Introduction to SQL

Useful Things to Do

- Teach/Analyze an online class (6/18)
- SQL test (6/20)

- Write a cover letter
- Review resume

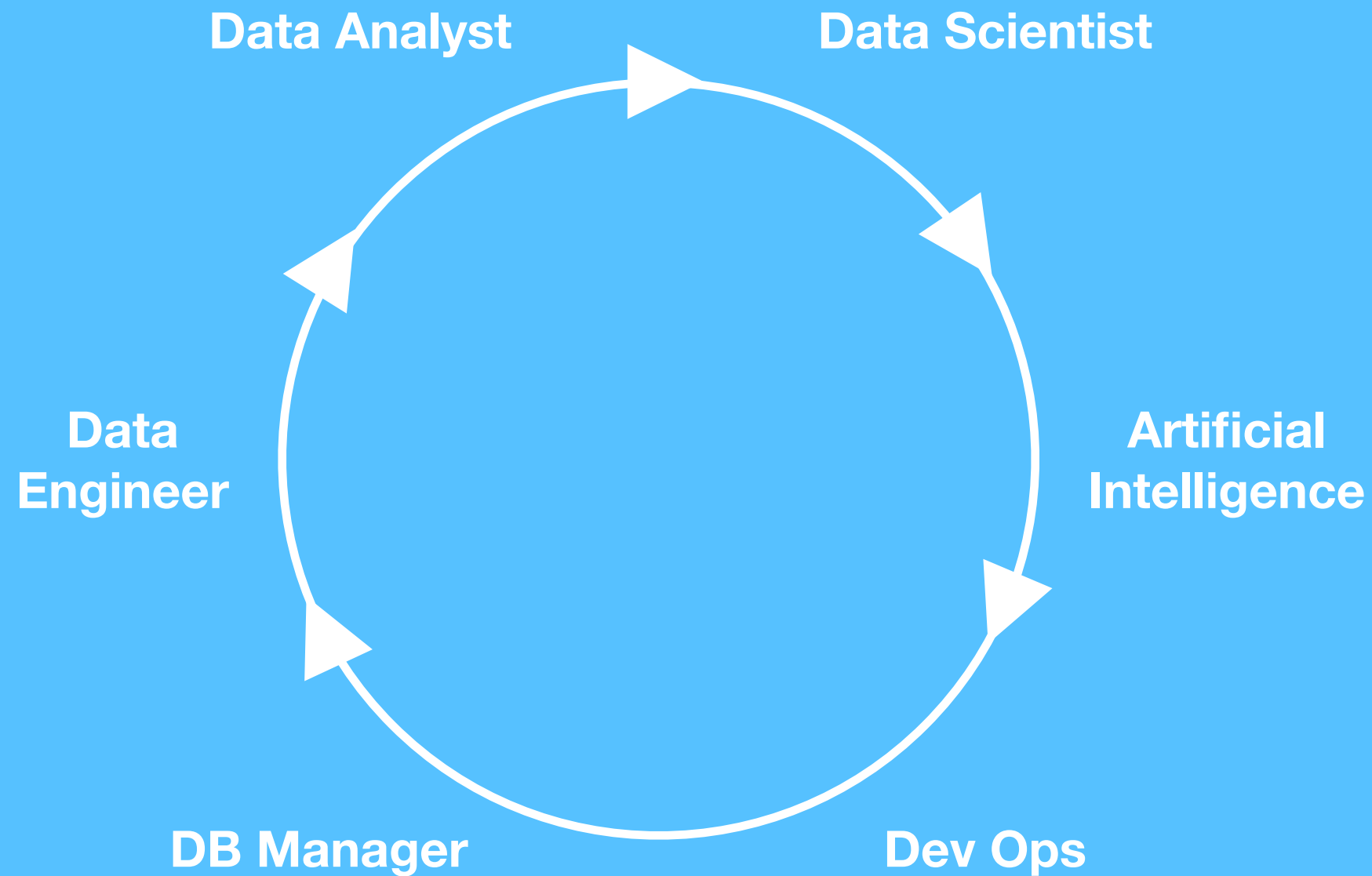- Attend AWS Summit Online
- Analyze job search
- Test photos

