

Nama : Zuhri Alim

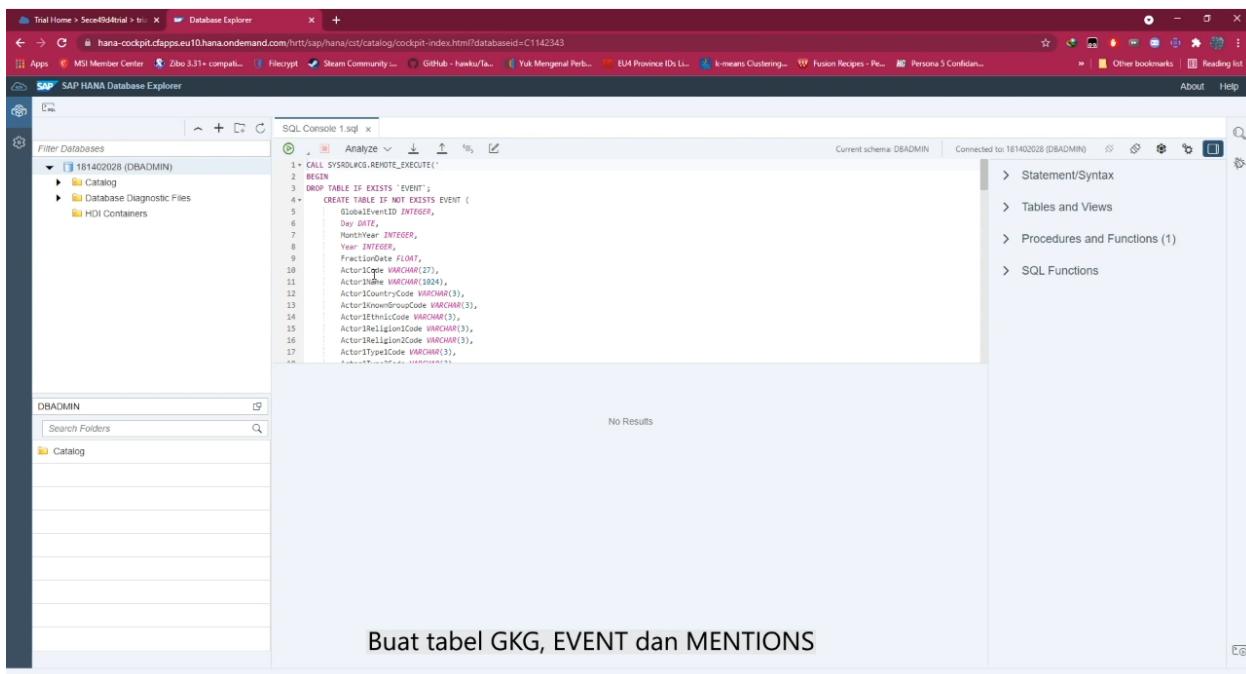
KOM : A

NIM : 181402028

UTS Enterprise Development Software

Modul 4 : Connecting to and Creating Data on the SAP HANA Cloud Data Lake

Dalam modul ini menambahkan data ke data lake dan menghubungkannya ke instance cloud sap hana dengan tujuan untuk mengidentifikasi lima partner teratas dan hari dengan pemesanan maksimum untuk lima partner teratas nantinya. Pertama membuat tabel GKG, EVENT dan MENTION, disini saya sudah membuat dari tugas 2 sebelumnya.



The screenshot shows the SAP HANA Database Explorer interface. In the top navigation bar, it says "Trial Home > SecorR&Mtrial > Trial Home > Database Explorer". Below the bar, there's a toolbar with various icons. The main area has a "SQL Console 1.sql" tab open. The code in the console is:

```
1- CALL SYSPROC.GE.REMOTE_EXECUTE();
2- BEGIN
3-   DROP TABLE IF EXISTS 'EVENT';
4-   CREATE TABLE IF NOT EXISTS EVENT (
5-     GlobalEventID INTEGER,
6-     Day DATE,
7-     Month INTEGER,
8-     Year INTEGER,
9-     FractionDate FLOAT,
10-    Actor1Code VARCHAR(27),
11-    Actor1Name VARCHAR(1024),
12-    Actor1GenreCode VARCHAR(3),
13-    Actor1NameCode VARCHAR(3),
14-    Actor1EthnicCode VARCHAR(3),
15-    Actor1ReligionCode VARCHAR(3),
16-    Actor1EducationCode VARCHAR(3),
17-    Actor1TypeCode VARCHAR(3),
18-    ... (many more lines of code)
```

To the right of the SQL console, there's a sidebar with sections like "Statement/Syntax", "Tables and Views", "Procedures and Functions (1)", and "SQL Functions". At the bottom of the interface, there's a message: "Buat tabel GKG, EVENT dan MENTIONS".

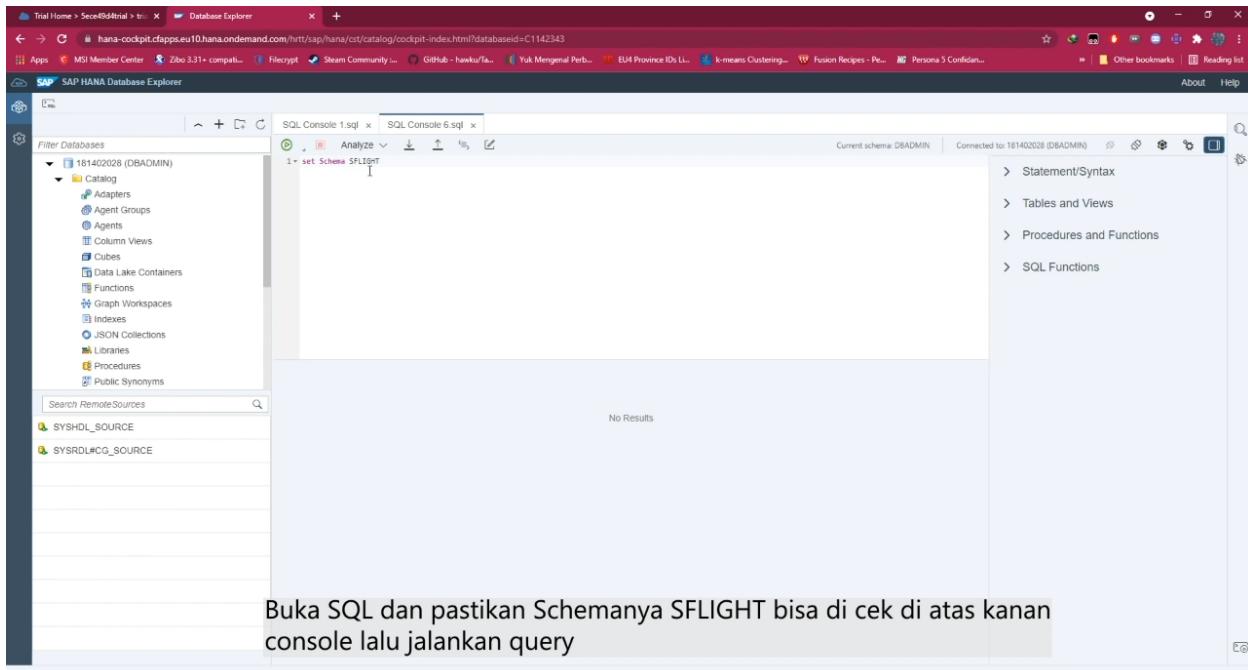
Selanjutnya membuat Remote Sources, expand folder catalog -> klik kanan pada remote source ->pilih show remote sources. Koneksi ke sap hana data lake otomatis terbuat jika telah men -enable data lagi selagi membuat instances. Pada Schema pilih SYSRDL#CG ->Klik search, Selanjutnya membuat virtual table dengan memilih database yang ada. Jangan lupa selagi membuat virtual tables pilih schema SFLIGHT karena nanti akan bekerja menggunakan schema itu.

Pilih SYSRDL#CG, ini untuk mencari koneksi setiap remote objek database

Object	Schema	Type
EVENT	SYSRDL#CG	TABLE
GKG	SYSRDL#CG	TABLE
MENTIONS	SYSRDL#CG	TABLE

Modul 5 : Query Data on SAP HANA Cloud

Pada modul sebelumnya sudah menyiapkan database cloud sap hana dan data lake. Langkah selanjutnya adalah mendapatkan informasi yang dibutuhkan dari tabel menggunakan pernyataan sql di sap hana database explorer. Buka SQL dan pastikan Schemanya SFLIGHT.



