



Module 4

Basic Query Formulation with SQL

Lesson 4: Using join operations in SQL
SELECT statements

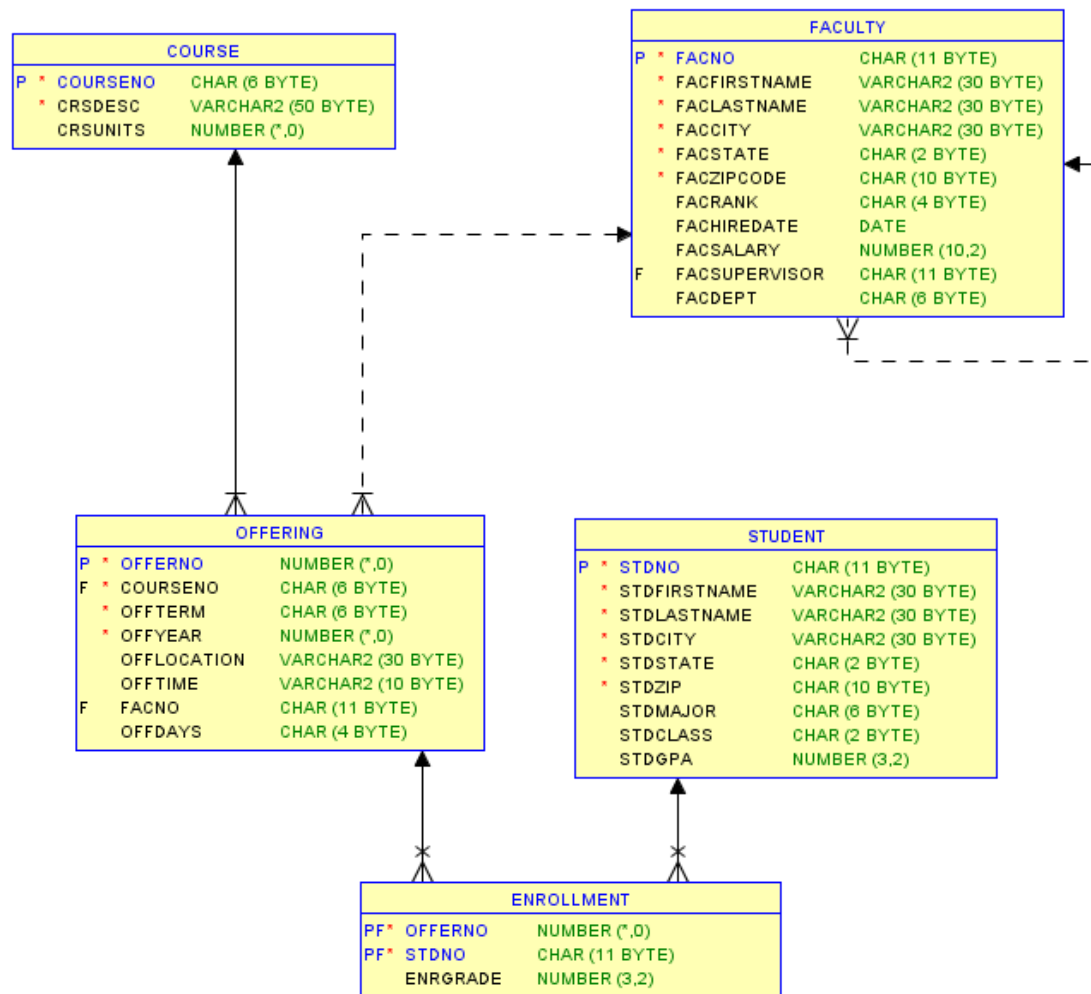


Lesson Objectives

- Write SELECT statements using both join styles
- Provide natural language explanations of SELECT statements using both join styles



