Tutorial 2 — Data Definition, Security, Modelling Languages

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Before we begin...

Solutions to Tutorial 1 exercises have been added to Tutorial 1 slides.

Corrections:
Exercise 1-3 E-R diagram cardinality.
Exercise 1-6 extraneous GROUP BY clause.

Exercise 2-1

Oops! Our `user` table contains passwords in plaintext! Our table looks like:

```
 CREATE TABLE user (
id int,
name varchar(100) NOT NULL,
password varchar(2000) NOT NULL,
PRIMARY KEY (id)
);
INSERT INTO user VALUES (1, 'Alice', 'abcABC123!@#');
```

How can we modify the `user` table to replace `password` with a non-nullable `hashedPassword` column, containing the result of `PASSWORD(password)` of each row?

Exercise 2-2

Suppose we have the following instance of the `user` table. Do the contents suggest any potential security vulnerabilities?

What could we do to improve it?

id	name	hashedPassword
1	Alice	*BEEFBEEFBEEFBEEF
2	Bob	*43F23EBECA12AD31CBA2C1BC2
3	Charlie	*BEEFBEEFBEEFBEEF
4	Donna	*43DBA275606D7A633AC28

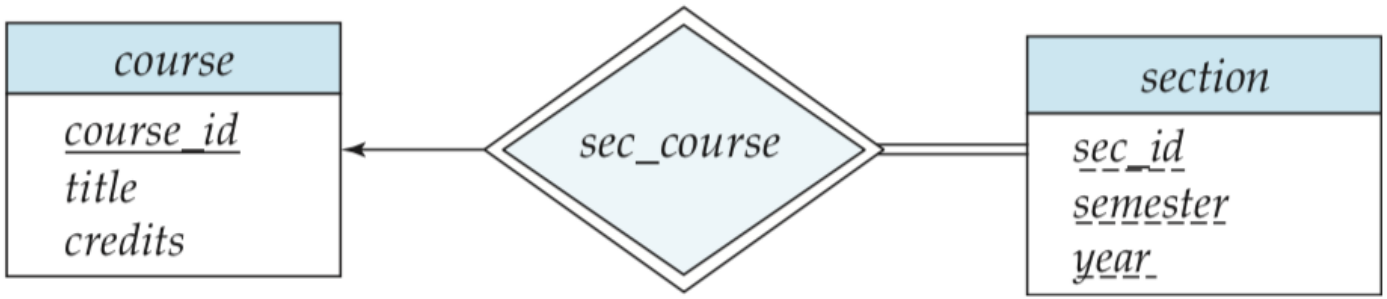
Exercise 2-3

Which of the following functions are deterministic?

```
ABS
COUNT
DATEDIFF
GETDATE
ISNULL
RAND
```

Exercise 2-4

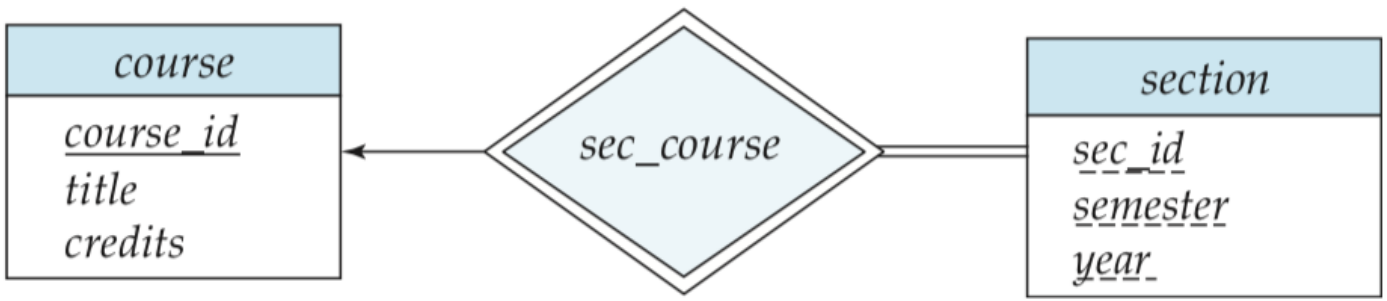
What could the database schema for the following E-R diagram look like?



Exercise 2-5

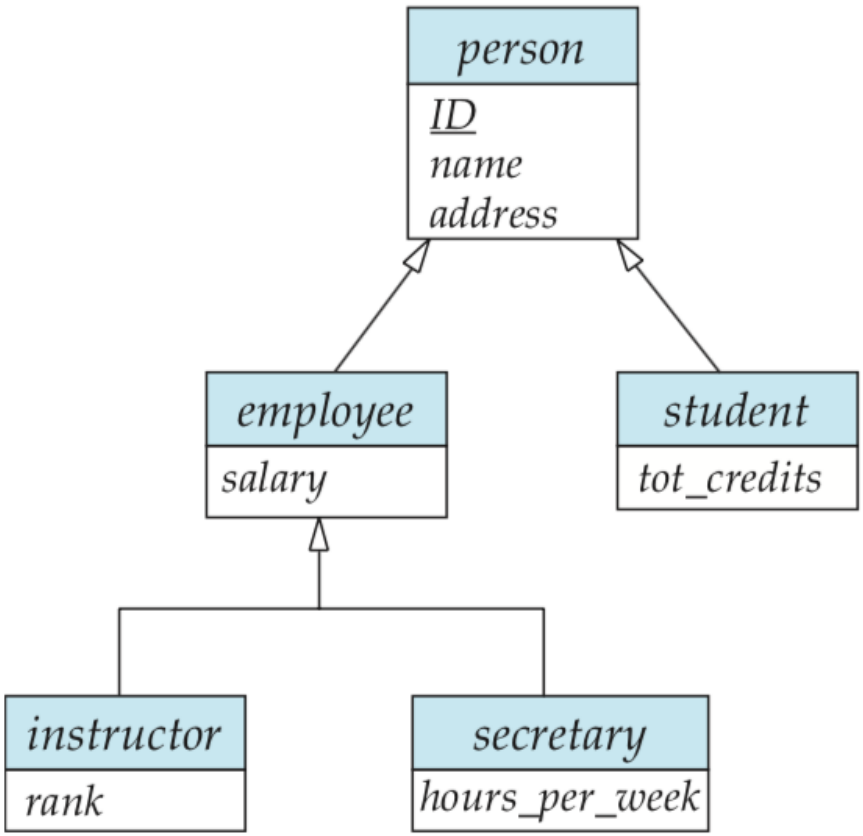
What do the following parts of this diagram mean?

- the solid underline on *course_id*
- the single arrow pointing to *course*
- the double diamond around *sec_course*
- the double lines between *sec_course* and *section*
- the dashed underlines on the attributes of *section*



Exercise 2-6

What could the database schema for the following E-R diagram look like?



Fin

What other topics do you want to talk about?