- Capstone MOU
- Capstone initial meeting

SQL Test

- 50 questions
- 60 min
- Opened twice 8am/8pm
- June 30th

https://github.com/la-process-and-theory/sql-db-setup

Data Science Workflow

DB Taxonomy

Relational (RDDBMS)

Old School

MySQL
Oracle
PostgreSQL

New School

Amazon Aurora
MySQL Cluster

Maria

Object-Oriented
Smalltalk

Non-Relational

NoSQL

Key-Value
Membrane
Document
MongoDB
Graph

InfiniteGraph

Distributed
Blockchain

Relational DBs

student   **Table**

student_id	username	email
1	AAA	emailA
2	BBB	emailB
3	CCC	emailC
4	DDD	emailD

Row/ Record

Unique Key/ Primary key*

Column/ Field

lesson

id	student_id
Z	1
Z	2
Z	3
Z	4

Foreign key

game

id	lesson_id	level
1A	Z	1
1A	Z	2
1A	Z	1
1B	Z	1

* Can be hidden

DB Popularity

Rank			DBMS	Database Model	Score		
Oct 2019	Sep 2019	Oct 2018			Oct 2019	Sep 2019	Oct 2018
1.	1.	1.	Oracle ➕	Relational, Multi-model ℹ️	1355.88	+9.22	+36.61
2.	2.	2.	MySQL ➕	Relational, Multi-model ℹ️	1283.06	+3.99	+104.94
3.	3.	3.	Microsoft SQL Server ➕	Relational, Multi-model ℹ️	1094.72	+9.66	+36.39
4.	4.	4.	PostgreSQL ➕	Relational, Multi-model ℹ️	483.91	+1.66	+64.52
5.	5.	5.	MongoDB ➕	Document, Multi-model ℹ️	412.09	+2.03	+48.90
6.	6.	6.	IBM Db2 ➕	Relational, Multi-model ℹ️	170.77	-0.79	-8.91
7.	7.	⬆️ 8.	Elasticsearch ➕	Search engine, Multi-model ℹ️	150.17	+0.90	+7.85
8.	8.	⬇️ 7.	Redis ➕	Key-value, Multi-model ℹ️	142.91	+1.01	-2.38
9.	9.	9.	Microsoft Access	Relational	131.18	-1.53	-5.62
10.	10.	10.	Cassandra ➕	Wide column	123.22	-0.18	-0.17

https://db-engines.com/en/ranking

Create a MySQL DB

- Log into your [AWS Management Console](#)
- Locate `RDS` under the `Databases` heading
- Within Amazon RDS click `Create database`
- Under `Choose a database creation method` click `Standard Create`
- Under `Engine options` choose `MySQL`
- Under `Templates` choose `Free tier`
- Under `Settings` name your `DB instance identifier` as `sqltest`
- Under `Credential settings` create a username and password combination and write it down (you will need it later)
- Under `Connectivity` expand `Additional connectivity configuration` to show additional menu items and make sure that `Publicly accessible` is checked `Yes`
- Expand the `Additional configuration` menu
- Under `Initial database name` write `testdb`
- Uncheck `Automatic backups`
- Click `Create database`

Structured Query Language (SQL)

