT
- DOUBLE, FLOAT
- DATE, DATETIME
- BLOB, CLOB

Constraint types

- NOT NULL constraint
- Unique constraint
- Primary and foreign key constraint
- Check constraint

Relationships between Tables

- One-to-many relationship
- One-to-one relationship
- Many-to-many relationship

Principle of Data Independence

- Physical data independence
- Logical data independence

Examples:

- Adding / dropping a column
- Adding / dropping an index

SQL Introduction

Standard language for querying and manipulating data

Structured **Q**uery **L**anguage

Many standards out there:

- ANSI SQL
- SQL92 (a.k.a. SQL2)
- SQL99 (a.k.a. SQL3)
- Vendors support various subsets of these
- What we discuss is common to all of them

Data Manipulation Language (DML) statements

- SELECT
- INSERT/UPDATE/DELETE

Data Definition Language (DDL) statements

- CREATE/ALTER/DROP
- GRANT/REVOKE

Concept Question 1

How can Alice's record be deleted from the Persons table?

A. Delete Persons record where person_id = 100

B. Delete Persons record where person_id = 100 and then delete Favorite_Music records where person_id = 100

C. Delete Favorite_Music records where person_id = 100 and then delete Persons records where person_id = 100

D. Either B or C

E. None of the above

```
create table Persons
(
  person_id SMALLINT(4) PRIMARY KEY,
  first_name VARCHAR(20),
  last_name VARCHAR(20),
  birth_date DATE
)
```

person_id	first_name	last_name	birth_date
100	Alice	Richardson	1990-05-01
200	Carter	Willis	1982-01-27

```
create table Favorite_Music
(
   song_id SMALLINT,
   person_id SMALLINT,
   contraint pk_fav_music primary key (person_id, song_id),
   constraint fk_person_id foreign key (person_id)
     references Persons (person_id)
)
```

song_id	person_id
40	100
41	100

Homework for Next Time

- Chapter 3 from the Learning SQL book
- Exercises at the end of Chapter 3