Selanjutnya membuat tabel baru sebagai agency data dari tabel yang sudah ada yaitu SBOOK dan SAGENCY. Tujuannya untuk mengetahui jumlah total pemesanan yang dilakukan per agensi, disini saya sudah ada query yang telah diberikan untuk membuat tabel-tabel tersebut. Copy query dari pdf yang diberikan.

```

1+ CREATE TABLE SAGENCYDATA AS (SELECT SBOOK.AGENCYNUM,
2+ COUNT(SBOOK.HERNCODE) AS NUMBOOKINGS FROM SBOOK, STRAVELAG
3+ SBOOK.AGENCYNUM=STRAVELAG.AGENCYNUM GROUP BY SBOOK.AGENCYNUM ORDER BY
4+ COUNT(SBOOK.HERNCODE) DESC);
5+

```

Setelah dibuat bisa dilihat datanya dengan menggunakan perintah `SELECT * FROM nama_tabel`.

	AGENCYNUM	NUMBOOKINGS
1	00000284	27870
2	00000122	27869
3	00000109	27867
4	00000101	27866
5	00000118	27416
6	00000067	25936
7	00000061	25935
8	00000113	24459
9	00000093	24458
10	00000104	24458
11	00000320	24458
12	00000111	24458
13	00000116	24458
14	00000117	24458

Selanjutnya membuat query untuk menghasilkan 5 agensi teratas dengan booking terbanyak.

The screenshot shows the SAP HANA Database Explorer interface. On the left, the 'Filter Databases' sidebar is open, showing the structure of the database including Catalog, Adapters, Agent Groups, Agents, Column Views, Cubes, Data Lake Containers, Functions, Graph Workspaces, Indexes, JSON Collections, Libraries, Procedures, and Public Synonyms. Below this, the 'Search RemoteSources' field contains 'SYSHDL_SOURCE' and 'SYSRDL#CG_SOURCE'. The main area displays two SQL consoles: 'SQL Console 1.sql' and 'SQL Console 6.sql'. The 'SQL Console 6.sql' tab is active, containing the following SQL code:

```
1- SELECT TOP 5 SAGENCYDATA.AGENCYNUM,
2 STRAVELAG.NAME,SAGENCYDATA.NUMBOOKINGS from SAGENCYDATA INNER JOIN
3 STRAVELAG on SAGENCYDATA.AGENCYNUM = STRAVELAG.AGENCYNUM;
```

To the right of the SQL console is a sidebar titled 'Current schema: SFLIGHT' and 'Connected to: 181402028 (DBADMIN)'. It includes links to 'Statement/Syntax', 'Tables and Views (2)', 'Procedures and Functions', and 'SQL Functions'. Below the sidebar is a 'Result' table titled 'Rows (5)' with columns 'AGENCYNUM', 'NAME', and 'NUMBOOKINGS'. The data is as follows:

AGENCYNUM	NAME	NUMBOOKINGS
1 00000284	Rainy, Stormy, Cloudy	27870
2 00000122	Fly Low	27869
3 00000109	Kangeroos	27867
4 00000101	Bella Italia	27866
5 00000116	Asia By Plane	27416

Untuk menemukan booking harian teratas, pertama-tama buat dua tabel baru yaitu STOPAGENCY dan SAGBOOKDAYS.

The screenshot shows the SAP HANA Database Explorer interface. The 'Messages' tab is active, displaying the output of a SQL command. The command is:

```
1- CREATE TABLE STOPAGENCY as (select top 5 SAGENCYDATA.AGENCYNUM,
2 STRAVELAG.NAME,SAGENCYDATA.NUMBOOKINGS from SAGENCYDATA INNER JOIN
3 STRAVELAG on SAGENCYDATA.AGENCYNUM = STRAVELAG.AGENCYNUM);
```

The message pane shows the execution details:

Statement: CREATE TABLE STOPAGENCY as (select top 5 SAGENCYDATA.AGENCYNUM, ...
Client elapsed time: 30.00 ms
Statement prepare time: 3.029 ms elapsed time, 3.373 ms CPU time
Statement execute time: 28.93 ms elapsed time, 26.62 ms CPU time
Peak memory consumed: 6.203 MB

```

1+ SELECT * FROM SBOOKDAYS
2
3

```

AGENCYNUM	ORDERDAY	DAYCOUNT
00000121	SATURDAY	3406
00000067	SATURDAY	3708
00000001	FRIDAY	3523
00000124	FRIDAY	3476
00000112	SATURDAY	3515
00000119	SATURDAY	3378
00000113	SATURDAY	3501
00000124	SUNDAY	3551
00000118	SUNDAY	3911
00000310	TUESDAY	3488
00000117	SATURDAY	3400
00000233	THURSDAY	2716
00000116	FRIDAY	3519
00000301	TUESDAY	3541

Setelah membuat dua tabel STOPAGENCY dan SBOOKDAYS, tabel ini akan digabungkan berdasarkan nomor agensi, dan juga mengambil data hanya hari dengan jumlah pemesanan maksimum untuk masing-masing dari lima agensi teratas.

```

1+ SELECT SBOOKDAYS.AGENCYNUM, STOPAGENCY.NAME, SBOOKDAYS.ORDERDAY,
2      SBOOKDAYS.DAYCOUNT FROM SBOOKDAYS INNER JOIN STOPAGENCY ON
3      SBOOKDAYS.AGENCYNUM=STOPAGENCY.AGENCYNUM WHERE SBOOKDAYS.DAYCOUNT IN
4      (SELECT MAX(DAYCOUNT) FROM SBOOKDAYS GROUP BY AGENCYNUM);
5
6

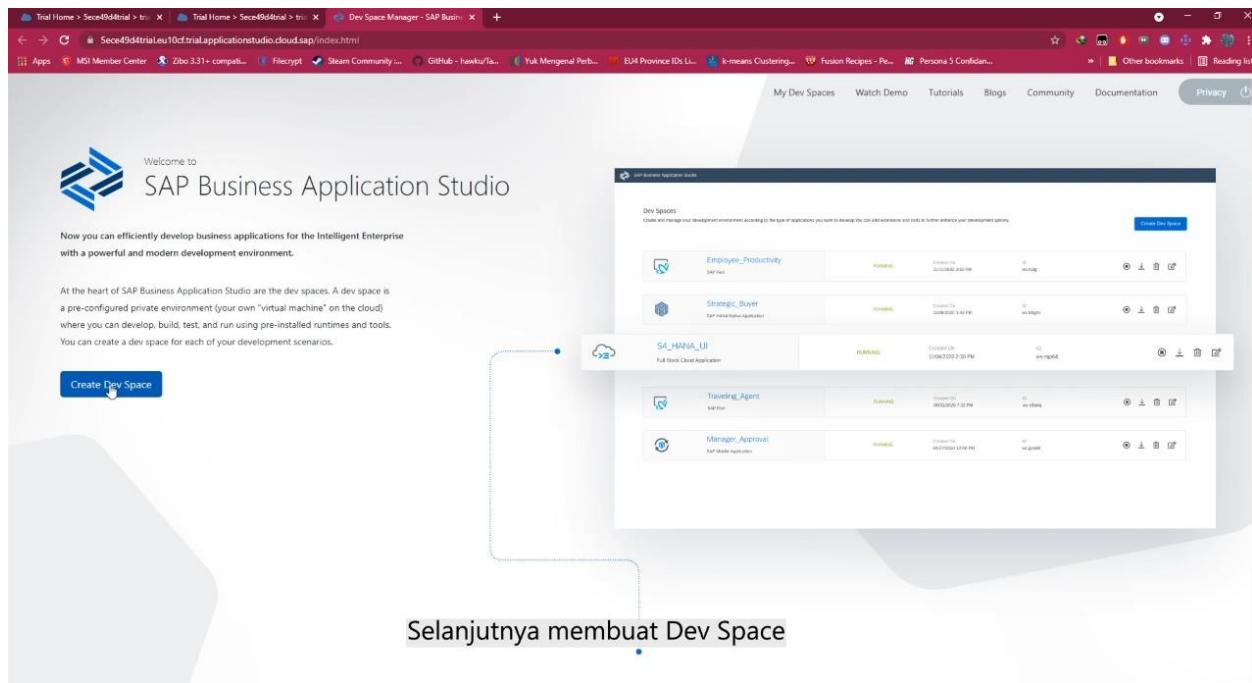
```

AGENCYNUM	NAME	ORDERDAY	DAYCOUNT
00000109	Kangeroos	THURSDAY	4095
00000122	Fay Low	THURSDAY	4037
00000284	Rainy, Stormy, Cloudy	MONDAY	4106
00000101	Bella Italia	THURSDAY	4038
00000116	Asia By Plane	TUESDAY	4004

