



COM5940: NEW MEDIA BUSINESS MODEL & INNOVATION INTRODUCTION TO SQL & MYSQL DATABASE FOR WEB DEVELOPMENT



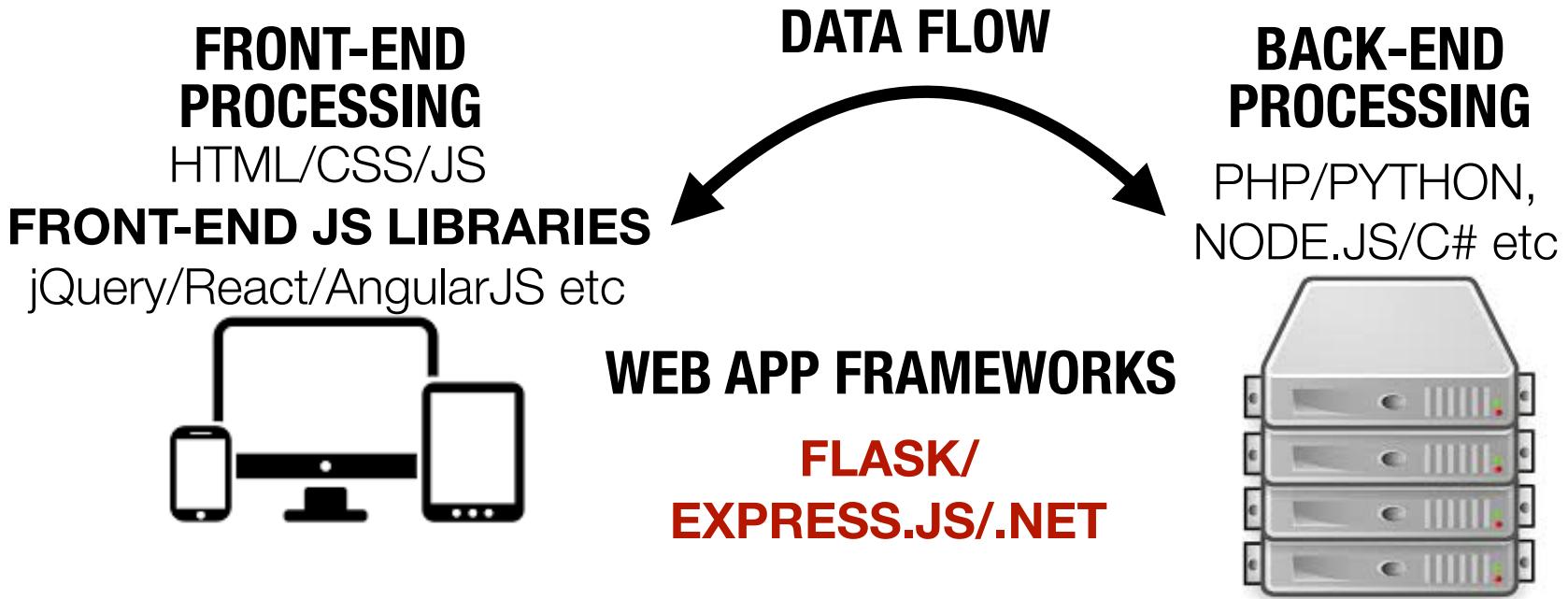
Center for
Entrepreneurship

Bernard Suen
Center for Entrepreneurship
Chinese University of Hong Kong

Today's Agenda

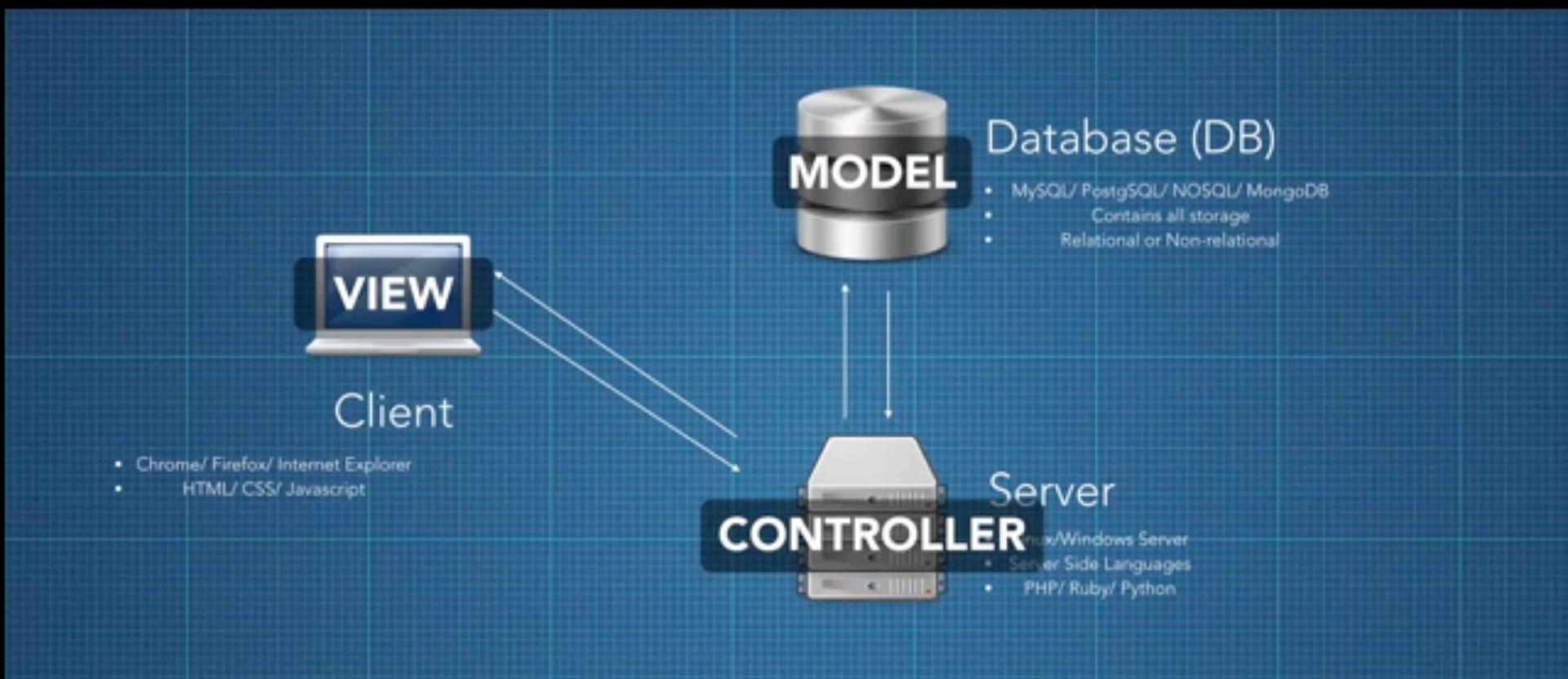
1. Installation of the **LAMP** stack using **MAMP**
2. Short demonstration of **MySQL CRUD** operations in **phpMyAdmin**
3. Comparison Between **MySQL** and **Airtable**
4. Aggregated Functions in **MySQL**
5. House keeping matters (e.g. participation points, 5 problem sets, team formation requirements, Slack and Airtable setup)

POPULAR FULL STACK FRAMEWORK FOR SOFTWARE DEVELOPMENT



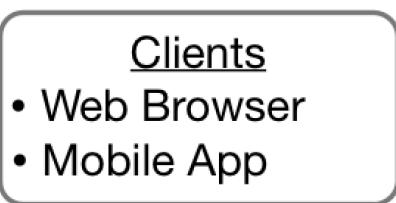
Which functions should be processed on the front-end and which should be on the back-end?

HOW DOES A WEBSITE WORK? THE FLOW



Digital Infrastructure for Platform Development

云计算的三层架构



Software (软件)
e.g. Your app



Platform (平台)

e.g. Google App Engine/AWS Fargate/PythonAnywhere



Infrastructure(基建)

e.g. Amazon, Azure, Aliyun

Public(公共)/Private(私人)/Hybrid Clouds(混合)

API (e.g. RestFUL)



