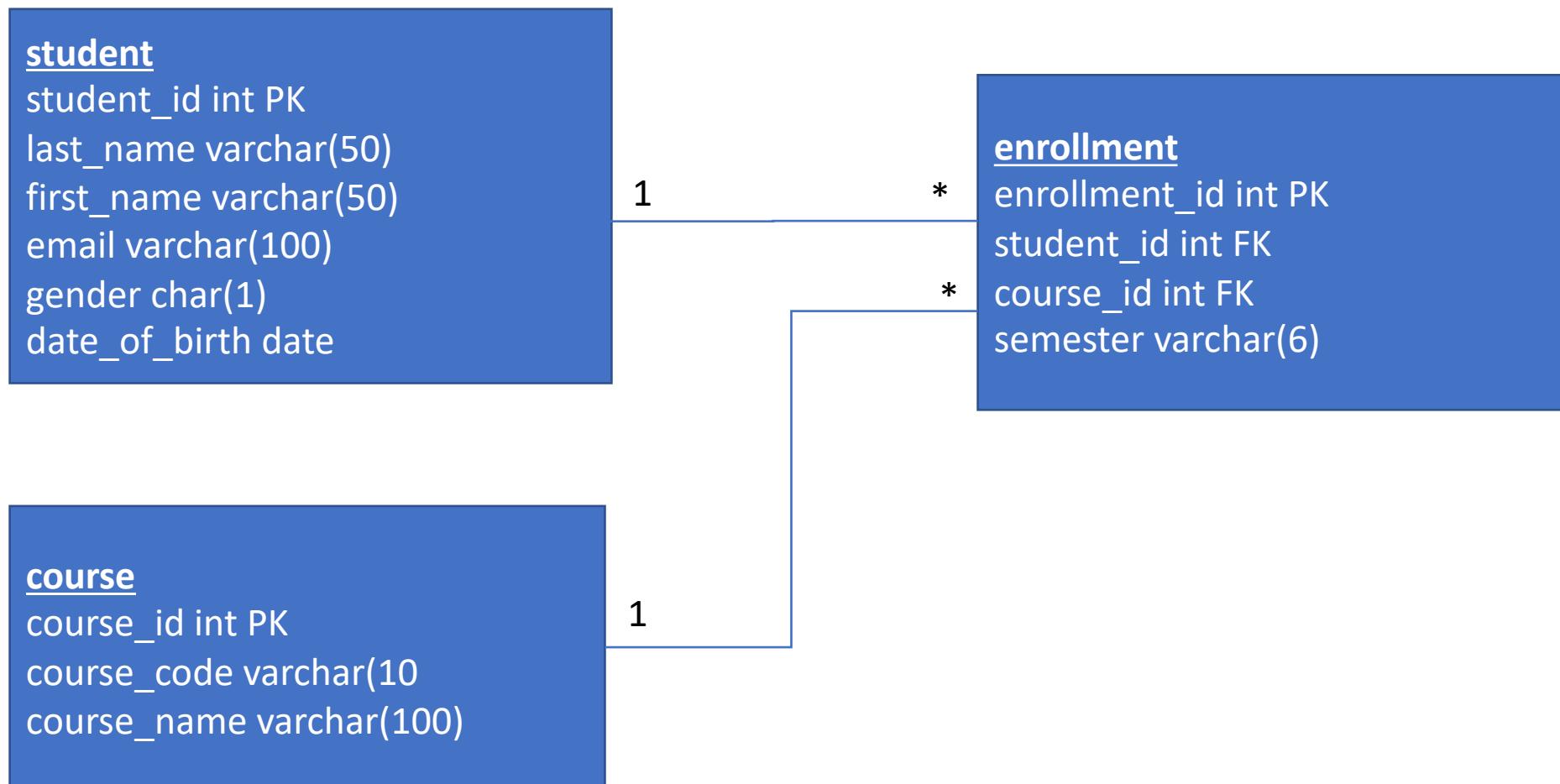


# The college database diagram after normalization



# Data can be fetched from each individual table

```
select * from student;
```

```
select * from course;
```

```
select * from enrollment;
```

But how do we fetch related data from multiple tables in a single SELECT statement?

