

Hands-On Lab: Generative AI for Querying Databases

Estimated time needed: 30 minutes

Overview

In this lab, you will learn how to use generative AI to translate natural language queries into SQL queries. You will use the *dbsensei* AI Assist feature to automatically generate SQL queries from English text.

Objectives

After completing this lab, you will be able to:

- Sign in on dbsensei.com
- Generate queries

Prerequisites:

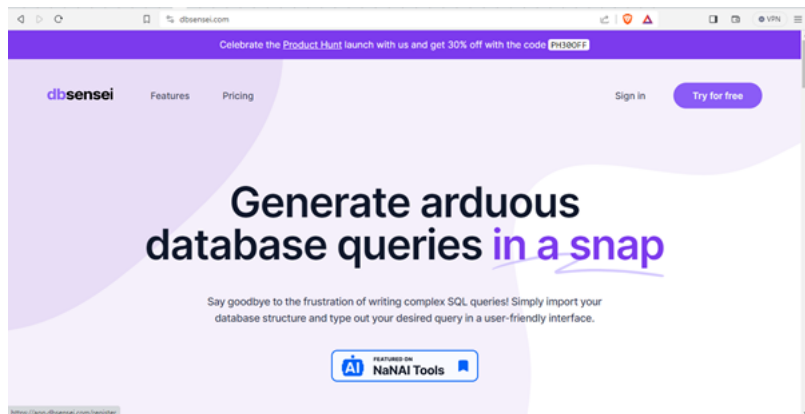
- A *dbsensei* account
- A basic understanding of SQL

Dataset:

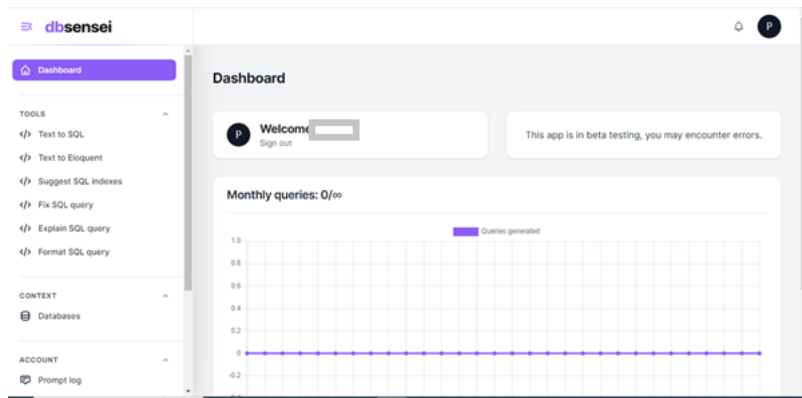
Download the dataset **Sample.txt** from [here](#)

Task 1: Sign in on dbsensei.com

1. If you do not have an account, click <https://dbsensei.com>.
2. Click **Sign in** to create the account.
3. Click **Try for free**.



4. Login and the **Dashboard** is displayed.

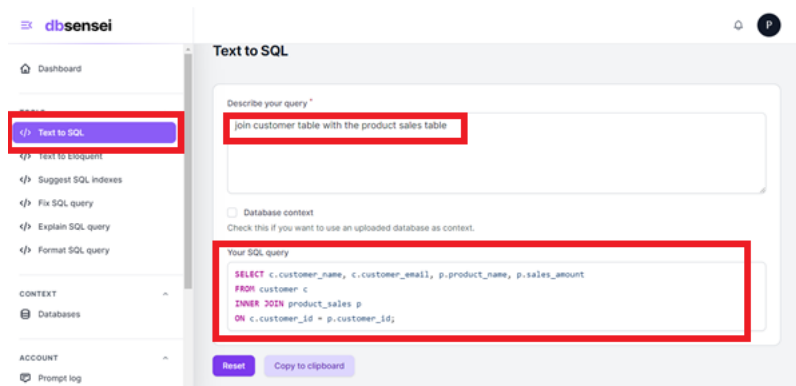


Task 2: Generate queries

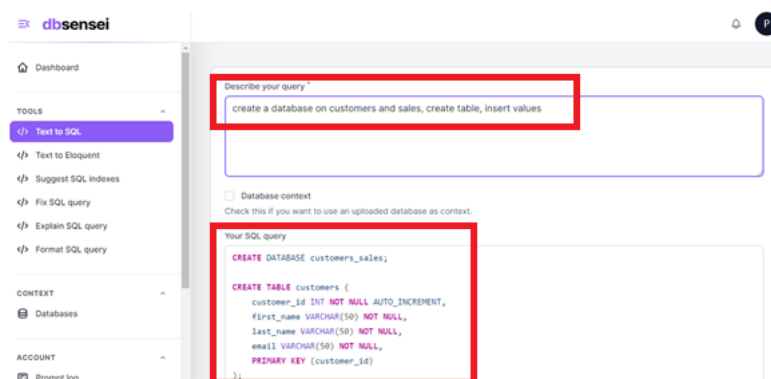
5. Click Text to SQL and start generating queries through prompts.

