



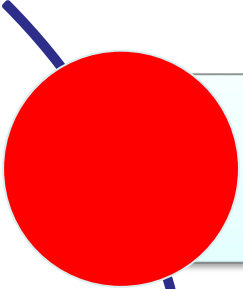
# Module 12

## Advanced Query Formulation with SQL

### Lesson 1 (Part 1): Outer Join Operators



# Lesson Objectives



Explain outer join operators using a Venn diagram



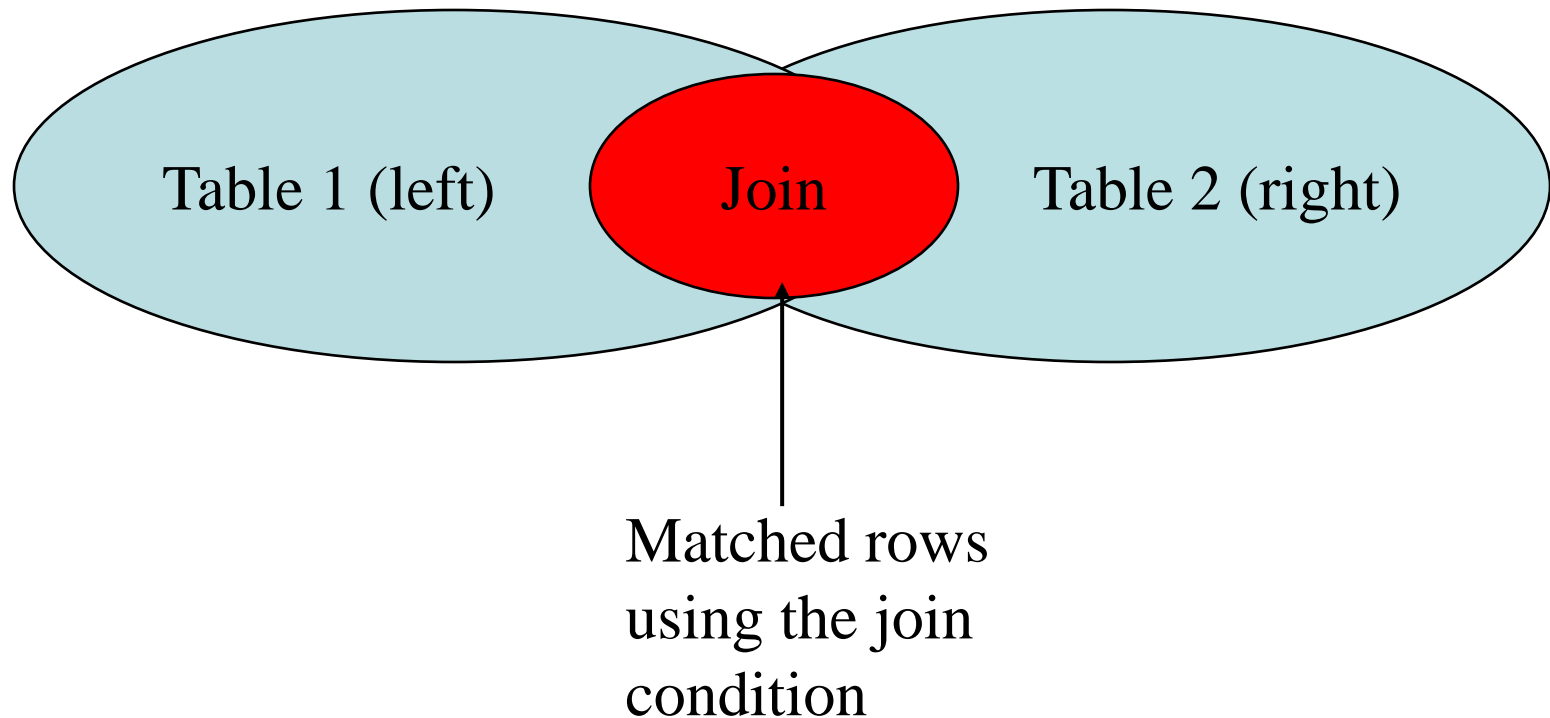
Explain outer join operations using small sample tables



