# TerminusDB

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# About

**TerminusDB** originated in Trinity College Dublin in Ireland in 2015, when a group of ambitious students started a project to store lots of information about ever society in human history.

It is a Git-like tool, making the collaborative work on databases possible.

Possible to Clone, Fork, Branch, and Merge, just like Git.

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# About

- An open source (GPLv3) full featured in-memory graph database management system with a rich query language: WOQL (the Web Object Query Language).
- Uses OWL (Web Ontology Language) under the hood
- Provides a document API for building via the JSON exchange format
- Written in Prolog and Rust

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# Primary Data model

GRAPH DBMS

Whereas traditional relational databases divide data into tables, columns and rows, in TerminusDB everything is an object – objects can have properties and some of these properties may link to other objects. The network of interlinked objects forms a graph structure (in the mathematical sense – nodes and edges).

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# Secondary Data models

Document store

RDF store

- Segments of the graphs are **documents**. Documents can be extracted as JSON objects, providing a convenient data package for applications.

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# Extraction of JSON Docs

- One of the most convenient features that TerminusDB provides is the extremely trivial extraction of JSON-LD documents, which can be done right on the platform. The user needs to simply create the visual version of their graph, and TerminusDB will take care of the rest, with just one click!

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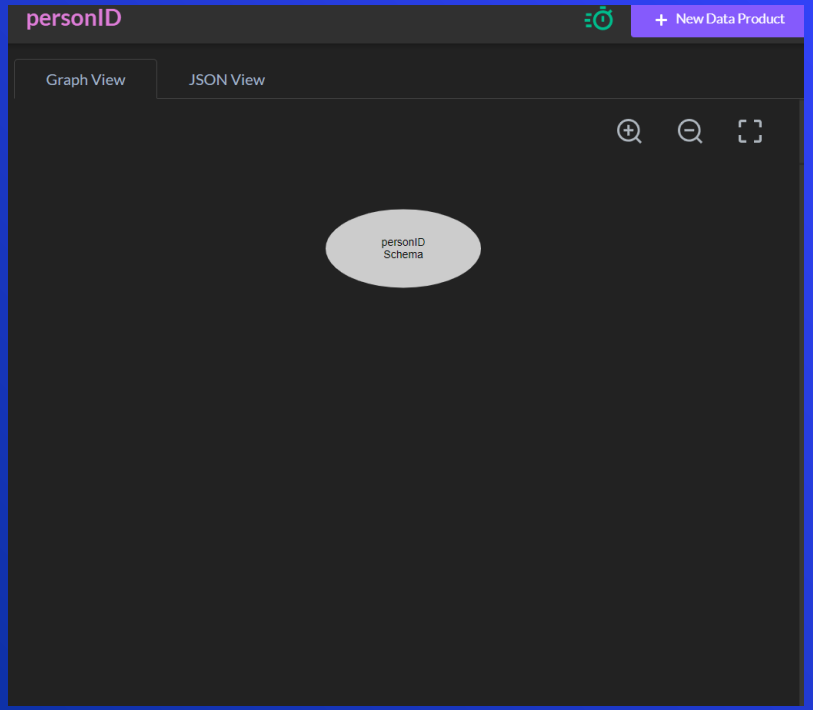
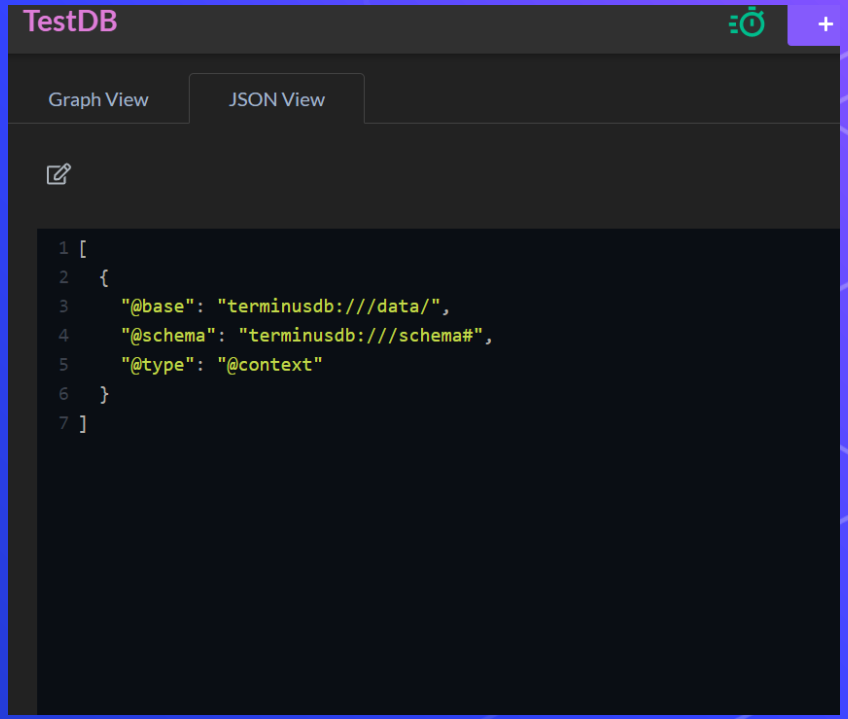
# Extraction of JSON docs