Let's assume two tables, one on customer information and the other on the sale of products. Provide the following prompt and see how does it works:

Prompt 1: Join customer table with the product sales table



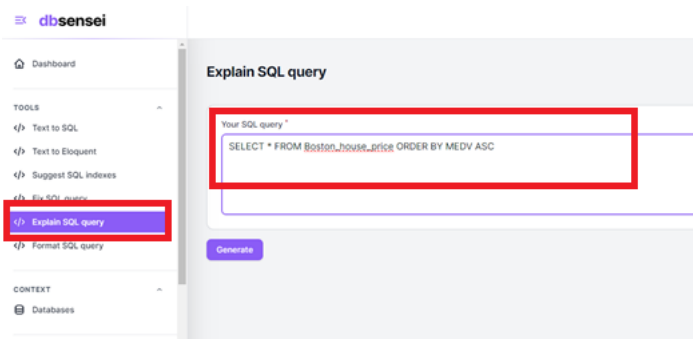
Prompt 2: Create a database on customers and sales, create a table, insert values



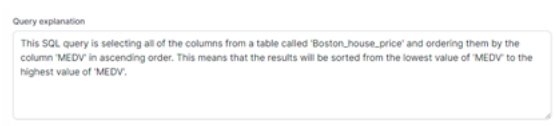
Task 3: Explain queries

6. Under **Dashboard**, click **Explain SQL query** to understand the SQL query.

Prompt 3: SELECT * FROM Boston_house_price ORDER BY MEDV ASC



7. Check out the response. This tool can understand the SQL query and explain it well.



8. Copy the following SQL query, pass it as a prompt, and read the generated explanation.

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10

1. ``CREATE TABLE IF NOT EXISTS `studentreport` (
2.   `CLASS` varchar(5) NOT NULL,
3.   `SECTION` varchar(1) NOT NULL,
4.   `ROLLID` decimal(3,0) NOT NULL,
5.   `GRADE` varchar(5) NOT NULL,
6.   `SEMISTER` varchar(5) DEFAULT NULL,
7.   `CLASS_ATTENDED` decimal(25,0) DEFAULT NULL,
8.   KEY `FK_CSR` (`CLASS`, `SECTION`, `ROLLID`)
9. ) ``
10. `
```

Copied!

```

"ROLLID" decimal(3,0) NOT NULL,
"GRADE" varchar(5) NOT NULL,
"SEMESTER" varchar(5) DEFAULT NULL,
"CLASS_ATTENDED" decimal(25,0) DEFAULT NULL,
KEY "FK_CSR" ("CLASS", "SECTION", "ROLLID")
) ENGINE=MySQL DEFAULT CHARSET=latin1;

```

Query explanation

This query is creating a table called 'studentreport' in a database. The table will have 6 columns: 'CLASS', 'SECTION', 'ROLLID', 'GRADE', 'SEMESTER', and 'CLASS_ATTENDED'. The 'CLASS' and 'SECTION' columns will contain data of type 'varchar' (variable length character string) with a maximum length of 5 characters and 1 character respectively. The 'ROLLID' column will contain data of type 'decimal' with a maximum length of 3 digits. The 'GRADE' column will contain data of type 'varchar' with a maximum length of 5 characters. The 'SEMESTER' column will contain data of type 'varchar' with a maximum length of 5 characters and will have a default value of NULL. The 'CLASS_ATTENDED' column will contain data of type 'decimal' with a maximum length of 25 digits and will have a default value of NULL. Finally, a key will be created on the 'CLASS', 'SECTION', and 'ROLLID' columns.

In summary, this query is creating a table with 6 columns that will store information about students and their grades. The table will have a key on the 'CLASS', 'SECTION', and 'ROLLID' columns.

Task 4: Upload database and generate queries

You can also upload your database and use this tool to generate SQL queries in its context.

- On the left panel, click **Databases**, upload the [sample.txt file](#), and click **Create**. Please download the dataset and save it on your local machine before you can use it here.

The screenshot shows the dbSensei web application interface. On the left sidebar, under the 'CONTEXT' section, the 'Databases' option is highlighted. The main content area is titled 'Create Database'. A red box highlights the 'SQL schema' input field, which contains a long alphanumeric string: 'mL7XS7Uba5JNSxo6JMO4zEF3GFCmj6-metac2FtcGxLnR4dA...'. Below the input field is a 'Create' button, also highlighted with a red box. A red arrow points from the 'Create' button to a 'Created' notification banner at the top right of the main area.

- Once database is created, click **Database**, click **Edit**, and change the table names in this database as shown below.

Databases

New database

⋮

Search

1 record selected. [Select all 2.](#) [Deselect all.](#)

<input type="checkbox"/>	Name ▾	Type ▾	Created at ▾	
<input checked="" type="checkbox"/>	`sample`	mysql	2023-11-27 06:19:56	Edit
<input type="checkbox"/>	MySQL Database	mysql	2023-11-27 05:06:14	Edit

Showing 1 to 2 of 2 results

10 ▾ per page

1 record selected. [Select all 9.](#) [Deselect all.](#)

Name

Primary key

Company

COMPANY_ID

Save changes

Cancel

11. Click **Text to SQL**, select **Database context**, select the table(s) and pass, then write the prompt and click **Generate**.

Dashboard

TOOLS

- </> Text to SQL**
- </> Text to Eloquent
- </> Suggest SQL indexes
- </> Fix SQL query
- </> Explain SQL query
- </> Format SQL query

CONTEXT

- Databases

ACCOUNT

- Prompt log

Text to SQL

Describe your query *

select all users created in the last 7 days

☒ Database context

Check this if you want to use an uploaded database as context.

Database *

sample

New database +

Tables *

des_order x Agent_Table x order x item_codr x

Company x ITem x customer x order_day x

Select an option

Generate

Prompt 5: How many sales were done on each country code?

Your SQL query

```
SELECT COUNTRY, COUNT(*) AS 'Number of Sales'
FROM Agent_Table
GROUP BY COUNTRY;
```

Try more prompts, and if possible, create another database and use this tool to generate SQL queries for you.

Conclusion

In this lab, you performed hands-on exercises on dbSensei's AI Assist, using generative AI to query databases. The ability to query databases in natural language makes data retrieval easy for non-technical users.

Author(s)

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