



Visualise a Relational Database

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Introducing Today's Project!

What is Amazon RDS?

Amazon RDS is a managed database service that's used to set up and manage relational databases. It can automate time-consuming processes such as backups, recoveries and scaling, which makes it convenient for users to focus on their applications.

How I used Amazon RDS in this project

In this project I used Amazon RDS to create a database and used MySQL Workbench to create and populate the tables. I configured a secure network and connection between QuickSight and the RDS instance. After that I made a dashboard with 2 charts.

One thing I didn't expect in this project was...

I wasn't expecting how simple it was to create a database and configure the network settings; I also didn't expect how fun it was to connect to the database through MySQL Workbench and run SQL scripts.

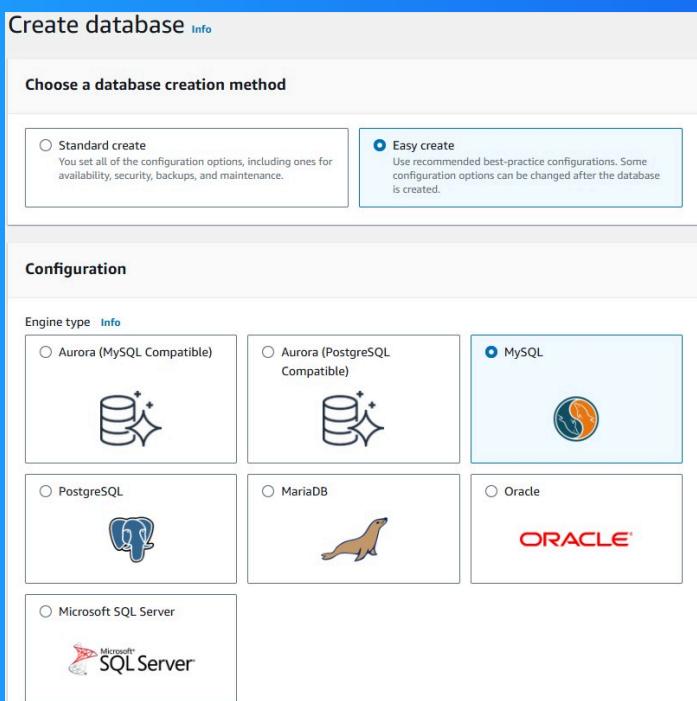
This project took me...

This project took me 1 hour and 30 minutes to complete. I also used another 20 minutes to write up my documentation.

In the first part of my project...

Creating a Relational Database

I created my relational database by going to the RDS Console on my AWS account. From there I selected the Databases option on the left panel and clicked on Create Database. I chose the Easy Option and provided the configurations and credentials.





Understanding Relational Databases

A relational database is a type of database that organizes data into tables, which are made up of rows and columns. The database is called relational because the rows and columns are related to one another.

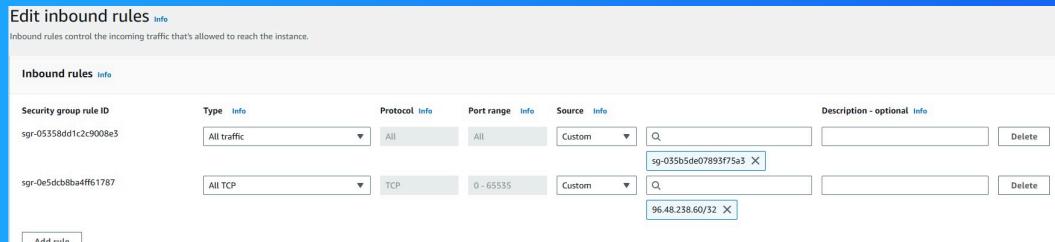
MySQL vs SQL

The difference between MySQL and SQL is that MySQL is a relational database management system (RDBMS); it allows a user to create, manage and interact with relational databases. SQL is a programming language for managing and leveraging databases.

