

MODULE 2 DATABASE PROGRAMMING

Keys, JOIN, and UNION





YESTERDAY...

How do we specify the order of query results?

What's the syntax for only returning the first 8 records?

What is an aggregate function?

How do you get records into summary rows?

How do you use IN or NOT IN during the where clause?



amazon



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Tables (maybe)

Users			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
FirstName	varchar(50)		<input type="checkbox"/>
LastName	varchar(50)		<input type="checkbox"/>
MemberSince	datetime		<input checked="" type="checkbox"/>
isActive	bit		<input type="checkbox"/>

Purchases			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
userID	int		<input type="checkbox"/>
productID	int		<input type="checkbox"/>
PurchaseDate	datetime		<input type="checkbox"/>
isActive	bit		<input type="checkbox"/>

Shipping Addresses			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
Street_1	varchar(50)		<input type="checkbox"/>
Street_2	varchar(50)		<input checked="" type="checkbox"/>
City	varchar(50)		<input type="checkbox"/>
State	varchar(50)		<input type="checkbox"/>
Zip	varchar(50)		<input type="checkbox"/>
userID	int		<input type="checkbox"/>
isActive	bit		<input type="checkbox"/>

Products			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
Description	varchar(MAX)		<input type="checkbox"/>
Price	float		<input type="checkbox"/>
Location	int		<input type="checkbox"/>
isActive	bit		<input type="checkbox"/>

Users			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
FirstName	varchar(50)		<input type="checkbox"/>
LastName	varchar(50)		<input type="checkbox"/>
MemberSince	datetime		<input checked="" type="checkbox"/>
isActive	bit		<input type="checkbox"/>

Shipping_Addresses			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
Street_1	varchar(50)		<input type="checkbox"/>
Street_2	varchar(50)		<input checked="" type="checkbox"/>
City	varchar(50)		<input type="checkbox"/>
State	varchar(50)		<input type="checkbox"/>
Zip	varchar(50)		<input type="checkbox"/>
userID	int		<input type="checkbox"/>
isActive	bit		<input type="checkbox"/>

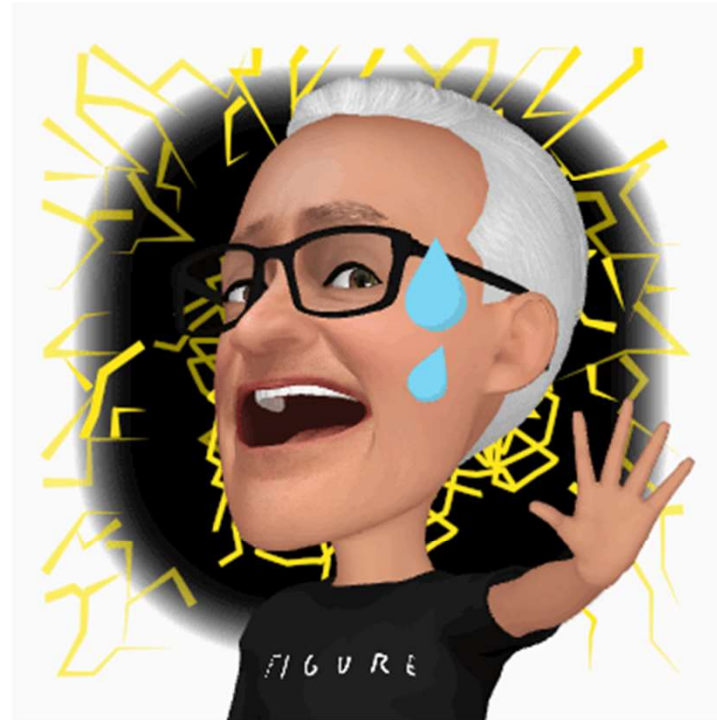
Purchases			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
userID	int		<input type="checkbox"/>
productID	int		<input type="checkbox"/>
PurchaseDate	datetime		<input type="checkbox"/>
isActive	bit		<input type="checkbox"/>

Products			
Column Name	Data Type	Allow Nulls	
id	int		<input type="checkbox"/>
Description	varchar(MAX)		<input type="checkbox"/>
Price	float		<input type="checkbox"/>
Location	int		<input type="checkbox"/>
isActive	bit		<input type="checkbox"/>

select * from Shipping_Addresses where userID in (select id from Users where FirstName='Henry' and LastName='Edwards')

select * from Purchases where userID in (select id from Users where FirstName='Henry' and LastName='Edwards')

select * from Products where id in (select productID from Purchases where userID in (select id from Users where FirstName='Henry' and LastName='Edwards'))