BACK-END TECHNOLOGY

后台

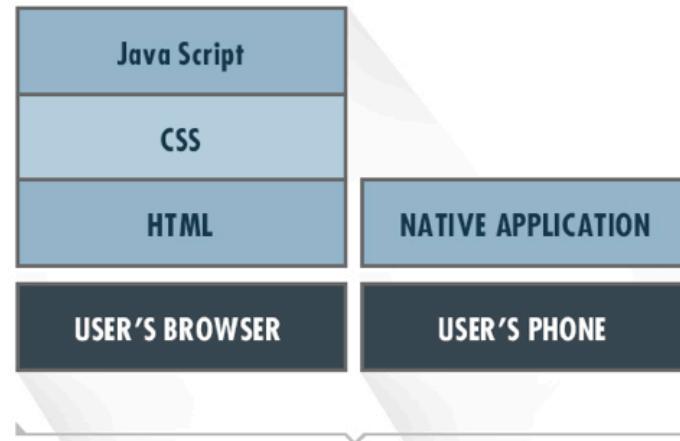
WHAT IS YOUR “CLOUD” AND “STACK” STRATEGY?

云架构及前端和后端的全栈策略

{ JSON }



THE INTERNET



FRONT-END TECHNOLOGY

前台

**FULL STACK DEVELOPMENT:
FRONT-END + BACK-END + CLOUD INFRASTRUCTURE**





Non-mainstream Coder

@非主流程序员

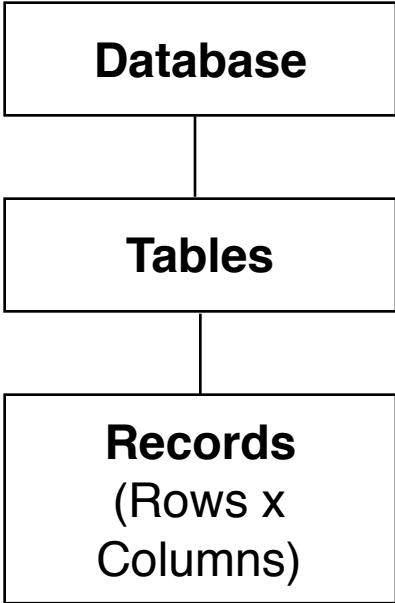
Platform and API Growth Bring Along More Data for Mining Patterns

**TO UNDERSTAND DATA, WE NEED TO
UNDERSTAND DATABASE**

WHAT IS A “DATABASE”?

“A **Database** is a computerised system that makes it easy to search, select and store information..”

BBC Website



“A **database** is a collection of **tables** which relate to each other for storing and processing **records** that are defined by rows and columns (**fields**).”

A database can be used for representing and tracking people, things, events. and transactions.

- **People** (e.g. students, employees, customers, donors, volunteers)
- **Things** (e.g. properties, stocks, products, books)
- **Events** (e.g. campaigns, courses, conferences)
- **Transactions** (e.g. billings, orders, tasks, donations)

QUICK RECAP OF THE AIRTABLE BASE (DATABASE)



Product Blocks Templates Universe Pricing Sign in [Sign up](#)

Create, your way

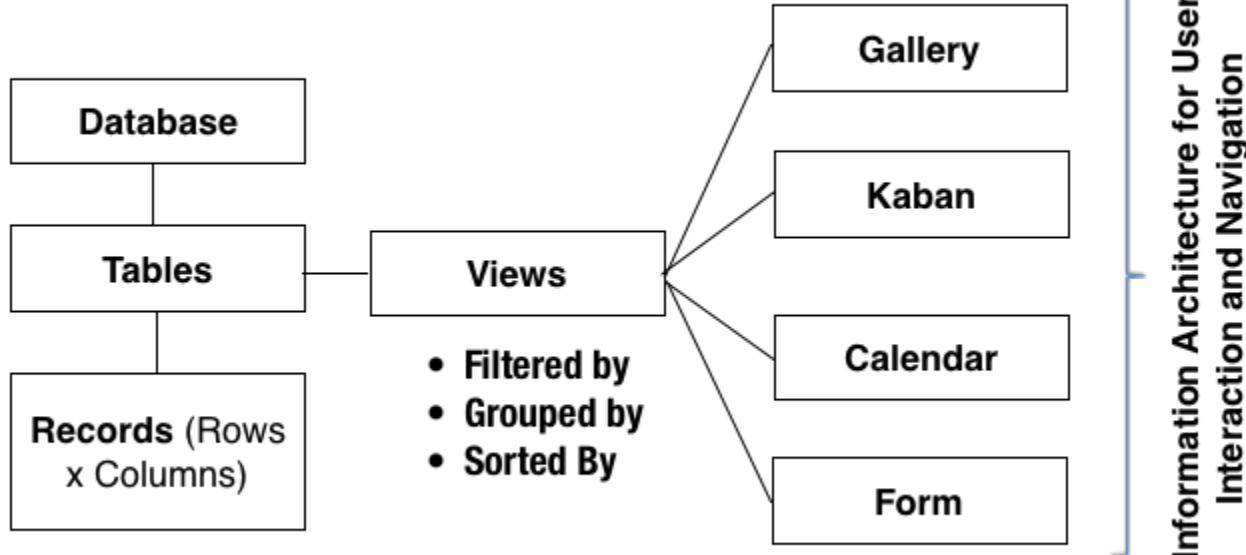
Part spreadsheet, part database, and entirely flexible, teams use Airtable to organize their work, their way.