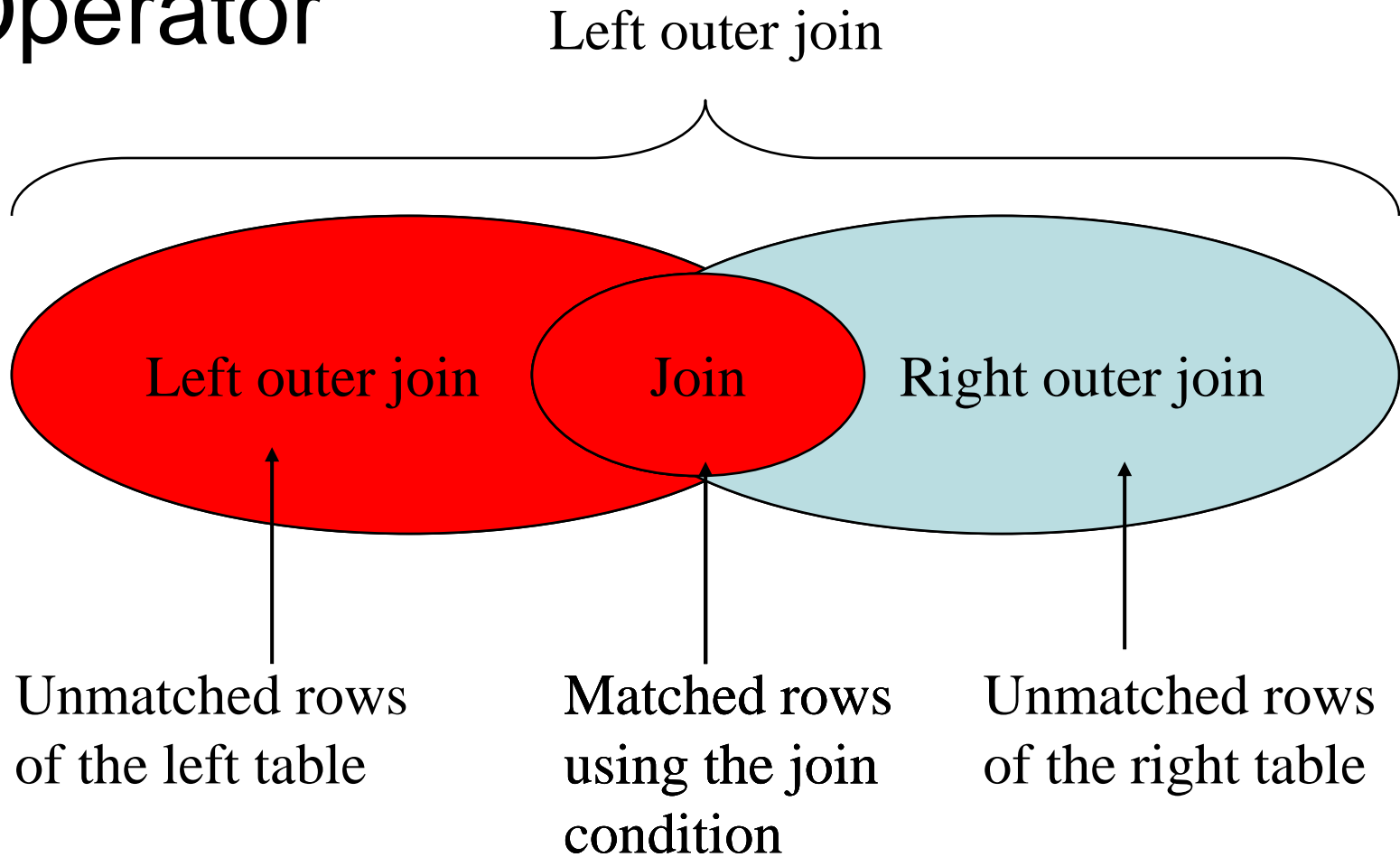
Explain lack of commutativity for the one-sided outer join operator