- By joining the **student** and **enrollment** tables using an INNER JOIN statement:

```
select * from student  
inner join enrollment  
on student.student_id = enrollment.student_id;
```

# Now fetch only a subset of columns

```
select student.student_id,  
       student.last_name,  
       student.first_name,  
       enrollment.course_id,  
       enrollment.semester from student  
inner join enrollment on student.student_id =  
enrollment.student_id;
```

# The previous statement returns `course_id`

- Now perform an additional join between the **enrollment** and **course** tables to return the full course names:

```
select student.student_id,  
       student.last_name,  
       student.first_name,  
       enrollment.course_id,  
       enrollment.semester,  
       course.course_name from student  
inner join enrollment  
       on student.student_id = enrollment.student_id  
inner join course  
       on enrollment.course_id = course.course_id;
```

The result set should look like this

student_id	last_name	first_name	course_id	semester	course_name
1237	Klein	Calvin	10	Fall	Mobile App Development
1237	Klein	Calvin	30	Fall	Advanced Databases
1236	Kim	John	10	Fall	Mobile App Development
1236	Kim	John	30	Fall	Advanced Databases
1235	Kay	Mary	10	Spring	Mobile App Development
1235	Kay	Mary	20	Spring	SQL Programming
1234	Smith	Dave	10	Spring	Mobile App Development
1234	Smith	Dave	20	Spring	SQL Programming

# Now format the SELECT statement

```
select concat(student.first_name, ' ',  
            student.last_name) as student_name,  
      course.course_name,  
      enrollment.semester  
  from student  
inner join enrollment  
        on student.student_id = enrollment.student_id  
inner join course  
        on enrollment.course_id = course.course_id  
order by student.first_name, student.last_name;
```

For the following result set

	student_name	course_name	semester
▶	Calvin Klein	Mobile App Development	Fall
	Calvin Klein	Advanced Databases	Fall
	Dave Smith	Mobile App Development	Spring
	Dave Smith	SQL Programming	Spring
	John Kim	Mobile App Development	Fall
	John Kim	Advanced Databases	Fall
	Mary Kay	Mobile App Development	Spring
	Mary Kay	SQL Programming	Spring