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KEYS

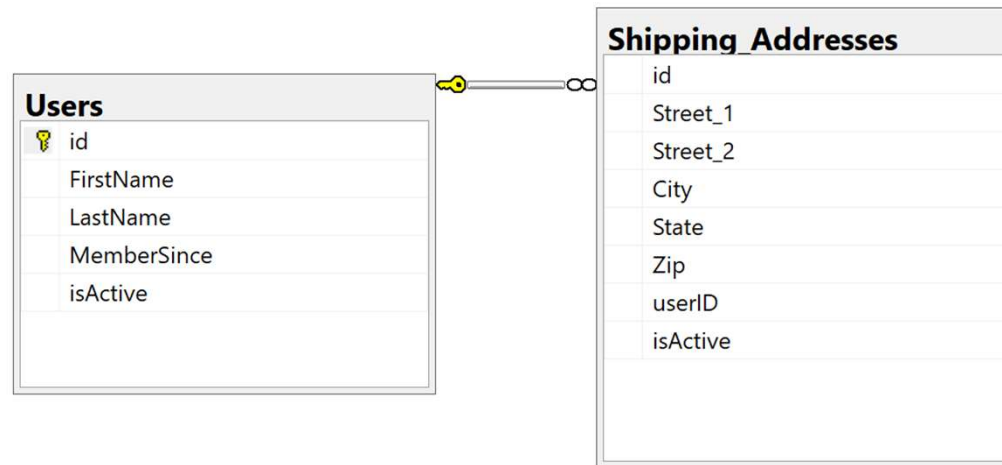
Primary key columns are columns that hold a value that is unique for every row in that table.

Foreign key is a field in one table that uniquely identifies a row of another table

Users			
	Column Name	Data Type	Allow Nulls
	id	int	<input type="checkbox"/>
	FirstName	varchar(50)	<input type="checkbox"/>
	LastName	varchar(50)	<input type="checkbox"/>
	MemberSince	datetime	<input checked="" type="checkbox"/>
	isActive	bit	<input type="checkbox"/>
			<input type="checkbox"/>

Shipping_Addresses			
	Column Name	Data Type	Allow Nulls
	id	int	<input type="checkbox"/>
	Street_1	varchar(50)	<input type="checkbox"/>
	Street_2	varchar(50)	<input checked="" type="checkbox"/>
	City	varchar(50)	<input type="checkbox"/>
	State	varchar(50)	<input type="checkbox"/>
	Zip	varchar(50)	<input type="checkbox"/>
	userID	int	<input type="checkbox"/>
	isActive	bit	<input type="checkbox"/>
			<input type="checkbox"/>

CARDINALITY



ONE TO MANY

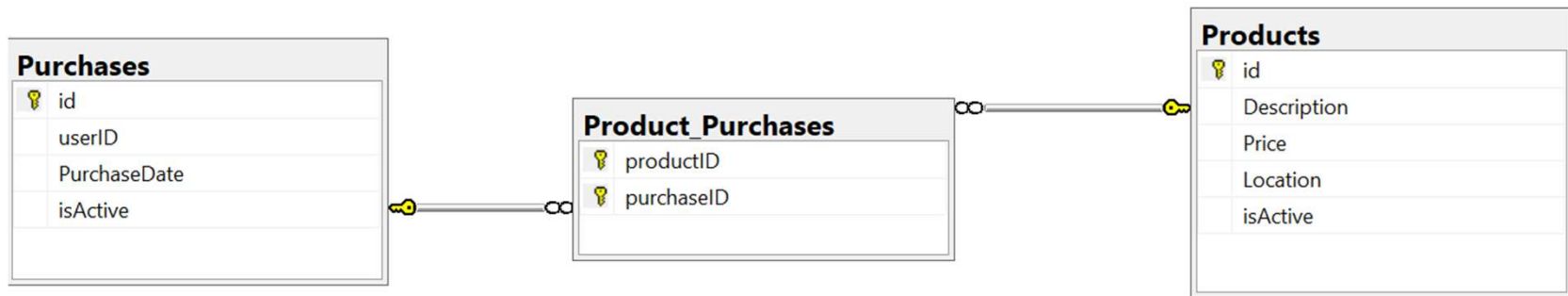


CARDINALITY

Products	
	id
	Description
	Price
	Location
	isActive

Purchases	
	id
	userID
	productID
	PurchaseDate
	isActive

CARDINALITY



MANY TO MANY

JOINS

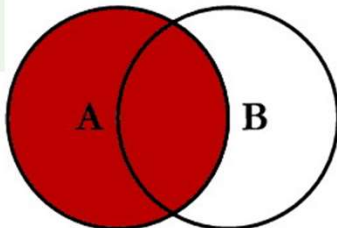
- **SQL JOINS** allow us to create queries that produce data from one or more tables.