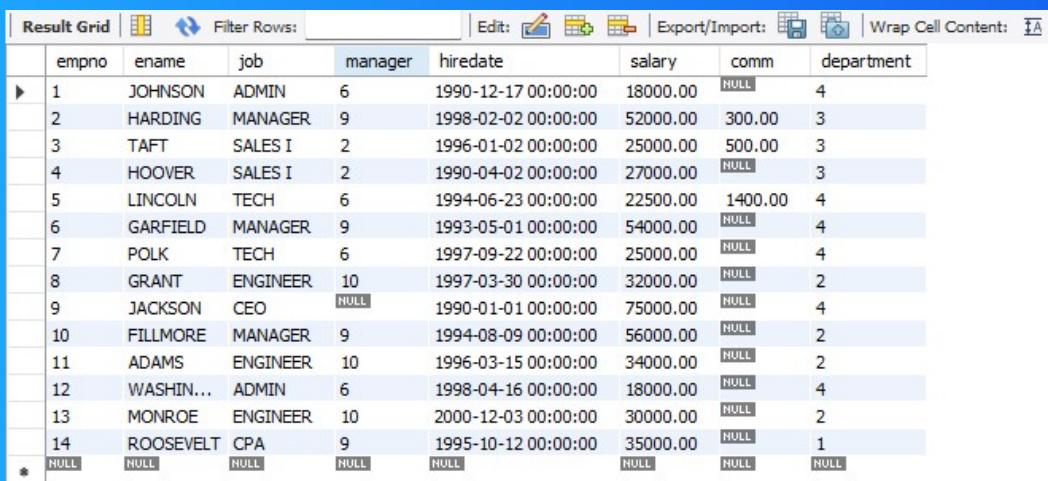
Populating my RDS instance

The first thing I did was make my RDS instance public because I want this database to be accessible to external resources such as my local machine.

I had to update the default security group for my RDS schema because I'm going to access the database externally from my local machine. I added a rule in the security group to allow access to the local machine's IP address.



Using MySQL Workbench



The screenshot shows a MySQL Workbench interface with a result grid titled 'Result Grid'. The grid displays 14 rows of data from a table with columns: empno, ename, job, manager, hiredate, salary, comm, and department. The data includes various employees like Johnson, Harding, and Roosevelt, along with their roles, managers, hire dates, salaries, commissions, and departments (e.g., Admin, Manager, Sales I, Tech, Engineer, CEO). The 'department' column contains values 1 through 4.

	empno	ename	job	manager	hiredate	salary	comm	department
▶	1	JOHNSON	ADMIN	6	1990-12-17 00:00:00	18000.00	NULL	4
	2	HARDING	MANAGER	9	1998-02-02 00:00:00	52000.00	300.00	3
	3	TAFT	SALES I	2	1996-01-02 00:00:00	25000.00	500.00	3
	4	HOOVER	SALES I	2	1990-04-02 00:00:00	27000.00	NULL	3
	5	LINCOLN	TECH	6	1994-06-23 00:00:00	22500.00	1400.00	4
	6	GARFIELD	MANAGER	9	1993-05-01 00:00:00	54000.00	NULL	4
	7	POLK	TECH	6	1997-09-22 00:00:00	25000.00	NULL	4
	8	GRANT	ENGINEER	10	1997-03-30 00:00:00	32000.00	NULL	2
	9	JACKSON	CEO	NULL	1990-01-01 00:00:00	75000.00	NULL	4
	10	FILLMORE	MANAGER	9	1994-08-09 00:00:00	56000.00	NULL	2
	11	ADAMS	ENGINEER	10	1996-03-15 00:00:00	34000.00	NULL	2
	12	WASHIN...	ADMIN	6	1998-04-16 00:00:00	18000.00	NULL	4
	13	MONROE	ENGINEER	10	2000-12-03 00:00:00	30000.00	NULL	2
	14	ROOSEVELT	CPA	9	1995-10-12 00:00:00	35000.00	NULL	1
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

To populate my QuickSightDatabase I used SQL statements in MySQL Workbench. I used the CREATE TABLE statement to create the tables NEWHIRE and DEPARTMENT. I also used the INSERT INTO statement to load data into the tables.



