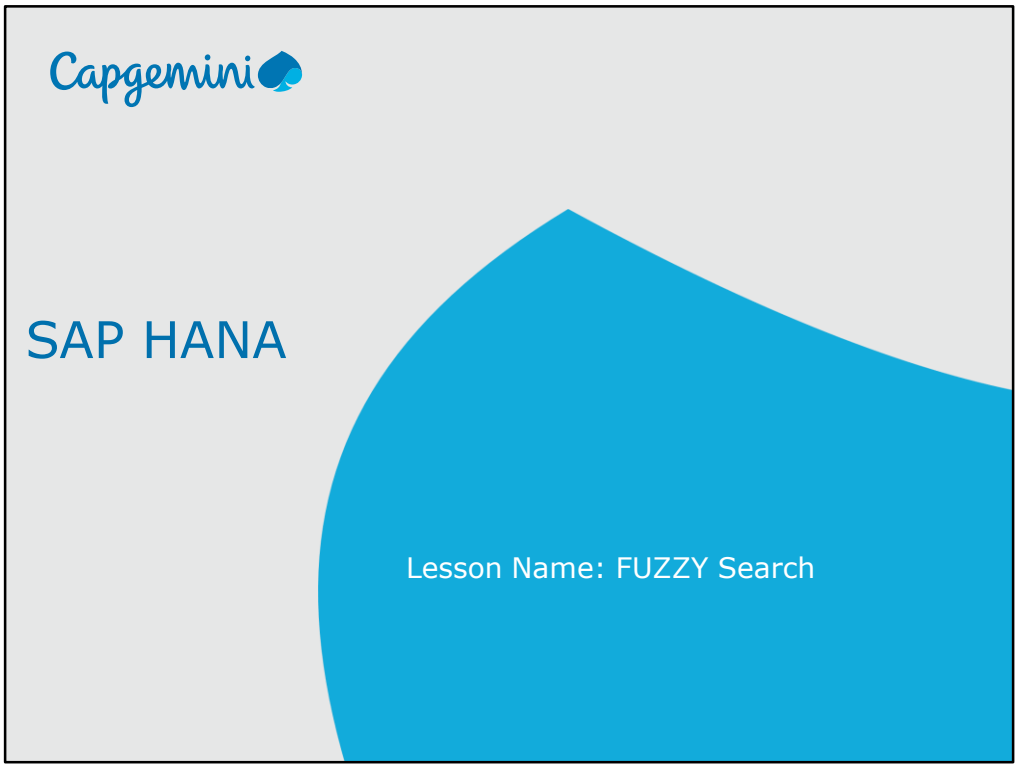


ABAP New syntax (SAP NW 7.4 onwards)

Contents

- Introduction to Fuzzy Search
- Examples of Fuzzy Search
- Configuration in CDS View

Lesson Objectives

After completing this lesson, participants will be able to -

- Know the meaning of Fuzzy Search and How to Implement In HANA Data base.
- Configure Fuzzy search logic.

Introduction to Fuzzy Search

What is Fuzzy search

- Fuzzy Search is a fast and fault-tolerant search feature .
- It is known as approximate string matching.
- Fuzzy search is the technique of finding strings that match a pattern approximately (rather than exactly).
- It is a type of search that will find matches even when users misspell words or enter in only partial words for the search.

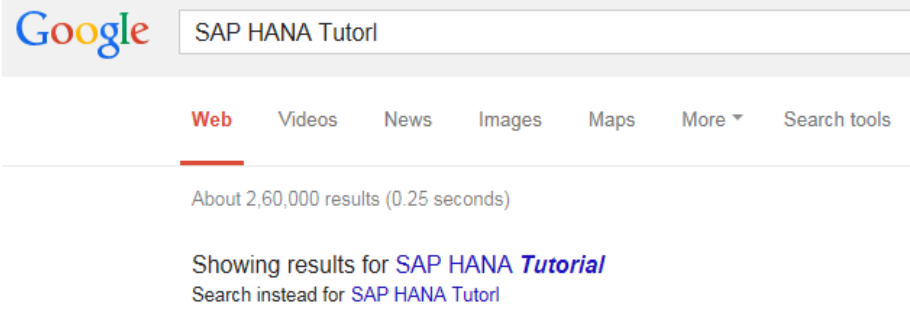
Introduction to Fuzzy Search

Purpose:

- With the help of Fuzzy Search Misspellings and typos still provide relevant results.

Real World Example:

- If a user types "SAP HANA Tutorl" into Google a list of hits is returned along with the question, "Did you mean "SAP HANA Tutorial"?"