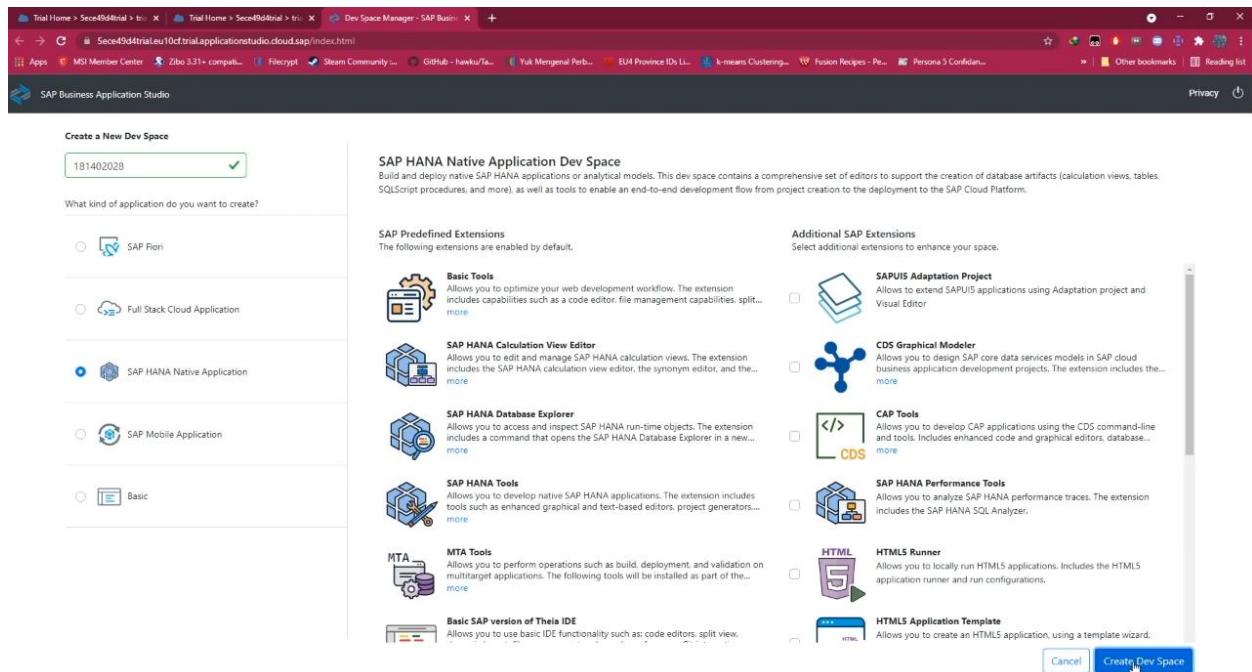
Bisa dilihat bahwa pemesanan maksimum sebagian besar dilakukan pada hari Kamis untuk lima agensi teratas

Modul 6 : Setting up your first HANA Project in SAP BUSINESS APPLICATION STUDIO

Sekarang membuat SAP Business Application Studio, yaitu tools dalam layanan platform sap cloud dan alat penting untuk pemodelan data dengan sap hana cloud termasuk membuat calculation views.



Masukkan nama dev space dan pilih “SAP Hana Native Application”.



Tunggu status berubah menjadi "Running" lalu klik pada nama Dev Space yang telah dibuat.

Dev Spaces

Create and manage your development environment according to the type of applications you want to develop. You can add extensions and tools to further enhance your development options.

181402028
SAP HANA Native Application

RUNNING

Created On
10/19/2021 7:38 PM

ID
ws-v448t

Disk Usage
16 MB / 3.9 GB

Create Dev Space

Copy Download Delete Edit

Selanjutnya membuat development project dengan memilih start from template dan pilih SAP Hana Data Project.

File Edit Selection View Go Run Terminal Help

SAP Business Application Studio - 181402028

EXPLORER

You have not yet opened a folder.

Open Folder

You can clone a repository locally.

Clone Repository

To learn more about how to use git and source control in VS Code read our docs.

You can create a project using built-in templates.

Create Project

SAP Business Application Studio

Featuring

SAP HANA Native Application

Start from template
Create a new project

Clone from Git
Clone Git project

Import
Import files to your dev space

Files & Folders
Open files and folders

Recent

No Recent Workspaces

Don't show me again

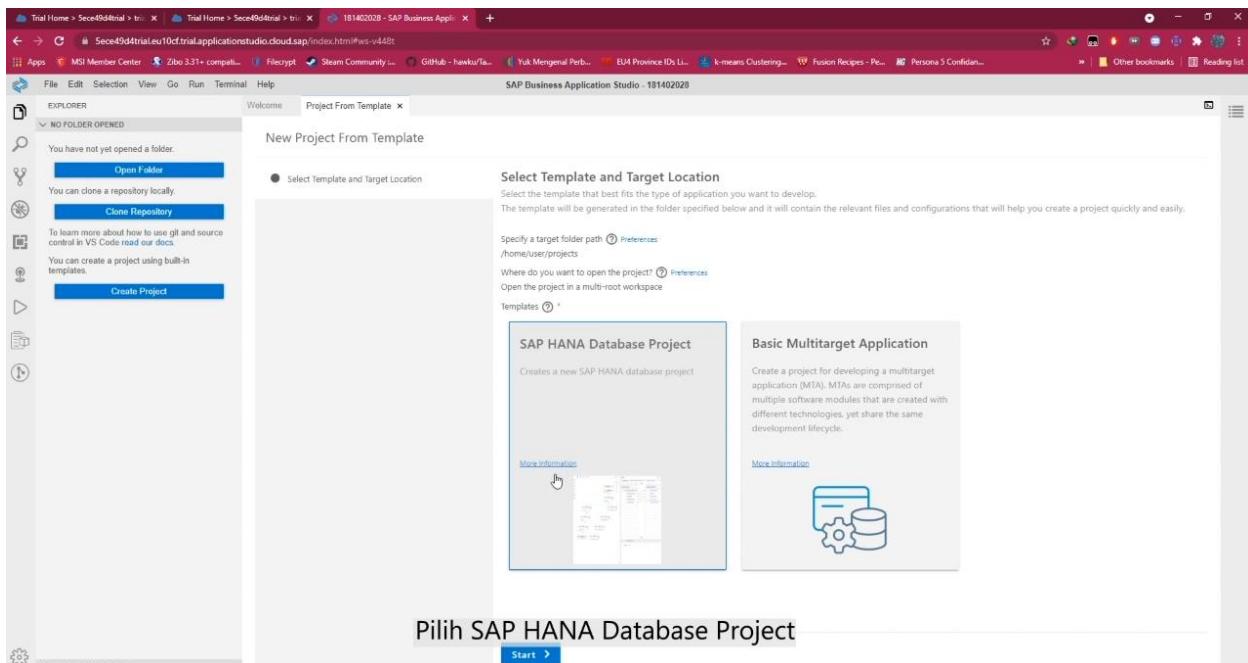
Documentation • What's New • Getting Started