University Database Diagram

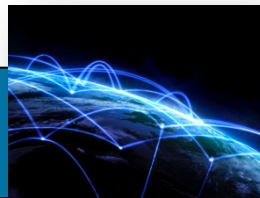


Cross Product Style

- List tables in the FROM clause
- List join conditions in the WHERE clause

Example 1

```
SELECT OfferNo, CourseNo, FacFirstName, FacLastName  
FROM Offering, Faculty  
WHERE OffTerm = 'FALL' AND OffYear = 2016  
    AND FacRank = 'ASST' AND CourseNo LIKE 'IS%'  
    AND Faculty.FacNo = Offering.FacNo;
```

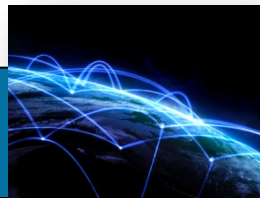


Join Operator Style

- Use INNER JOIN and ON keywords
- FROM clause contains join operations

Example 2

```
SELECT OfferNo, CourseNo, FacFirstName, FacLastName  
FROM Offering INNER JOIN Faculty  
    ON Faculty.FacNo = Offering.FacNo  
WHERE OffTerm = 'FALL' AND OffYear = 2016  
    AND FacRank = 'ASST' AND CourseNo LIKE 'IS%';
```



Name Qualification

- Ambiguous column reference
 - More than one table in the query contains a column referenced in the query
 - Ambiguity determined by the query not the database
- Use column name alone if query is not ambiguous
- Qualify with table name if query is ambiguous

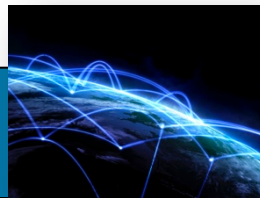


Name Qualification Example

Example 2

```
SELECT OfferNo, CourseNo, FacFirstName, FacLastName  
FROM Offering INNER JOIN Faculty  
    ON Faculty.FacNo = Offering.FacNo  
WHERE OffTerm = 'FALL' AND OffYear = 2016  
    AND FacRank = 'ASST' AND CourseNo LIKE 'IS%';
```

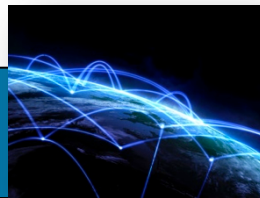
- FacNo must be qualified
- Can qualify other names for easier readability



Cross Product Style with 3 Tables

Example 3: List Leonard Vince's teaching schedule in fall 2016. For each course, list the offering number, course number, number of units, days, location, and time.

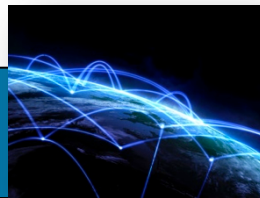
```
SELECT OfferNo, Offering.CourseNo, OffDays,  
       CrsUnits, OffLocation, OffTime  
FROM Faculty, Course, Offering  
WHERE Faculty.FacNo = Offering.FacNo  
      AND Offering.CourseNo = Course.CourseNo  
      AND OffYear = 2016 AND OffTerm = 'FALL'  
      AND FacFirstName = 'LEONARD'  
      AND FacLastName = 'VINCE';
```



Join Operator Style with 3 Tables

Example 4: List Leonard Vince's teaching schedule in fall 2016. For each course, list the offering number, course number, number of units, days, location, and time.

```
SELECT OfferNo, Offering.CourseNo, OffDays,  
       CrsUnits, OffLocation, OffTime  
FROM Offering INNER JOIN Course  
     ON Offering.CourseNo = Course.CourseNo  
     INNER JOIN Faculty ON Offering.FacNo = Faculty.FacNo  
WHERE OffYear = 2016 AND OffTerm = 'FALL'  
     AND FacFirstName = 'LEONARD'  
     AND FacLastName = 'VINCE';
```



Summary

- Explicit join specification in the SELECT statement
- Read and write both join styles
- Consult database diagram when formulating join queries
- Work many problems