Introduction to Fuzzy Search

Fuzzy Search is a fast and fault-tolerant search feature for SAP HANA.

- The term ”fault-tolerant search” means that a database query returns records even if the search term (the user input) contains additional or missing characters or other types of spelling errorenterprise.

Uses in Applications :

- Fault-tolerant search in structured database content:

Eg Search for a product called ‘coffe krisp biscuit’ and find ‘Toffee Crisp Biscuits’

- Fault-tolerant check for duplicate records**:**

Eg. Before creating a new customer record in a CRM system, search for similar customer records and verify that there are no duplicates already stored in the system.

Fuzzy Search

Contains Predicate.

- In SAP HANA, you can call the fuzzy search by using the CONTAINS predicate with the FUZZY option in the WHERE clause of a SELECT statement.

Syntax:

```
SELECT * FROM <tablename>

WHERE CONTAINS (<column_name>, <search_string>, FUZZY (0.8))
```

- A search with FUZZY(x) returns all values that have a fuzzy score greater than or equal to X.

Fuzzy Search

The SCORE() Function.

- The fuzzy search algorithm calculates a fuzzy score for each string comparison.
- The higher the score, the more similar the strings are. A score of 1.0 means the strings are identical.
- A score of 0.0 means the strings have nothing in common
- We can request the score in the SELECT statement by using the SCORE() function.
- We can sort the results of a query by score in descending order to get the best records first (the best record is the record that is most similar to the user input).
- When a fuzzy search of multiple columns is used in a SELECT statement, the score is returned as an average of the scores of all columns used.

Examples on Fuzzy Search

- Hence it means not only does it find a “fault tolerant” match, it also puts a score behind it.

Take one example

SQL | Result

```
SELECT SCORE() AS score, * FROM SAP_HANA_TUTORIAL.COMPANIES
    WHERE   CONTAINS(COMPANY_NAME,'SAP',
            FUZZY(0.7,'textSearch=compare,bestMatchingTokenWeight=0.7'))
    ORDER BY score DESC
```

	SCORE	ID	COMPANY_NAME
1	1	1	SAP
2	0.9121320247650146	3	SAP AG
3	0.8732050657272339	2	SAP in Walldorf
4	0.684099018573761	4	ASAP Corp
5	0.684099018573761	5	BSAP orp

- The output of fuzzy search contains 5 entries. Based on the fuzzy search factor (which is 0.7 in this case), it will also consider the similar words. In this case “SAP AG”, "BSAP orp" etc.

Examples on Fuzzy Search

Without Fuzzy Search:

- Suppose you want to search a customer with name "Jimi".

SQL Query:

```
SELECT * FROM <Schema_Name>."CUSTOMERS"
        WHERE CONTAINS(FIRST_NAME, 'Jimi')
        ORDER BY "CUSTOMER_ID" DESC;
```

- The output will contain only one entry which contains exact match of "Jimi".

SQL | Result

```
SELECT * FROM SAP_HANA_TUTORIAL."CUSTOMERS"
    WHERE CONTAINS(FIRST_NAME, 'Jimi')
    ORDER BY "CUSTOMER_ID" DESC
```

	CUSTOMER_ID	FIRST_NAME	LAST_NAME	STREET	CITY	COUNTRY	POSTAL_CODE
1	00003	Jimi	Hendrix	Berliner Plats 43	Munchen	Germany	80805
2	00001	Jimi	Hendricks	Berliner Platz 43	Munchen	Germany	80805

Examples on Fuzzy Search

- Fuzzy search can be done on 2 columns viz. First Name and Last Name.

SQL Query:

```
SELECT SCORE() AS score, * FROM <Schema_Name>."CUSTOMERS"
    WHERE
        CONTAINS(FIRST_NAME, 'Jimi', FUZZY(0.7))
        and CONTAINS(LAST_NAME, 'Hendricks', FUZZY(0.7))
    ORDER BY score DESC;
```

- The output contains 3 entries. Based on the fuzzy search factor (which is 0.7 in this case), it will also consider the similar names. In this case "Jimy Hendricks" and "Jimi Hendrix".