Keyboard Shortcuts

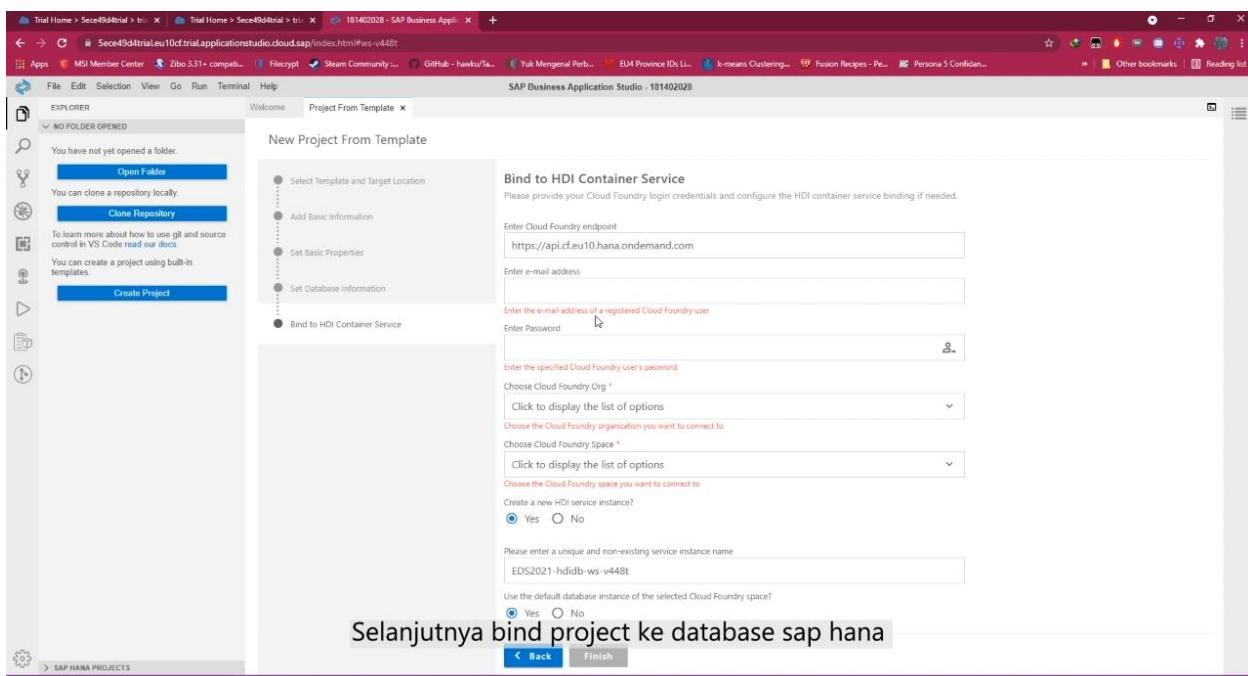
Open Preferences

Guided Development

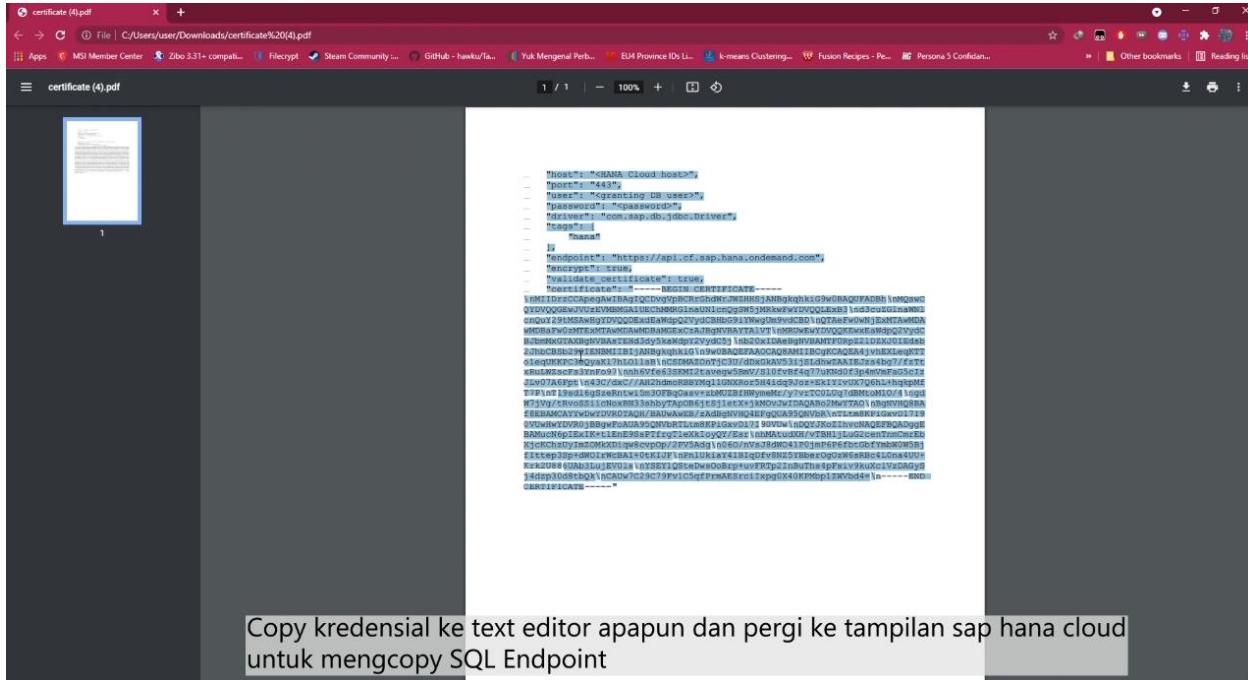
Selanjutnya membuat development project dengan memilih start from template



Berikan nama project, nama module, informasi database, dan bind HDI Container Service dengan memasukkan email dan password Sap Hana, lalu berikan nama service instance.



Selanjutnya membuat user provided service yang akan memberi akses ke data di dalam database. Copy kredensial dan pergi ke tampilan sap hana cloud untuk mengcopy SQL Endpoint.



Copy kredensial ke text editor apapun dan pergi ke tampilan sap hana cloud untuk mengcopy SQL Endpoint

Copy kredensial ke text editor apapun dan pergi ke tampilan sap hana cloud untuk mengcopy SQL Endpoint

Pastekan SQL Endpoint ke bagian host dan hapus port di akhir endpoint. Berikan juga nama user yaitu "DBADMIN" dan password. Lalu copy semua kredensial.

The screenshot shows the SAP BTP Cockpit interface. In the center, there is a Notepad window titled "Untitled - Notepad" containing a large amount of JSON configuration code. Below the Notepad is a summary table:

CPU	Storage
4 vCPUs	256 GB
Workers	Coordinators
1 x 2 vCPUs	1 x 2 vCPUs

At the bottom of the screen, there is a message box with the text "Selanjutnya Copy kredensial".

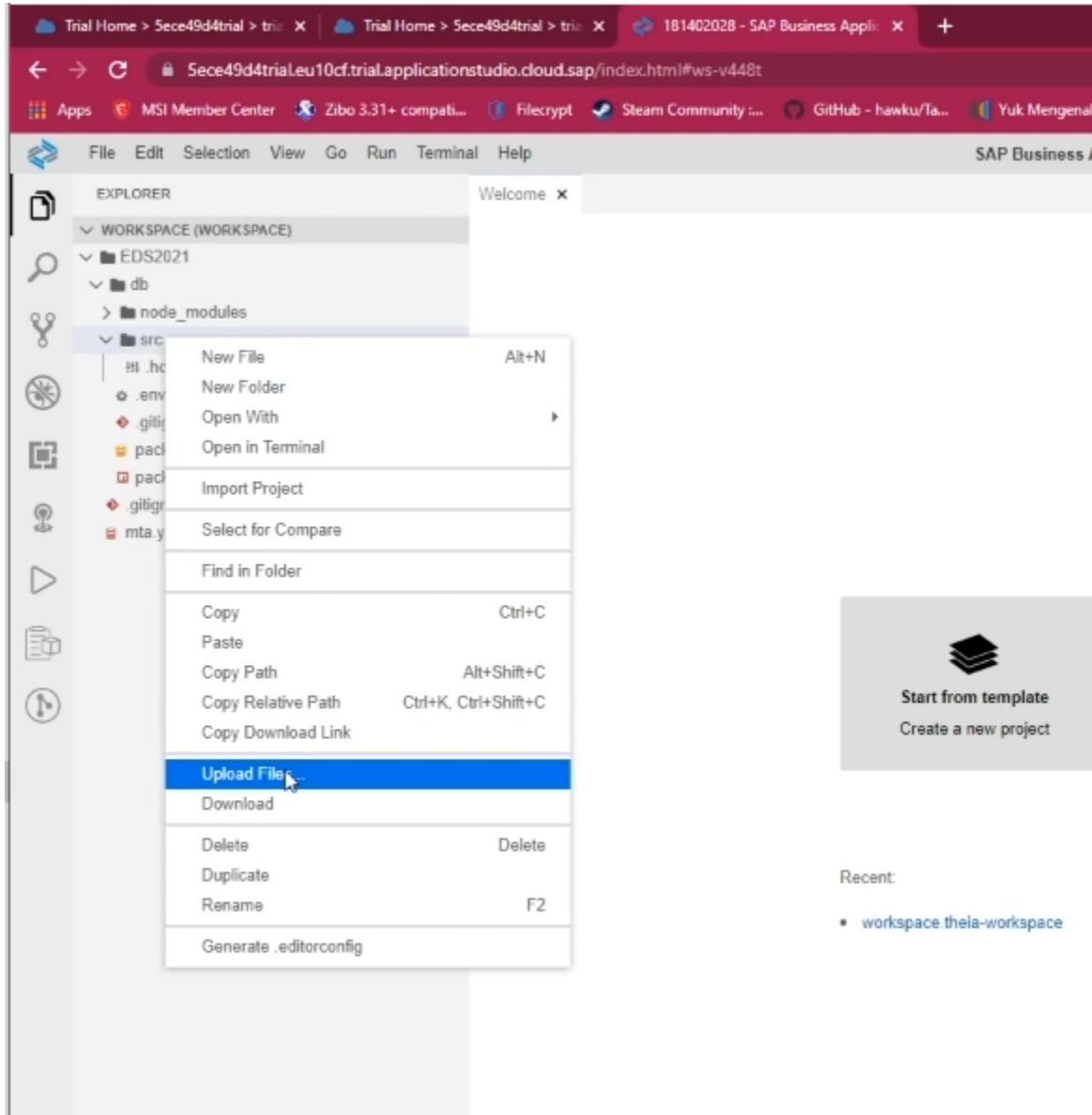
Masuk ke Sap Hana Business Application dan buka tampilan View ->Find Command, search create user provided service instance, berikan nama service instance -> Masukkan kredensial yang telah dicopy diantara brackets.