	code	name	continent	region	surfacearea	indepyear	population	lifeexpectancy	gnp	gnpold	localname	governmentform	headofstate	capital	code2	id	name	countrycode	district	population
1	ABW	Aruba	North America	Caribbean	193	NULL	103000	78.4	828.00	793.00	Aruba	Nonmetropolitan Territory of The Netherlands	Beatrix	129	AW	129	Oranjestad	ABW	?	29034
2	AFG	Afghanistan	Asia	Souther...	652090	1919	22720000	45.9	5976	NULL	Afganist...	Islamic Emirate	Mohamm...	1	AF	1	Kabul	AFG	Kabul	1780000
3	AFG	Afghanistan	Asia	Souther...	652090	1919	22720000	45.9	5976	NULL	Afganist...	Islamic Emirate	Mohamm...	1	AF	2	Qandahar	AFG	Qan...	237500
4	AFG	Afghanistan	Asia	Souther...	652090	1919	22720000	45.9	5976	NULL	Afganist...	Islamic Emirate	Mohamm...	1	AF	3	Herat	AFG	Herat	186800
5	AFG	Afghanistan	Asia	Souther...	652090	1919	22720000	45.9	5976	NULL	Afganist...	Islamic Emirate	Mohamm...	1	AF	4	Mazare...	AFG	Balkh	127800
6	AGO	Angola	Africa	Central ...	1246700	1975	12878000	38.3	6648	7984	Angola	Republic	Jos? Edu...	56	AO	56	Luanda	AGO	Lua	2022000
7	AGO	Angola	Africa	Central ...	1246700	1975	12878000	38.3	6648	7984	Angola	Republic	Jos? Edu...	56	AO	57	Huambo	AGO	Hua	163100
8	AGO	Angola	Africa	Central ...	1246700	1975	12878000	38.3	6648	7984	Angola	Republic	Jos? Edu...	56	AO	58	Lobito	AGO	Ben...	130000

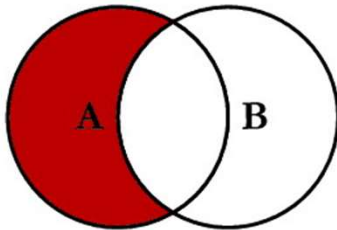
select * from country order by code

select * from city order by countrycode

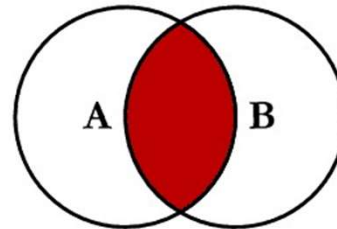
SQL JOINS



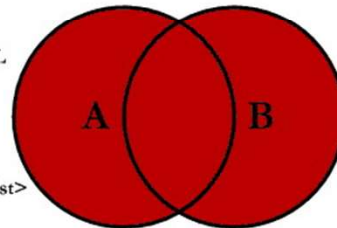
```
SELECT <select_list>
FROM TableA A
LEFT JOIN TableB B
ON A.Key = B.Key
```



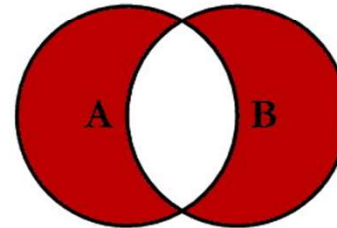
```
SELECT <select_list>
FROM TableA A
LEFT JOIN TableB B
ON A.Key = B.Key
WHERE B.Key IS NULL
```



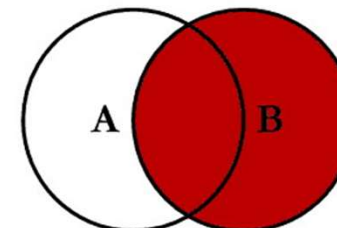
```
SELECT <select_list>
FROM TableA A
INNER JOIN TableB B
ON A.Key = B.Key
```



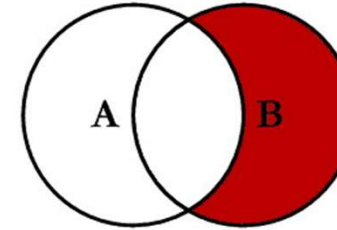
```
SELECT <select_list>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.Key = B.Key
```



```
SELECT <select_list>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.Key = B.Key
WHERE A.Key IS NULL
OR B.Key IS NULL
```



```
SELECT <select_list>
FROM TableA A
RIGHT JOIN TableB B
ON A.Key = B.Key
```



```
SELECT <select_list>
FROM TableA A
RIGHT JOIN TableB B
ON A.Key = B.Key
WHERE A.Key IS NULL
```

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UNIONS

- A SQL UNION combines the results of two or more queries into a single result set.
- The number of columns involved **must match exactly** and data types must be identical.
- Duplicate rows are removed.

SYNTAX:

SELECT expression1, expression2, ... expression_n FROM tables [WHERE conditions]

UNION

SELECT expression1, expression2, ... expression_n FROM tables [WHERE conditions]



LET'S CODE!



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**WHAT QUESTIONS DO
YOU HAVE?**

