Amanuddin Syed

Professor Sadoghi

ECS 165a Database Systems

January 18, 2022

Pre-Milestone Assignment

Group Members:

Name	Leadership Roles	Design and Development Roles
Aman Syed	Team Coordinator	Crash, recovery, and logging
Adil Bukhari	System Architect	Query Evaluation
Samir Cochinwala	Developer #1	Buffer pool Management
Sophie Mi	Developer #2	Query Evaluation
Jagroop Singh	Tester	Synchronization and Concurrency

What Exactly is a Database?

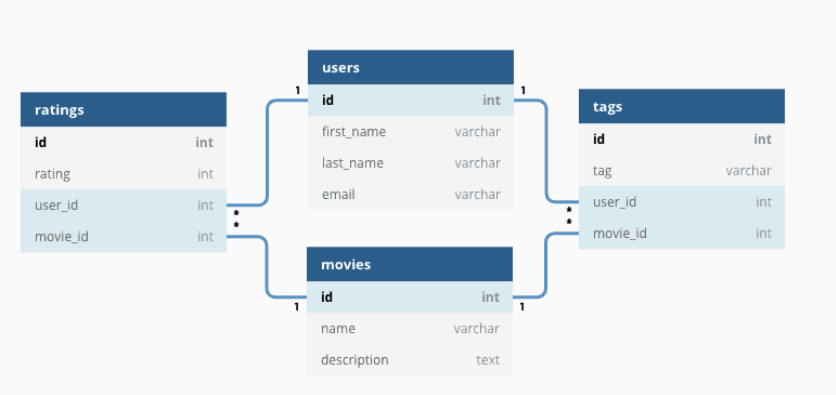
The most basic explanation of a Database is an electronic structural and organized way of storing and accessing data. A database is nothing with its DBMS (Database management system). The DBMS helps the user and administrator accesses, organize, and analyze the data which is stored in the database. DBMS's have changed a lot in the recent times and this paper will be going over some of the more common and interesting kinds of database systems.

Oracle RDBMS:

The Oracle Database (Oracle DB) was made by Larry Ellison and his associates in 1977. It is one of the most widely used and popular RDBMS's (Relational Database Management system) in the world. The Oracle DB uses a SQL (Structured Query Language) front end to allow users to manipulate data in a networked back end.

What is a Relational Database?

A relational database is a database in which all the data is related to one another. Every data point has a unique key attached to it, which helps it connect to other related or associated data. This unique key system also helps users draw trends and establish relationships with data. I found the graphic attached below very helpful in helping to visualize the magic of a relational database. As you can see, the data value stored in user_id can be called in other parts of the programs or database and it will help the user access more related data associated with it.



Notable Customers:

- JP Morgan
- United States department of Defense
- Bank of America
- Northrup Grumman

Sources:

https://discovery.hgdata.com/product/oracle-database

https://www.techopedia.com/definition/8711/oracle-database

https://www.oracletutorial.com/getting-started/what-is-oracle-database/

https://www.oracle.com/database/what-is-a-relational-database/

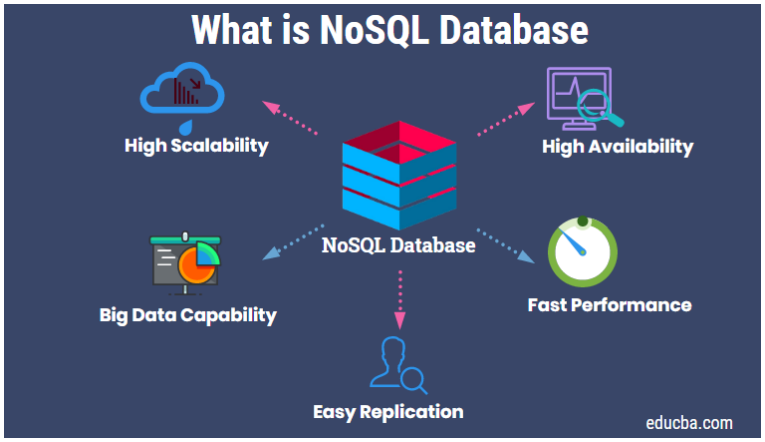
https://docs.oracle.com/cd/E11882_01/server.112/e40540/intro.htm#CNCPT001

https://db-engines.com/en/system/Oracle

Firebase DBMS:

Firebase is a relatively new DBMS developed by Google which features a No SQL cloud database. This DBMS is mostly used for mobile app on platforms like Android and iOS.

What is NoSQL?



NoSQL (No Structured Query Language) is the opposite of a RDBMS. Where an RDMS would store data in different tables which the data within the tables being related to together. A NoSQL system would store that data point as a single file with all the different attributes of the data point stored within that file. The system would then make the contents of that file searchable. This method makes searching for data easier and faster and also allows for greater flexibility when adding new features and procedures.

Why is Cloud Database better?

Cloud is a concept where instead of storing data locally and investing in your own infrastructure and developing your own tools; you work with a cloud company which lets you use their infrastructure and computers to store your data. This model is great because it reduces the amount of investment and energy needed in developing new things and it lets user flexibility of space depending on how much they use. Cloud databases are better because they allow users to collaborate online, are easily scalable, and are accessible across multiple devices in different locations.

Notable Customers:

- Instacart
- Twitch
- CBS
- Ali Baba

Microsoft SQL Server DBMS:

Microsoft SQL Server is another SQL relational DBMS. It was made in 1989 by Microsoft. This system is basically hosted on a server which can be either internal or external and allows users to remotely connect to it and access its contents. Microsoft is transitioning this DBMS into a cloud-based system, but the original local simple server solution is still supported and available with earlier releases.

Notable Customers:

- Sigma Health
- Qualcomm
- Dell

Sources:

https://discovery.hgdata.com/product/microsoft-sql-server

https://www.featuredcustomers.com/vendor/firebase/customers

https://aws.amazon.com/nosql/

https://firebase.google.com/docs/database