The screenshot shows the SAP Business Application Studio interface. A modal dialog box is open with the title "bQkrcCaUwTC29C79Fv1C5qfPmAESrclipgX40KMbpsIZWVb4dFn---END CERTIFICATE---" and the instruction "Enter credentials (Press 'Enter' to confirm your input or 'Escape' to cancel)".

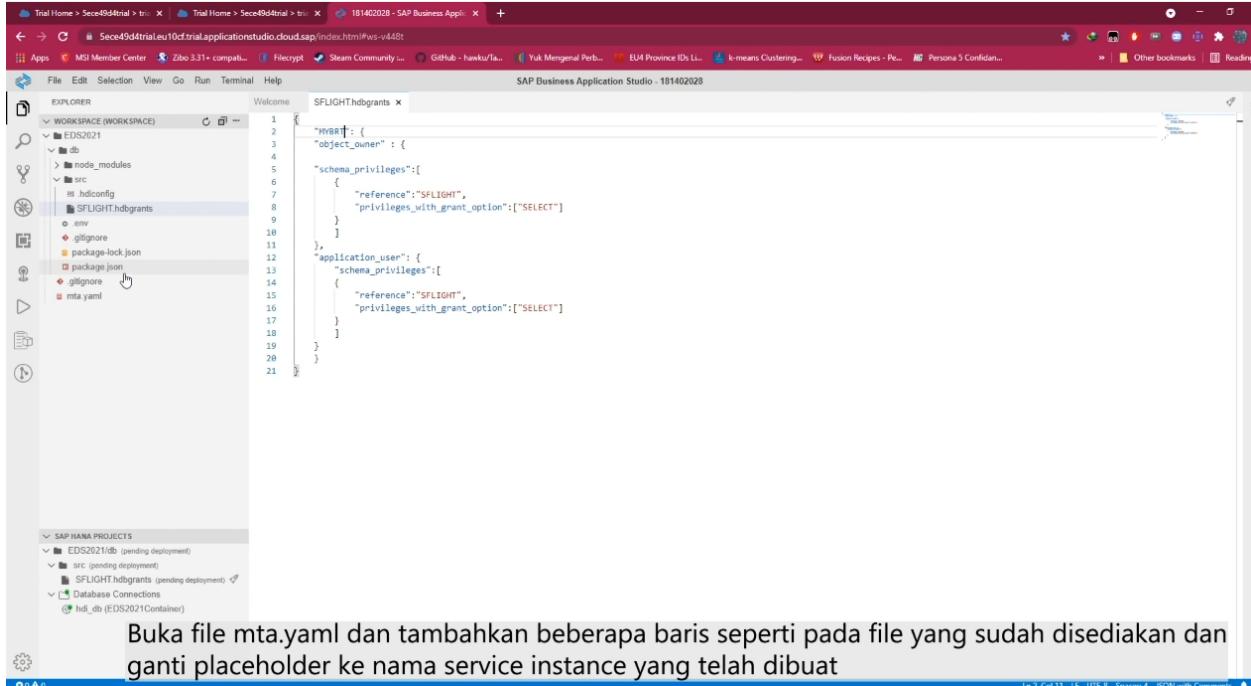
Below the dialog, the SAP Business Application Studio logo and the text "SAP HANA Native Application" are visible. There are four buttons in the center: "Start from template", "Clone from Git", "Import", and "Files & Folders".

At the bottom of the screen, there is a message box with the text "Pastekan kredensial yang telah dicopy diantara brackets dan tekan enter".

Selanjutnya mengimport file hbdgrants yang telah diberikan untuk memberikan izin pada project ini untuk mengakses data. Expand folder db -> klik kanan folder src -> pilih upload file -> pilih file hdbgrants.



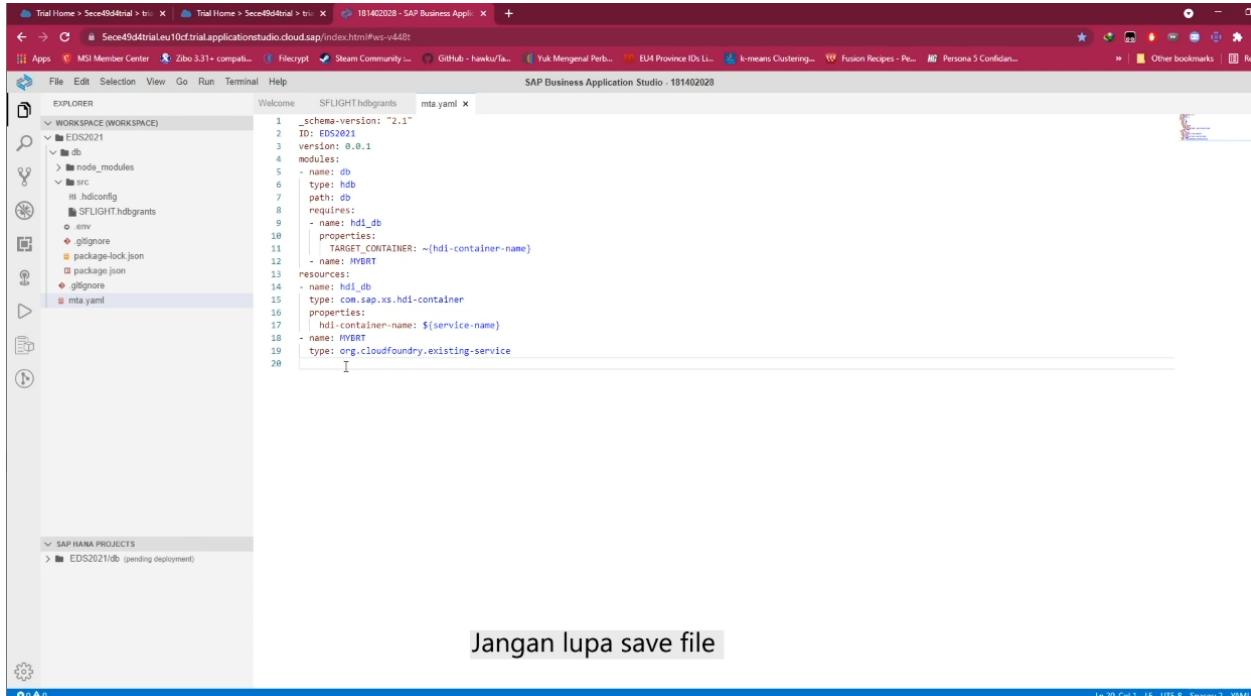
Buka file yang telah diupload dan ganti nama user provided service ke service yang baru saja dibuat tadi dan simpan dengan menekan CTRL+S.



```
1 "ref": {
2   "object_owner": {
3     "schema_privileges": [
4       {
5         "reference": "SFLIGHT",
6         "privileges_with_grant_option": ["SELECT"]
7       }
8     ],
9     "application_user": {
10       "schema_privileges": [
11         {
12           "reference": "SFLIGHT",
13           "privileges_with_grant_option": ["SELECT"]
14         }
15       ]
16     }
17   }
18 }
19 }
20 }
```

Buka file mta.yaml dan tambahkan beberapa baris seperti pada file yang sudah disediakan dan ganti placeholder ke nama service instance yang telah dibuat

