

CS3DB3 / SE4DB3 / SE6DB3 TUTORIAL

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Introduction

- Tutorial Time
 - ▣ T01: Wednesday 2:30pm-3:20pm, JHE 326H
 - ▣ T02: Wednesday 4:30pm-5:20pm, JHE 326H
- Teaching Assistants
 - ▣ Xiao Jiao Wang
 - Office Hour: Tues 10:30am-11:30am, ITB 115
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 - ▣ Yu Huang
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 - ▣ Arvind Viswanathan
 - Office Hour: Thurs 3:00pm-4:00pm, ITB 128
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Outline

- Environment
- Review
 - ▣ Superkey
 - ▣ (Candidate) key
 - ▣ Primary key
 - ▣ Foreign key
- Sample Script
- Basic DB2 Commands
- Using DB2 (Script)

Environment

- If you are off campus
 - Use VPN. Click [here](#) to download VPN.
 - ssh to a department server.
 - Windows: [Help on using SSH and download instructions.](#)
 - mills.cas.mcmaster.ca
 - moore.cas.mcmaster.ca
 - MacOS: Type **ssh macid@mills.cas.mcmaster.ca** in Terminal
- ssh to DB2 server
 - CS3DB3 **ssh macid@db2srv2**
 - SE4DB3/SE6DB3 **ssh macid@db2srv3**
- **Make sure you have access to these servers. Don't wait until the last minute.**

Review

- A **key** is a set of attributes that uniquely identifies tuples in a relation.
- A set of attributes K is a **superkey** for a relation r if r cannot contain two distinct tuples t_1 and t_2 such that $t_1[K]=t_2[K]$.
 - **Note:** If K is a superkey, then so is any superset of K .
- K is a (candidate) key for r if K is a minimal superkey.
 - **No proper subset is a superkey.**
- **Primary key:** a candidate key that is chosen by the database designer as the principal means of identifying tuples within a relation.
 - Nulls are not allowed
 - Attribute values are never, or very rarely, changed.
 - The address field of a person should not be part of the primary key, since it is likely to change.
 - Social-security numbers are guaranteed to never change.
- A **foreign key** requires that the values on a set X of attributes of a relation R_1 must appear as values for the primary key of another relation R_2 .

Example 1

| customer_id | customer_name | customer_street | customer_city |
|-------------|---------------|-----------------|---------------|
| 192-83-9465 | Johnson | 12 Alma St. | Palo Alto |
| 677-89-9011 | Hayes | 3 Main St. | Harrison |
| 182-73-6091 | Turner | 123 Putnam Ave. | Stamford |
| 321-12-3123 | Jones | 100 Main St. | Harrison |
| 336-66-9999 | Lindsay | 175 Park Ave. | Pittsfield |
| 019-28-3746 | Smith | 72 North St. | Rye |

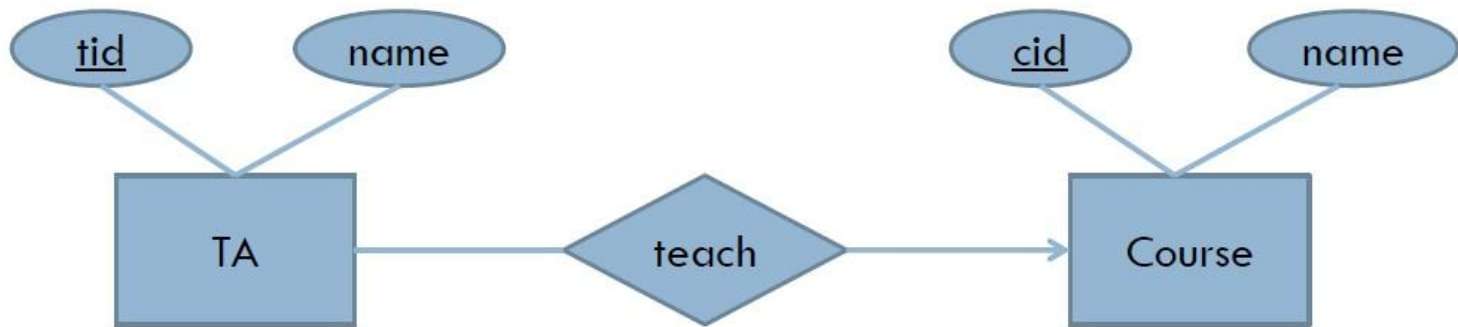
□ Superkey:

- {customer_id};
- {customer_id, customer_name};
- customer_name is not a superkey, because several people might have the same name.

□ Candidate key:

- {customer_id};
- {customer_name, customer_street} if we assume that this combination is sufficient to distinguish among members of the *customer* relation.
- {customer_id, customer_name} does not form candidate key, since the subset {customer_id} is a superkey.

Example 2 (Sample Script)



□ TA(tid, name, cid)

□ Course(cid, name)

| tid | name | cid |
|-----|-------|-----|
| t1 | John | c1 |
| t2 | Smith | c1 |
| t3 | Mary | c2 |

ref. →

| cid | name |
|-----|----------|
| c1 | Database |
| c2 | Math |

Note: cid in TA is a foreign key referring to Course.

Basic DB2 Commands

- Write a comment
 - **-- *this is a comment***
- Make a connection
 - **CONNECT TO DBNAME**
- Terminate a connection
 - **TERMINATE**

Using DB2(Script)

- Login to the server
- Upload your script (using SSH)
- Use command **db2 -n -t -f FILENAME** to execute the script