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# DDL - Create

- create_database(*dbid*, *team=None*, *label=None*, *description=None*, *prefixes=None*, *include_schema=True*)
- **Example:**

```
>>> client = WOQLClient("https://127.0.0.1:6363/")
>>> client.create_database("someDB", "admin", "Database Label", "My Description")
```

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# DDL - Drop

- delete_database(*dbid=None*, *team=None*, *force=False)*
- Example:

```
>>> client = WOQLClient("https://127.0.0.1:6363/")
>>> client.delete_database("<database>", "<team>")
```

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# DDL – Alter, Truncate

- update_triples(*graph_type*, *turtle*, *commit_msg*)

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# DML – insert, update

- insert_triples(*graph_type*, *turtle*, *commit_msg=None*)
- update_document(*document*, *graph_type='instance'*, *commit_msg=None*, *last_data_version=None*, *compress=1024*)

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# SQL vs WOQL example- SELECT

| Person_ID | Name | DOB | mother | father |
|---|---|---|---|---|
| 1 | John | 1/10/79 | 2 | 3 |
| 2 | Mary | 4/2/56 | 4 | 5 |
| 3 | John snr | 28/11/52 | 6 | 7 |
| 4 | Patricia | 17/4/22 | null | null |
| 5 | Michael | 1/9/09 | null | null |
| 6 | Sally | 17/4/23 | null | null |
| 7 | Robert | 3/10/13 | null | null |

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# SQL vs WOQL example- SELECT

```
SELECT Name from TABLE where Person_ID = (SELECT mother from TABLE where
Name="John")
SELECT Name from TABLE where Person_ID = (SELECT mother from TABLE WHERE Person_ID =
(SELECT mother from TABLE where Name="John"))
```

```
WOQL.and(
   WOQL.triple("v:Person", "mother", "v:MotherID"),
   WOQL.triple("v:MotherID", "name", "v:MotherName"),
   WOQL.triple("v:MotherID", "mother", "v:GrandmotherID"),
   WOQL.triple("v:GrandmotherID", "name", "v:GrandmotherName"),
)
```

# Pros and Cons

## Pros

- Enterprise-level availability, functionality, performance, scalability, and stability
- Fast and easy to use
- Simple querying
- Close to real life representations

## Cons

- **Does not support Windows**
- **Fairly new**
- **WOQL is not as rich of a querying language as i.e. SQL**
- **Querying is not so simple if not using on Linux**

# Thank you

## Any questions?

# References


- Hall, Susan. “TerminusDB Takes on Data Collaboration with a Git-like Approach.” *The New Stack*, 3 Dec. 2020, https://thenewstack.io/terminusdb-takes-on-data-collaboration-with-a-git-like-approach/.
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