SQL | Result

```
SELECT SCORE() AS score, * FROM SAP_HANA_TUTORIAL."CUSTOMERS"
    WHERE
        CONTAINS(FIRST_NAME, 'Jimi', FUZZY(0.7))
        and CONTAINS(LAST_NAME, 'Hendricks', FUZZY(0.7))
    ORDER BY score DESC
```

	SCORE	CUSTOMER_ID	FIRST_NAME	LAST_NAME	STREET	CITY	COUNTRY	POSTAL_CODE
1	1	00001	Jimi	Hendricks	Berliner Platz 43	Munchen	Germany	80805
2	0.9151471853256226	00002	Jimy	Hendricks	Berlinr Platz 43	Munchen	Germany	80805
3	0.8232232928276062	00003	Jimi	Hendrix	Berliner Plats 43	Munchen	Germany	80805

Examples of Fuzzy Search

Example: 1 (Twitter data)

- Twitter data from millions of tweets
- This is a download of Twitter data from March 2006 to November 2009
- The data set consists of "tokens," which are hashtags (#data), URLs, or emoticons (Twitter smileys or other "faces" created using keyboard characters)
- The data comes from analysis on the full set of tweets during that time period, which is 35 million users, over 500 million tweets, and more than 1 billion relationships between users.
- When doing a fuzzy search, The table needs to be structured in a certain way. This can easily be done by using SQL to create your table. This can be done by the following command:

Fuzzy Search

In general fuzzy searches can be performed on:

- TEXT
- SHORTTEXT
- VARCHAR, NVARCHAR
- DATE

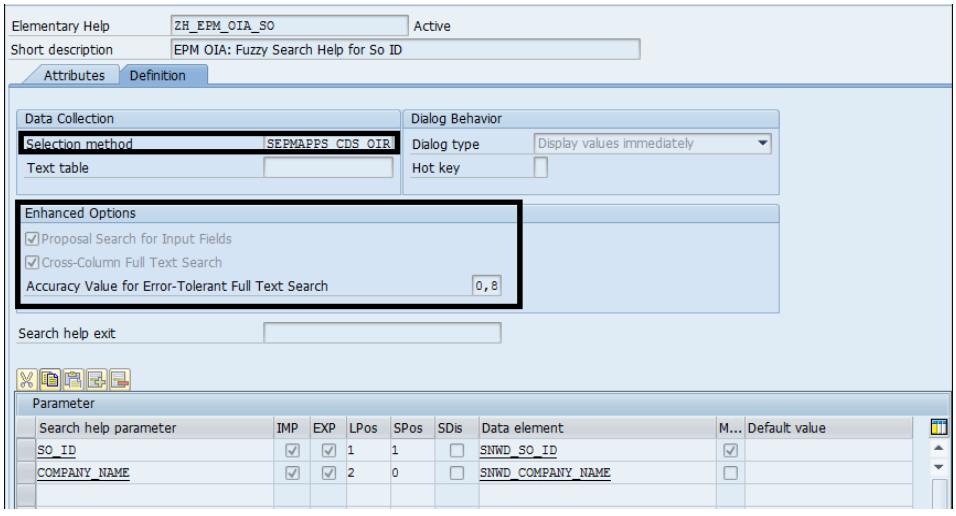
Configuration in CDS View

Fuzzy search logic is implemented in CDS Views.

The steps to configure Fuzzy search logic is as below.

- 1) Create a Search Help [***ZH_EPM_OIA_SO***] using the ***SE11*** transaction. Make sure it is an Elementary Search Help.
- 2) Enter the name of the CDS view name [***SEPMAPPS_CDS_OIR***] in "Selection method" input field.
- 3) Use the "***Enhanced Options***" section to configure the fuzzy search options [Refer screenshot given in Next step 4].
- 4) Create Search help parameters such as ***SO_ID*** and ***COMPANY_NAME*** and mark them as importing parameter, if you want to search for both *company_name* and *so_id*. You can also mark both the parameters as exporting parameters, if you want to display both, *company_name* and *so_id*, as output of the fuzzy search as shown in the snapshot below.

Configuration in CDS View



Configuration in CDS View

5) Currently, the ***SE11*** transaction does not support enhanced options in the test mode. You need to test them in a normal screen or by using a report with the type-ahead API.

6) **Fuzzy Search** is a fast and fault tolerant search and finds strings that match a pattern approximately(rather than exactly) means it returns records even if the search term contains additional or missing characters or other types of spelling error.

7) Fuzzy search algorithm calculates a fuzzy score for each string comparison.

8) We can call Fuzzy Search by using CONTAINS() function with FUZZY() option in WHERE clause of a SELECT Statement such as:

Summary

- Introduction to Fuzzy Search
- Examples of Fuzzy Search
- Configuration in CDS View

Web Link:

https://blogs.sap.com/2016/03/02/old-and-new-abap-syntax-overview-sheet/

http://www.saptutorial.org/new-abap-language-in-abap-7-4/