- Developed SEQUEL at IBM ~1970

- Domain-specific language for querying relational DBs

- Based on relational algebra

- Works with structured data

- <u>Main benefit</u>: don't need to specify how to reach a given record (no file path, index number)
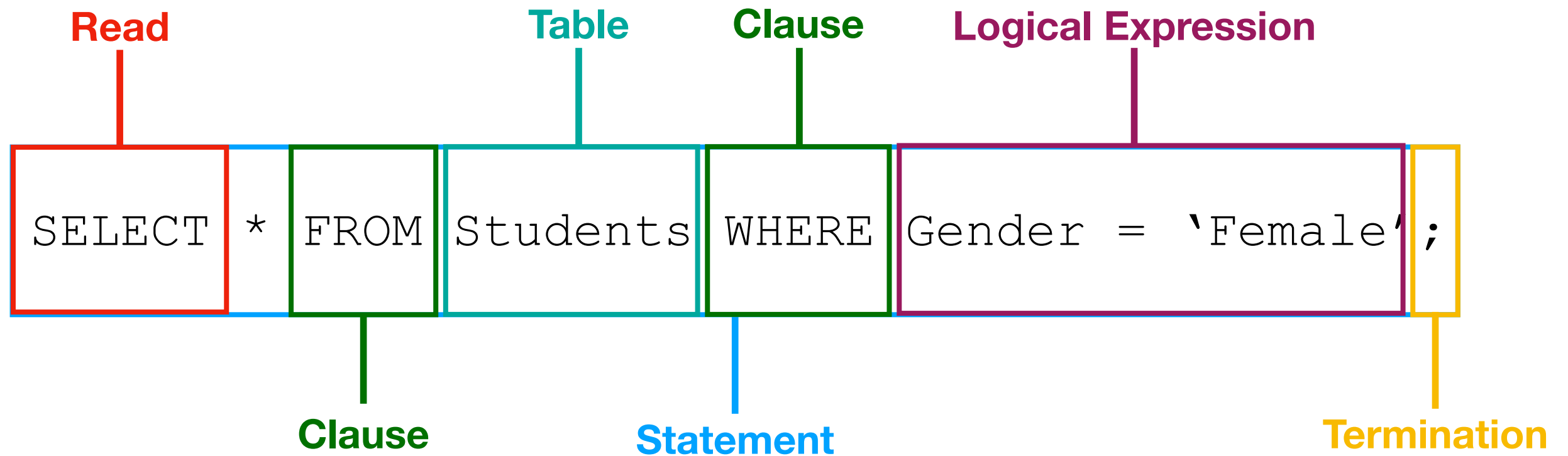
- Is *loosely standardized* across products