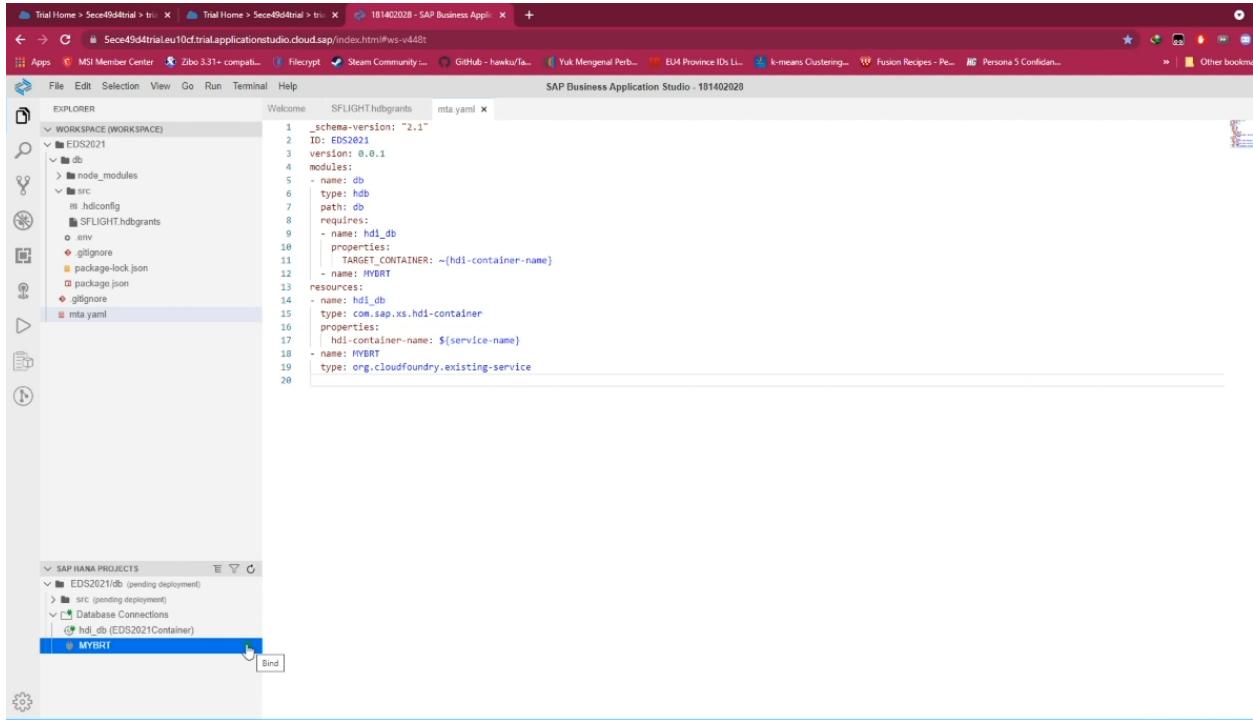
Buka file mta.yaml dan tambahkan beberapa baris seperti pada file yang sudah disediakan di pdf dan ganti placeholder ke nama service instance yang telah dibuat.



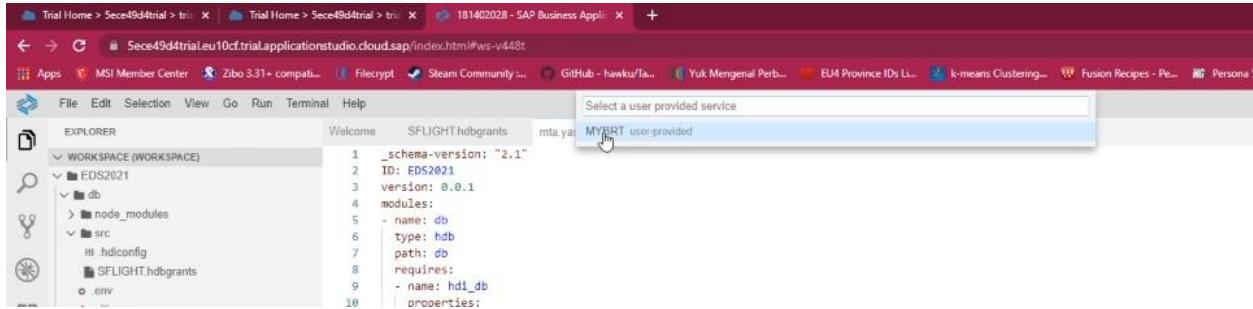
```
1 _schema-version: "2.1"
2 ID: EDS2021
3 version: 0.1
4 modules:
5   - name: db
6     type: hdb
7     path: db
8     requires:
9       - name: hdi_db
10      properties:
11        TARGET_CONTAINER: ~{(hdi-container-name)}
12      name: HVBRT
13    responses:
14      - name: hdi_db
15        type: com.sap.xs.hdi-container
16        properties:
17          hdi-container-name: ${service-name}
18        name: HVBRT
19        type: org.cloudfoundry(existing-service)
20
```

Jangan lupa save file

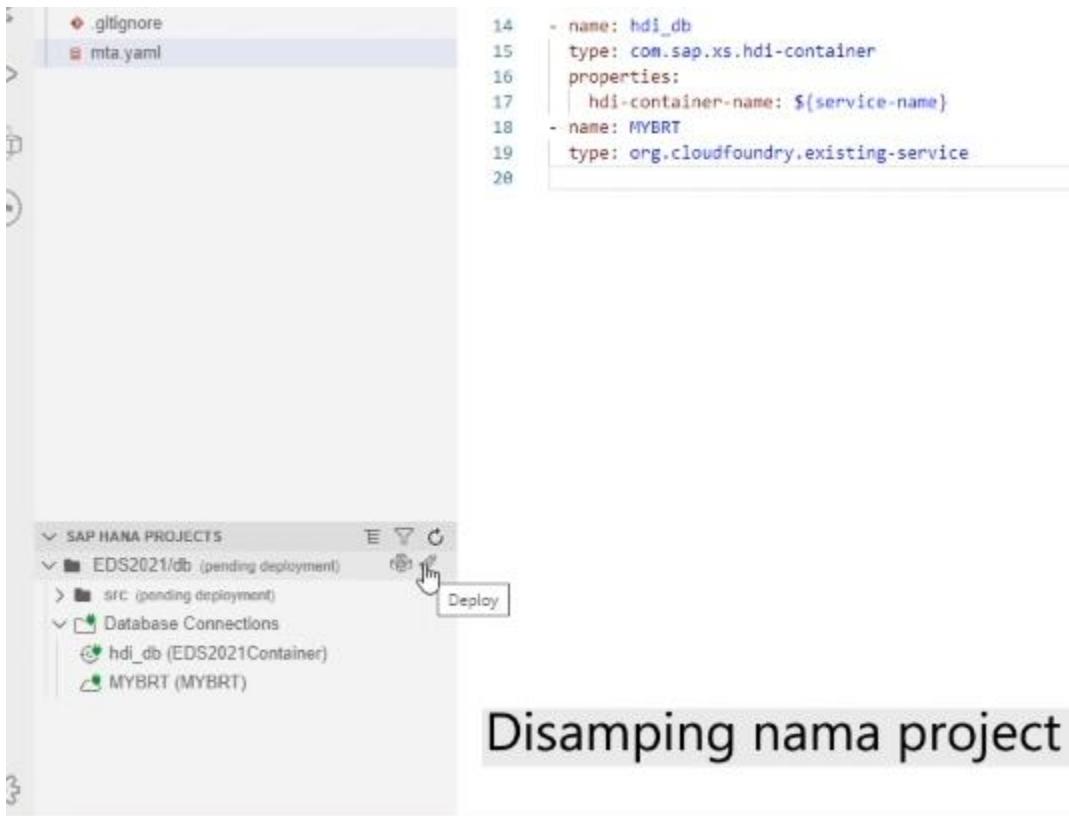
Selanjutnya pilih sap hana projects dibawah kiri tampilan dan expand folder. Disamping nama user provided service klik plug icon warna hijau untuk mem bind user provided service.



Pilih Bind user provided service -> pilih nama user provided service.



Disamping nama project pilih icon rocket untuk deploy project.