Connecting QuickSight and RDS

To connect my RDS instance to QuickSight I configured the security group that's attached to the instance. I added an inbound rule that allows all traffic from any resource with an IP address to access the RDS instance.

This solution is risky because the RDS instance is publicly available, which means that anyone can access the database. The data would be vulnerable to manipulation by people with malicious intentions.

A better strategy

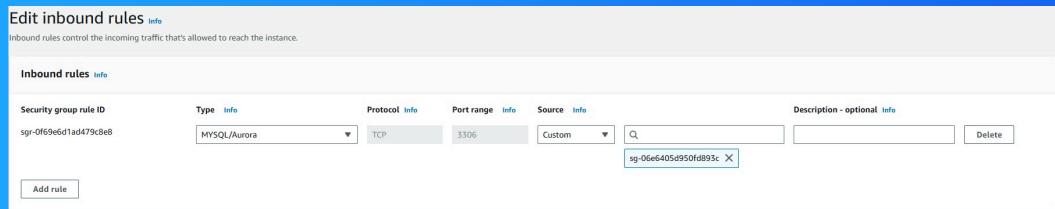
First, I made a new security group so that I can attach QuickSight to it. I'm doing this to secure my RDS instance by ensuring that it only accepts connections from the QuickSight security group.

Next, I connected my new security group to QuickSight by clicking on the Manage QuickSight button and then the Add VPC Connection button. In this section I selected the Security Group ID of the security group I created and provided other details.

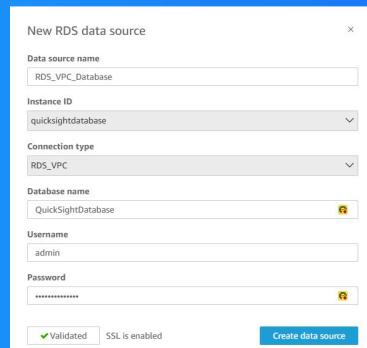
Now to secure my RDS instance

To make my RDS instance secure I modified it by enabling the 'Not Publicly Accessible' option in the Additional Configuration. I also created a security group and configured it so it only accepts incoming traffic from the QuickSight security group.

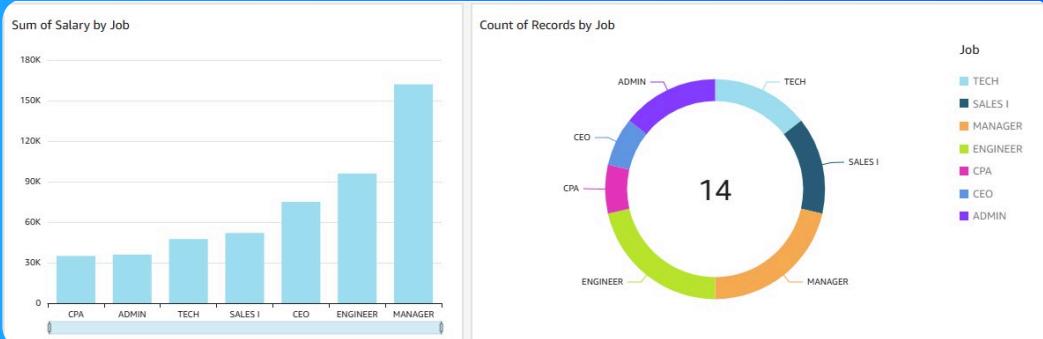
I made sure that my RDS instance could be accessed from QuickSight by attaching the RDS_SecGp security group and removing the default one. The new security group will only allow QuickSight access, which is more secure.



Adding RDS as a data source for QuickSight



This data source is different from my initial data source because only QuickSight can access and query the data, making it secure. My previous data source was public, meaning that the data would have been vulnerable to manipulation.





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