Enter your email address

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The Field Types Found in Airtable

- | | | |
|---------------------|--------------------|------------------|
| 1. Single Line Text | 9. Attachment | 17.Created Time |
| 2. Long Text | 10.Checkbox | 18.Modified Time |
| 3. Date | 11.Multiple Select | 19.Formula |
| 4. Phone Number | 12.Single Select | 20.Autonumber |
| 5. URL | 13.Collaborator | 21.Count |
| 6. Number | 14.Rating | 22.Link |
| 7. Currency | 15.Duration | 23.Lookup |
| 8. Percent | 16.Email | 24.Rollup |
| | | 25.Barcode |

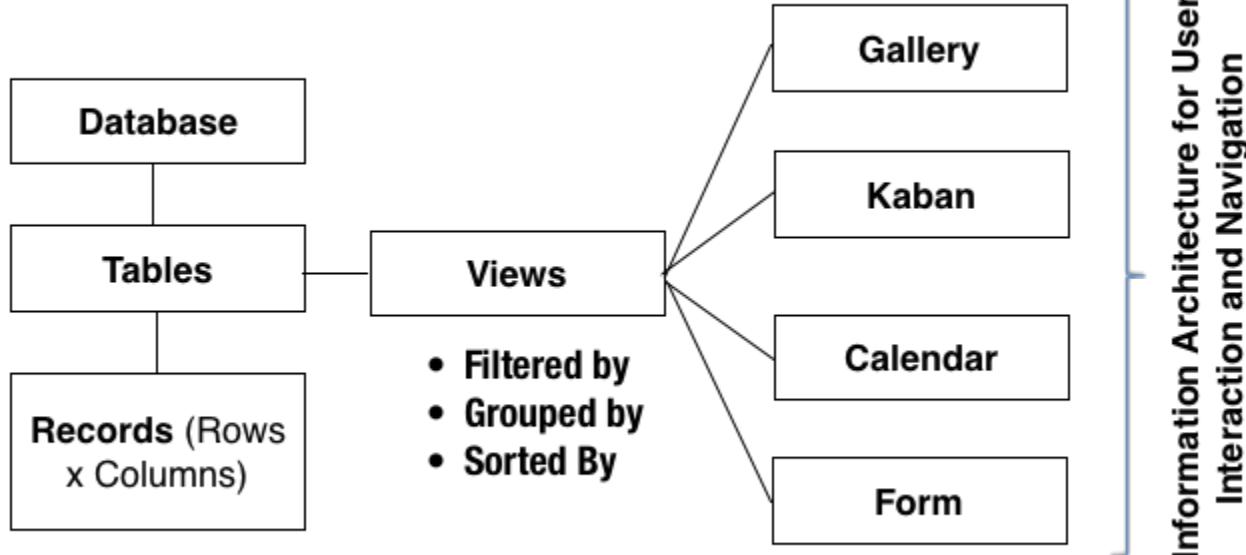
1. **Select** single or multiple fields as sorting criteria.
2. **Group** entries by a single field or multiple fields to create data segments.
3. **Filter** entries by single or multiple fields as searching conditions.

Use sort, group, and filter to search for information in a table.

Linking Tables

- 1. Grid**
- 2. Kanban**
- 3. Calendar**
- 4. Gallery**
- 5. Form**

**Use views to present
and capture data in a
variety of way to suit
different needs.**



Advanced Fields

Formula Field

A formula field in Airtable is almost like a formula field in Excel but more restrictive. It can only be applied to the values in the same record (i.e. row).