Todd
Codd

Donald
Chamberlin
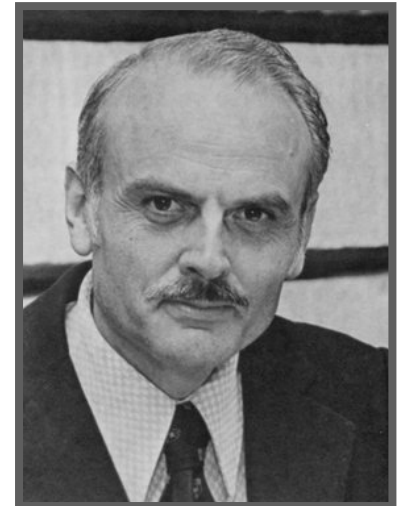
Ray
Boyce

DB Fundamental Functions

- **C**reate

- **R**ead

- **U**pdate

- **D**elete

Basic Statement

Read **Table** **Clause** **Logical Expression**

`SELECT` `*` `FROM` `Students` `WHERE` `Gender = 'Female'` `;`

Clause **Statement** **Termination**

*Capitalization of SQL keywords is not required but is useful

DB Fundamental Functions

- **C**reate: `INSERT` - Add rows

- **R**ead: `SELECT` - Get data

- **U**pdate: `UPDATE` - Change data
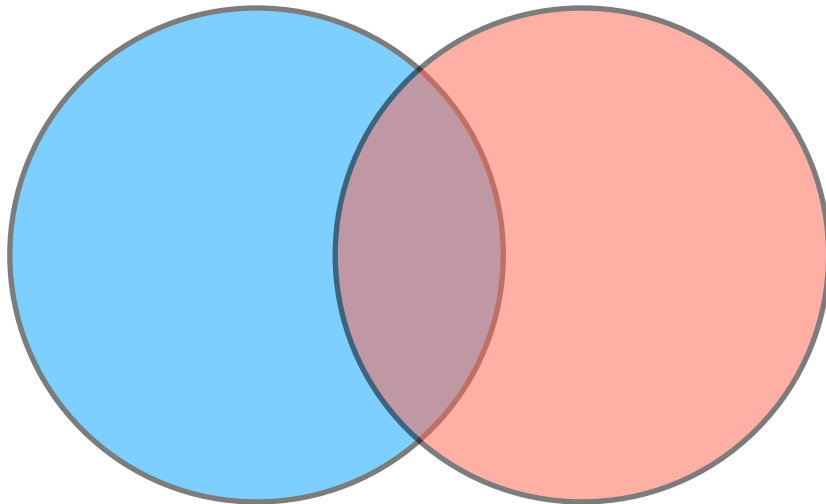
- **D**elete: `DELETE` - Remove rows

Create a MySQL DB

- Once your DB has been created

- Under `Security groups rules` click the hyperlink

- Click `Inbound` and then `Edit`

- Do not delete any rules!