This screenshot shows the SAP Studio interface with a different perspective. On the left, the WORKSPACE (WORKSPACE) view shows the project structure: EDS2021, db, node_modules, src, and a .gitignore file. The mta.yaml file is also listed here. The right side of the screen displays the deployment log in a terminal window. The log shows the deployment process for the EDS2021_HDI_DB_1 container, detailing steps like enabling table application, deploying tables, and deploying the application. At the bottom, a message says 'The MYBRT service has been bound'.

```
1 schema-version: "2.1"
2 ID: EDS2021
3 version: 0.0.1
4 modules:
5 - name: db
6   type: hdb
7   path: db
8   require:
9     - name: hdi_db
10    properties:
11      TARGET_CONTAINER: ~{(hdi-container-name)}
12    - name: MYBRT
13 resources:
14   - name: hdi_db
15     type: com.sap.xs.hdi-container
16     properties:
17       hdi-container-name: ${service-name}
18   - name: MYBRT
19     type: org.cloudfoundry(existing-service)
```

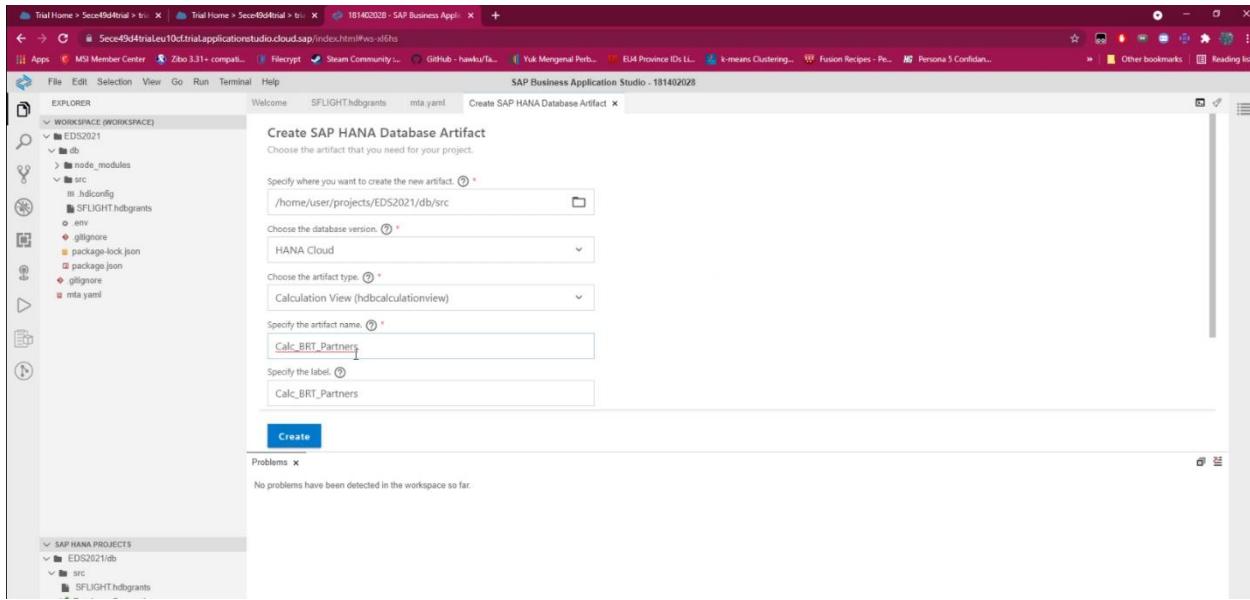
```
Make succeeded (0 warnings): 1 files deployed (effective 1), 0 files undeployed (effective 0), 0 dependent files redeployed
Making... ok (0s 899ms)
Enabling table application for the container schema "EDS2021_HDI_DB_1"...
Enabling table application for the container schema "EDS2021_HDI_DB_1"... ok (0s 11ms)
Start deployment to the container "EDS2021_HDI_DB_1"...
Deploying to the container "EDS2021_HDI_DB_1"...
No default-access-role handling needed; global role "EDS2021_HDI_DB_1::access_role" will not be adapted
Unlocking the container "EDS2021_HDI_DB_1"...
Unlocking the container "EDS2021_HDI_DB_1"...
Deployment to container "EDS2021_HDI_DB_1" done [Deployment ID: none].
Deployment ended at 2021-10-19 13:19:59
(3s 819ms)
```

Terminal will be reused by tasks.