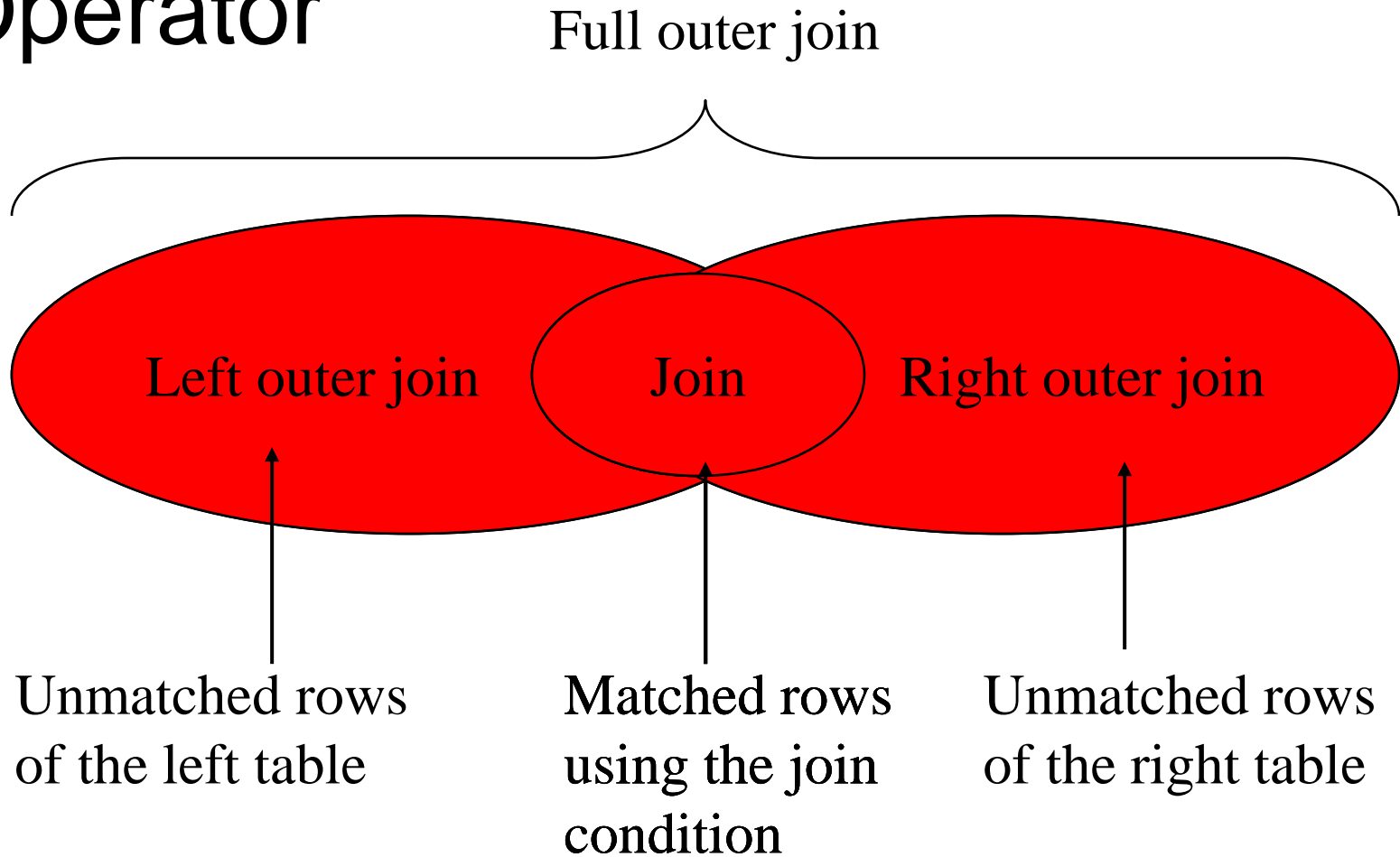
# Venn Diagram of the Join Operator



# Venn Diagram of the Left Outer Join Operator



# Venn Diagram of the Full Outer Join Operator



# Full Outer Join Operation I

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA

Faculty FULL JOIN Offering



# Full Outer Join Operation II

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA

Matching rows (join part)

Faculty FULL JOIN Offering		
OfferNo	FacNo	FacName
1111	111-11-1111	JOE
2222	222-22-2222	SUE
3333	111-11-1111	JOE



# Full Outer Join Operation III

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA

Matching rows plus  
unmatched *Offering* rows

Faculty FULL JOIN Offering		
OfferNo	FacNo	FacName
1111	111-11-1111	JOE
2222	222-22-2222	SUE
3333	111-11-1111	JOE
4444	[null]	[null]





# Full Outer Join Operation IV

Matching rows, unmatched  
*Offering* rows, plus unmatched  
*Faculty* rows

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA

Faculty FULL JOIN Offering		
OfferNo	FacNo	FacName
1111	111-11-1111	JOE
2222	222-22-2222	SUE
3333	111-11-1111	JOE
4444	[null]	[null]
[null]	333-33-3333	SARA

# Left Outer Join Operation I

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Offering LEFT JOIN Faculty

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA



# Left Outer Join Operation II

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA

Matching rows

Offering LEFT JOIN Faculty		
OfferNo	FacNo	FacName
1111	111-11-1111	JOE
2222	222-22-2222	SUE
3333	111-11-1111	JOE



# Left Outer Join Operation III

Offering	
OfferNo	FacNo
1111	111-11-1111
2222	222-22-2222
3333	111-11-1111
4444	

Faculty	
FacNo	FacName
111-11-1111	JOE
222-22-2222	SUE
333-33-3333	SARA

Matching rows plus  
unmatched *Offering* rows

Offering LEFT JOIN Faculty		
OfferNo	FacNo	FacName
1111	111-11-1111	JOE
2222	222-22-2222	SUE
3333	111-11-1111	JOE
4444	[null]	[null]

# Summary

Venn diagram for relationship of join and outer join operators

Small sample tables to trace results

Importance of one-sided outer join but not commutative

Part 2 of lesson 1 with practice about the one-sided outer join operator in the SELECT statement