- Add the rule `SQL/Aurora` on `Port 3306` with the `Connection` of `MyIP`

OU LA Data Set
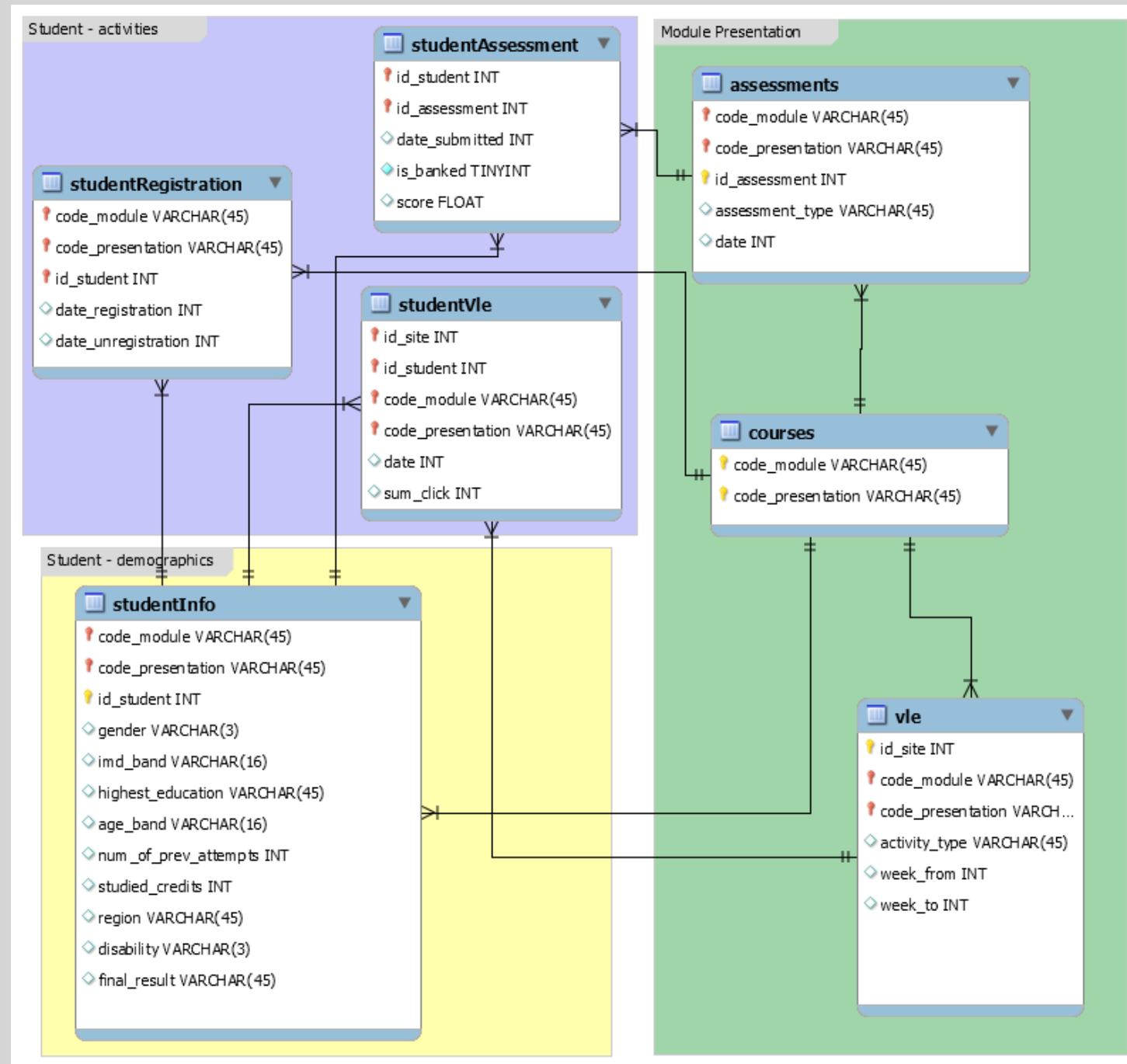
Joins

Inner Join

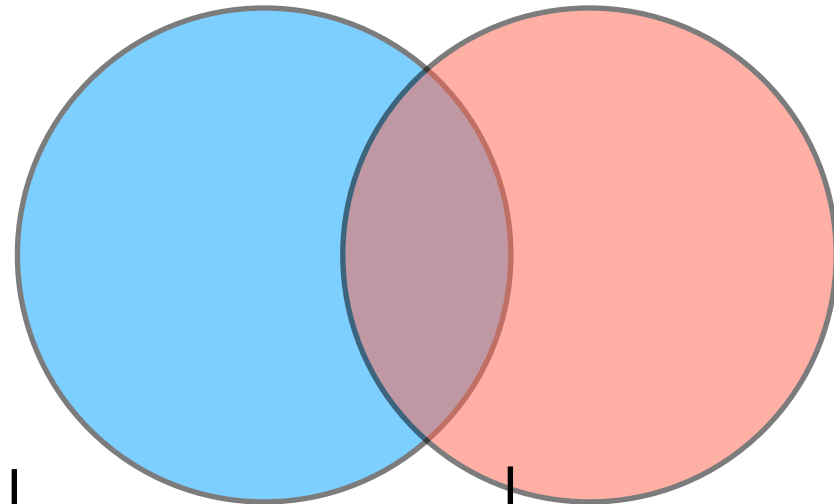**Left Outer Join**

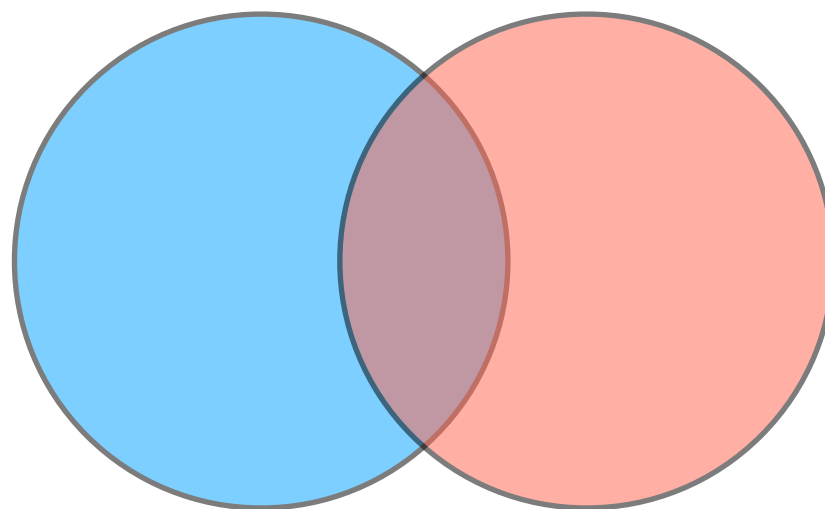**Full Join**

Moving Forward

- SoloLearn

- LeetCode.com

- Test

- Projects