

SQL Primer Guide



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INTRODUCTION

Many businesses use relational databases, which is making a basic understanding of databases and SQL a great (and desirable) skill for almost everyone.

This **SQL 101** guide gives you an overview of what relational databases are, what SQL is, and how you can start learning them.

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RELATIONAL DATABASES

A **database** is a computer program that stores various kinds of data. It allows multiple users to access and modify data at the same time. It can efficiently search, sort, and perform computations on data to create various reports. It can validate information's correctness and completeness. Databases can handle a large volume of data, even into petabytes!

There are various types of databases. One of the most common is the **relational database** – a very frequent choice in IT. There are quite a few relational database vendors: Oracle, MySQL, PostgreSQL, Microsoft SQL Server, and many others.

Relational databases are used in many industries. They are essential to any business that collects and handles large amounts of data. In traditional and online stores, databases maintain product and sales information; in banks, they store customer, account, and transaction information. They are used in financial institutions, insurance agencies, social media, web and mobile applications, taxi companies, and a whole lot more.

SQL

Structured Query Language (SQL) is the standard language for dealing with relational databases. Its name is pronounced either “S-Q-L” or “See-Quel”.

SQL is used to insert, modify, delete, and retrieve data from a database. It allows you to search for specific records, sort the data, prepare complex reports, and generate statistics.

All relational databases understand SQL, but each of them has a slightly different dialect. Many other data processing technologies, like NoSQL databases and Big Data technologies, also understand SQL.

SQL is a universal language for data processing. Because of this versatility, it is used in multiple roles, including technical (e.g. software engineer, data engineer) and analytical roles (e.g. data analyst, data scientist). Even traditionally non-technical roles, like product managers or marketers, can take advantage of SQL.

TABLES

Every relational database stores information in **tables**; there can be many tables in one database. Each table has a **name** describing its contents and holds data that refers to similar objects. For example, a university database would include a table named student that holds all data regarding students. It might also have another table called subject that stores information about the subjects taught at the university.

student			
id	name	year_born	graduation_year
1	Kyle Lawson	1998	2018
2	Santiago Knox	1999	2019
3	Arian Sheppard	2001	2017
4	Samuel Foster	1997	2014
5	Hayden Smith	2003	2020

→ Table name

→ Table columns

Table's rows with data

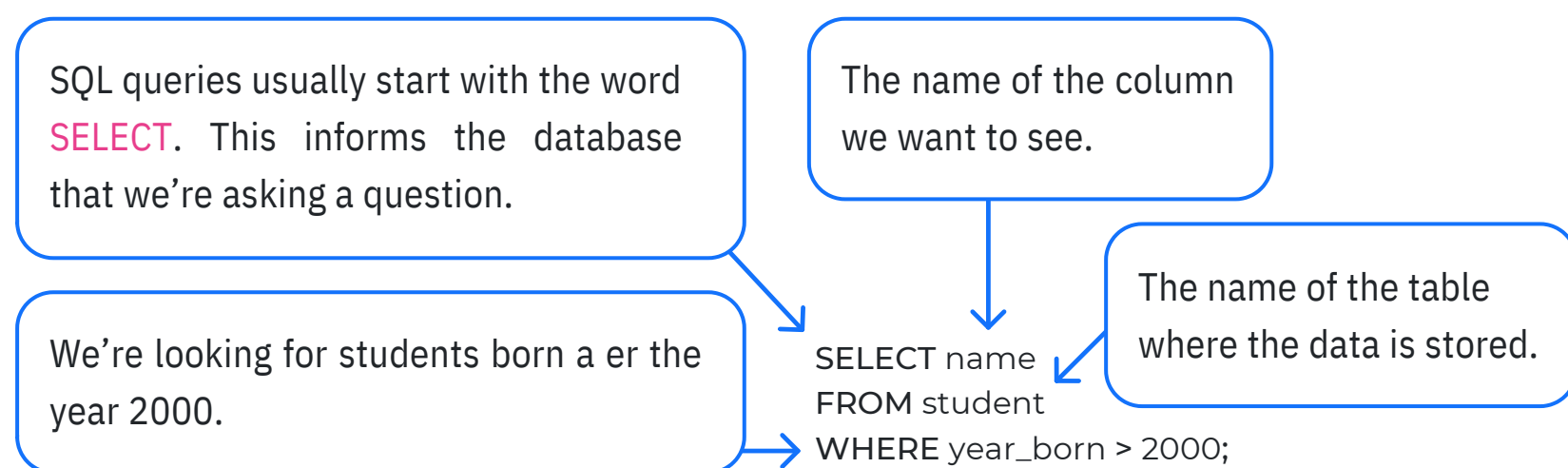
Database tables are made up of **columns** and **rows**. Columns have **names** that identify the kind of information stored in them.

Each row stores information about one object. In the **student** table above, you can see that the column names reflect the information that they contain: the **name** column has student names, the **graduation_year** stores that student's year of graduation, etc. In this table, each row holds the data of exactly one student.

SQL QUERIES

SQL instructions that select data from a database are called **queries**. Queries are questions that we ask with the goal of finding out some information about the data stored in the database.

SQL was created with beginners in mind, so its queries resemble an English sentence. Here's a query that means "Find the names of students who were born a er the year 2000." Take a look:



For the `student` table, the query would return:

id	name	year_born	graduation_year
3	Arian Sheppard	2001	2017
5	Hayden Smith	2003	2020

Queries can do amazing things – they not only return the data you ask for, but they also can actually do advanced calculations using that data.

HOW TO LEARN SQL

- ▶ The best way to learn SQL is through practice. To learn the foundations of SQL, we recommend the [SQL Basics](#) course at [LearnSQL.com](#). It is hands-on, 100% online, and completely interactive. All you need is a web browser and an internet connection. No additional software is required.
- ▶ After SQL Basics, we recommend the additional courses [SQL JOINS](#) and [SQL Practice Set](#) to consolidate your knowledge.
- ▶ Here are some additional helpful resources:
 - [5 Tips for Learning SQL for Beginners](#)
 - [How to Keep Focused While Learning SQL](#)
 - [SQL Books for Beginners](#)
 - [The History of SQL – How It All Began](#)
- ▶ If you prefer to watch videos, see our list of [SQL tutorials on YouTube](#).
- ▶ No matter the learning method you choose, you can always join the [SQL learning group for beginners](#) or follow our [Linkedin page](#).

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