# Joined statements can be filtered using the WHERE clause

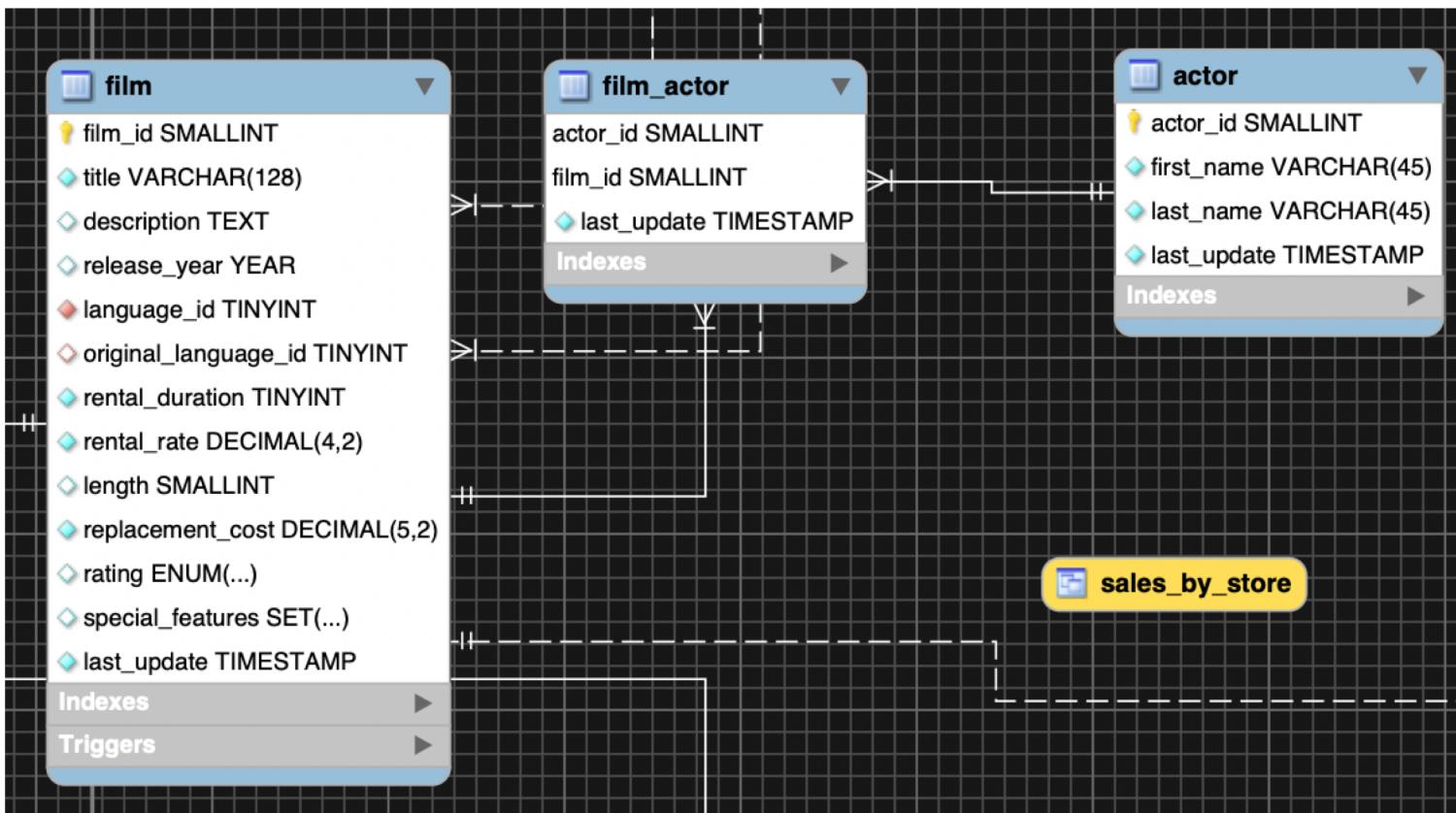
```
select concat(student.first_name, ' ',  
            student.last_name) as student_name,  
      course.course_name,  
      enrollment.semester  
  from student  
inner join enrollment  
    on student.student_id = enrollment.student_id  
inner join course  
    on enrollment.course_id = course.course_id  
where enrollment.semester = 'Fall'  
order by student.first_name, student.last_name;
```

# Simplify the statement using aliases

```
select concat(s.first_name, ' ', s.last_name) as
       student_name,
       c.course_name,
       e.semester
  from student s
 inner join enrollment e
           on s.student_id = e.student_id
 inner join course c
           on e.course_id = c.course_id
 where e.semester = 'Fall'
 order by s.first_name, s.last_name;
```

# Exercises using the sakila database

Examine the **film**, **actor**, and **film\_actor** tables



# Exercises using the sakila database

- Join the **film** and **film\_actor** tables
- Join the **film**, **film\_actor** and **actor** tables
- Filter the above joined statement to get all rows matching the film title 'ACADEMY DINOSAUR'
- Narrow down the column list to get all actors who were in 'ACADEMY DINOSAUR'

# Exercises using the sakila database

- Referring to the **staff**, **store** and **address** tables
  - Get the street address of the store managed by Mike Hillyer
- Get the number of films that are not in English
- Get a list of all films available in inventory at the store on '47 MySakila Drive'

# Concepts learned

- INNER JOINS
  - Filtering statements that use INNER JOINS
- concat() string function
- Table aliases