A lookup field is a foreign key field for looking up another field value through the linked table's primary key.

**Lookup
Field**

Rollup Field

A rollup field is like a supercharged lookup field which can perform aggregated functions on the looked up values.

Introduction to **LAMP** Stack through **MAMP**



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Jobs Downloads Support

Download **MAMP & MAMP PRO**



MAMP & MAMP PRO 5.5

macOS 10.10+ & 64-Bit processor (Intel)

Users of version 4 can update at a low price.



MAMP & MAMP PRO 4.1

Windows 7, 8.1, 10

Download **MAMP Viewer**



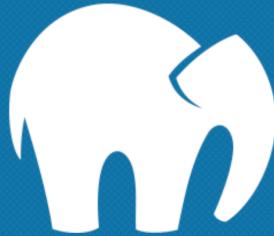
MAMP Viewer

iPhone & iPad — iOS 9.0+



MAMP Viewer

Android 5.0+

[Start](#)[My Website](#)[phpInfo](#)[Tools](#) ▾[FAQ](#)[MAMP Website](#)[Buy MAMP PRO](#)

MAMP PRO 5

New version out now!

[Try Now](#)

PHP

[phpinfo](#) shows the current configuration of PHP.

MySQL

MySQL can be administered with [phpMyAdmin](#).

To connect to the MySQL server from your own scripts use the following connection parameters:

Host	localhost
Port	3306
User	root
Password	root
Socket	/Applications/MAMP/tmp/mysql/mysql.sock

Examples

[PHP <= 5.5.x](#)[PHP >= 5.6.x](#)[Python](#)[Perl](#)

MAMP Version

3.5 → [Update \(5.2\) available!](#)

News

[MAMP & MAMP PRO 5 out now!](#)

31th July, 2018 – **MAMP & MAMP PRO 5 has just been released**

Comes with new WordPress features

Snapshots, Grouped Host List, and much more...

[MAMP Cloud Function available now with MAMP 4.4](#)

February, 2018 – **MAMP Cloud Function has been released**

Work on different machines, move or backup your project data.

MAMP Cloud allows you to save and load your host and database data using a cloud provider, such as Dropbox. You can easily save your host and database data in the cloud and later retrieve it on another Mac, or on the same Mac, when backing up data before making changes on your host.

[BLACK FRIDAY SALE](#)

Setting up MySQL on MAMP

phpMyAdmin

Recent | Favorites

Filter databases by name or

New

- acehub
- BucketList
- campus_prdev
- cellar
- ci
- com5940
- csdemo
- d734_e
- d739
- d744
- d744a
- d750a
- d751_a
- d753a
- d753e
- d753f
- d753g
- d754_e

Server: localhost:3306

Databases SQL Status Users Export Import Settings Replication VariablesCharsets Engines

General Settings

Server connection collation: utf8mb4_unicode_ci

Appearance Settings

Language: English

Theme: Original

Font size: 82%

More settings

Database server

- Server: Localhost via UNIX socket
- Server type: MySQL
- Server version: 5.5.42 - Source distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8)

Web server

- Apache/2.2.29 (Unix) mod_wsgi/3.5 Python/2.7.10 PHP/5.6.10 mod_ssl/2.2.29 OpenSSL/1.0.2h DAV/2 mod_fastcgi/2.4.6 mod_perl/2.0.9 Perlv5.22.0
- Database client version: libmysql - mysqld - 5.0.11-dev - 20120505 - S:3c68bb6bbc30d36a3ac24fdd4b7b5b787fe5555 \$
- PHP extension: mysqli
- PHP version: 5.6.10

phpMyAdmin

- Version information: 4.4.10
- Documentation
- Wiki
- Official Homepage
- Contribute
- Get support
- List of changes



phpMyAdmin

CONVERT DATA FORMAT FROM CSV TO SQL

<https://www.convertcsv.com/csv-to-sql.htm>

Structured Query Language (SQL)

“Language (commands) for instructing the database to perform data operations.”

SQL is further divided into Data Definition Language (DDL) and Data Manipulation Language (DML)

STRUCTURED QUERY LANGUAGE (SQL)

**DATA DEFINITION
LANGUAGE (DDL)**

**DATA MANIPULATION
LANGUAGE (DML)**

Data Definition Language (DDL)

Set Up Database

CREATE DATABASE `databaseName`

DROP DATABASE `databaseName`

SHOW DATABASES

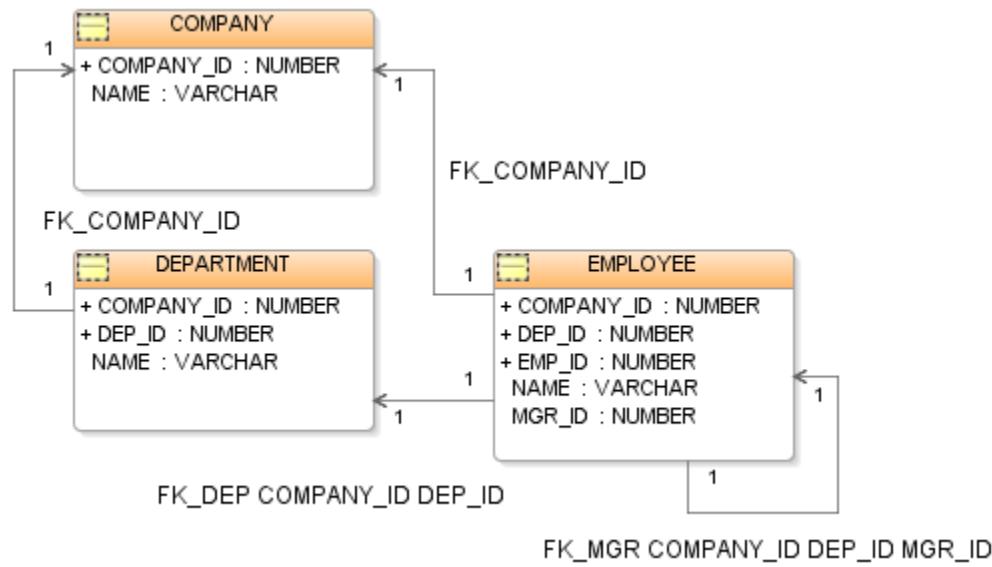
Data Definition Language (DDL)

Set Up Table

```
CREATE TABLE IF NOT EXISTS tableName  
SHOW TABLES
```

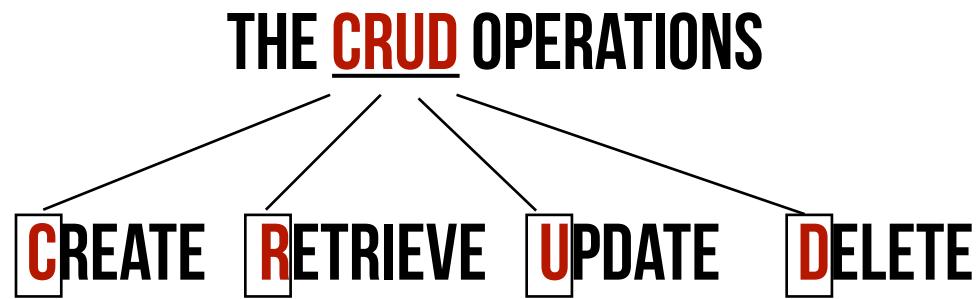
Building relationships between tables by using foreign keys.

- Every entry in a table should be uniquely defined by a **primary key**.
- Build relationships between tables by making one of the fields in the table as a **foreign key** linked to the **primary key** of another table.



Source: commons.wikimedia.org

Data Manipulation Language (DML)



Insert a Record (C)

INSERT INTO tableName VALUES (firstColumnValue, ..., lastColumnValue)

Retrieve a Record (R)

SELECT column1Name, column2Name, ... **FROM** tableName **WHERE** criteria

Update a Record (U)

UPDATE tableName **SET** columnName = {value|NULL|DEFAULT}, ... **WHERE**
criteria

Delete a Record (D)

DELETE FROM tableName **WHERE** criteria

Lab exercise continues at:

<https://www.dofactory.com/sql/syntax>

MySQL by Examples for Beginners

http://www.ntu.edu.sg/home/ehchua/programming/sql/mysql_beginner.html

THANK YOU FOR YOUR TIME!