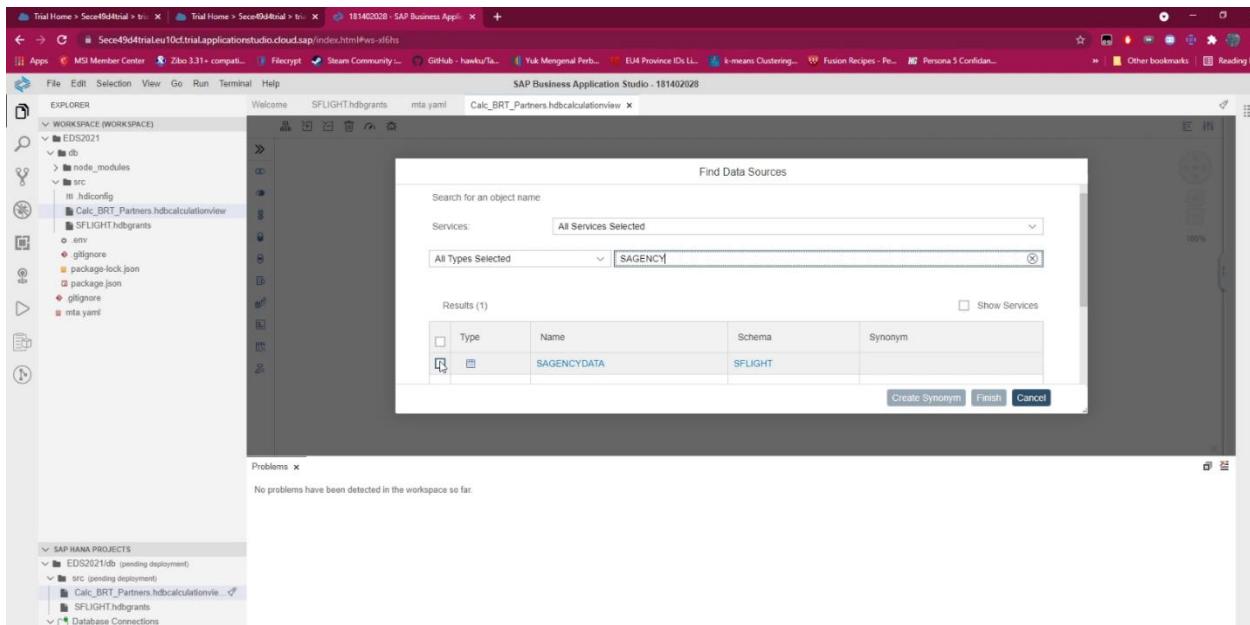
The MYBRT service has been bound

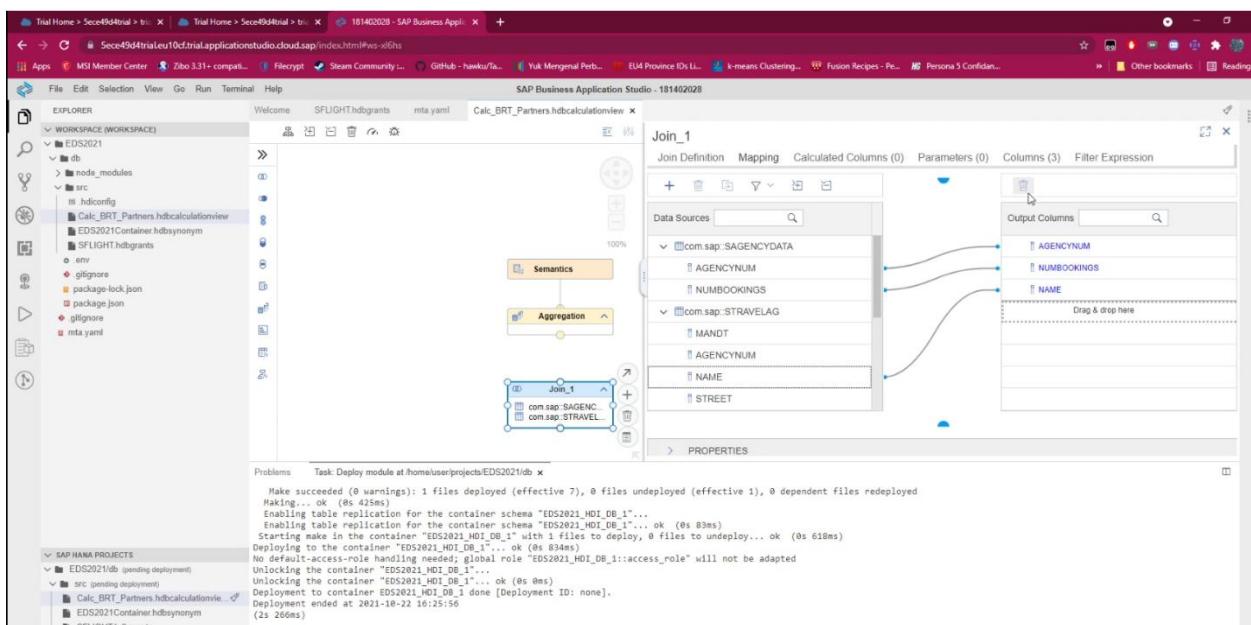
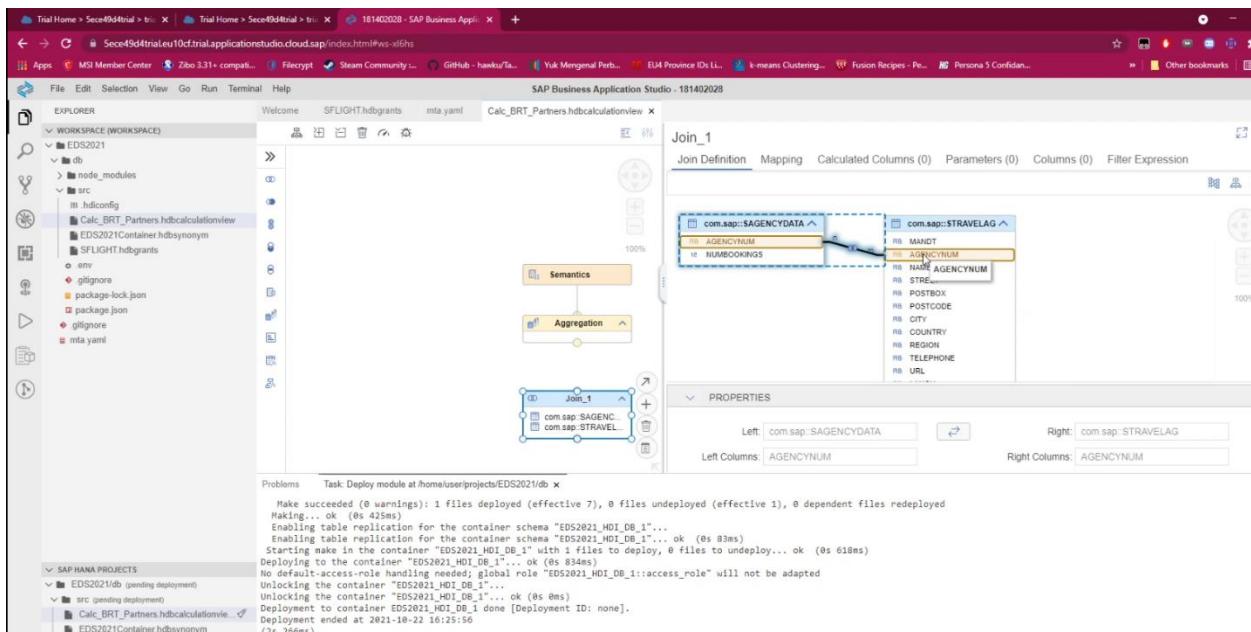
Modul 7: Create a Calculation View

Saatnya membuat Calculation View. Pilih View -> Create Sap database artefact, lalu pilih type artefact dan berikan namanya.

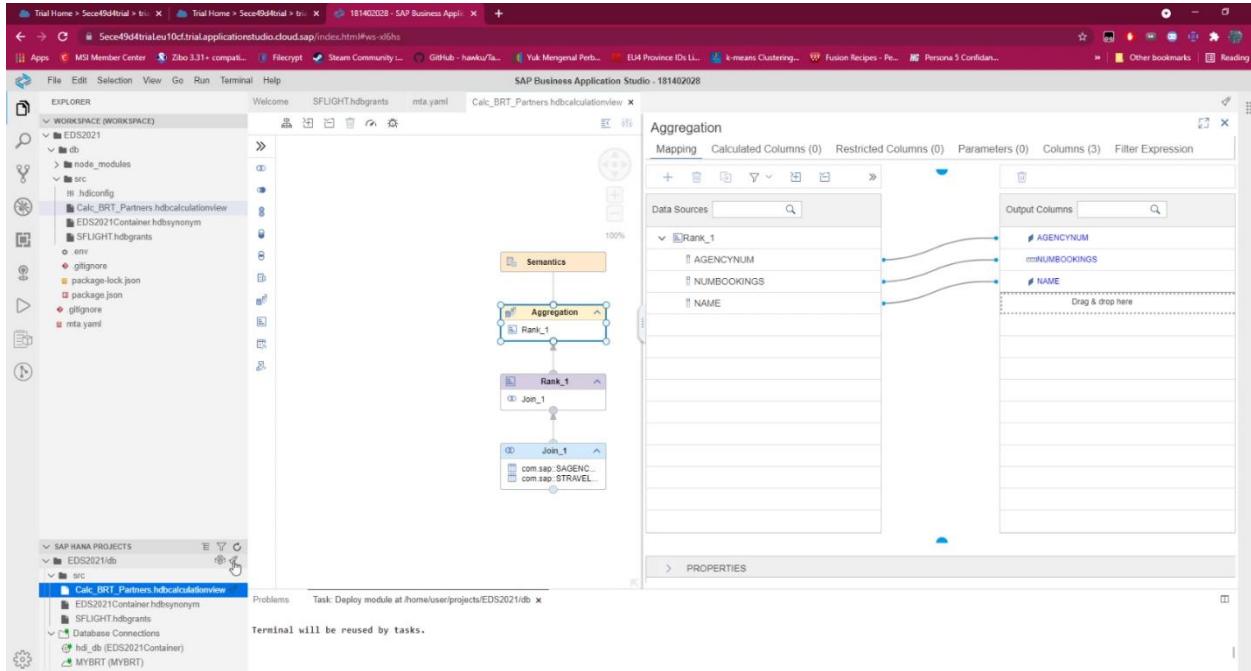


Setelah itu membuat join tabel, Karena untuk mengetahui lima partner teratas yang terbaik untuk data perjalanan/travel. Perlu digabung tabel SAGENCY dengan tabel STRAVELAG. Dan menghubungkan join node ke aggregation node.





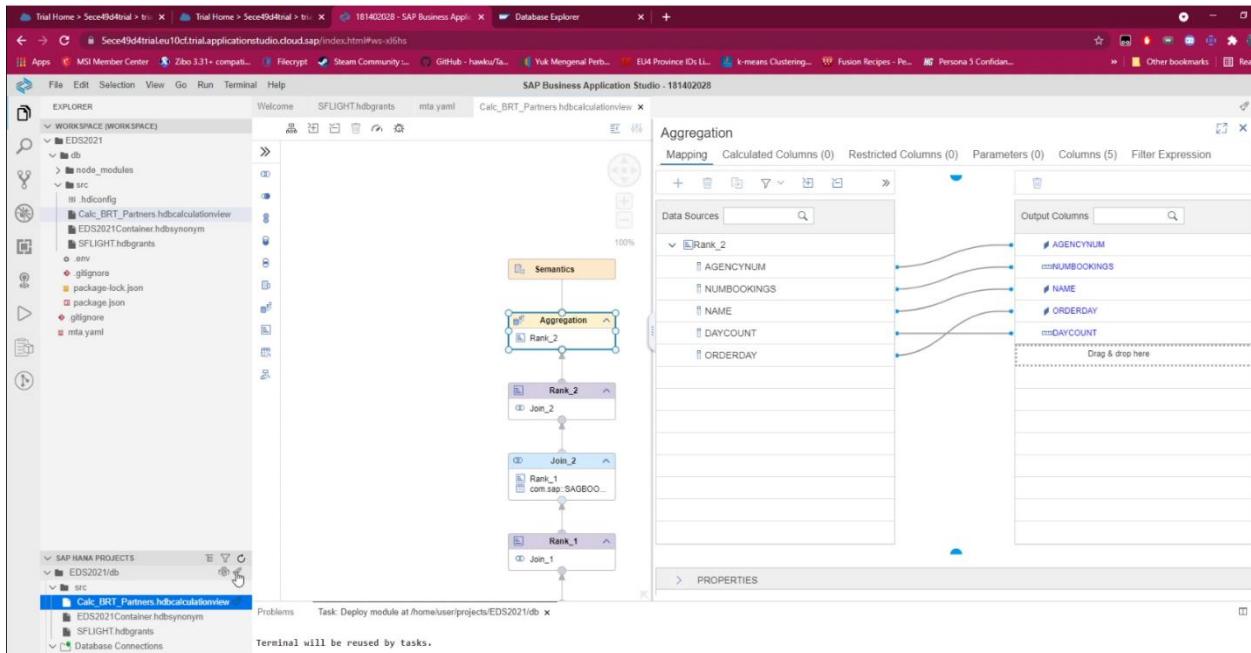
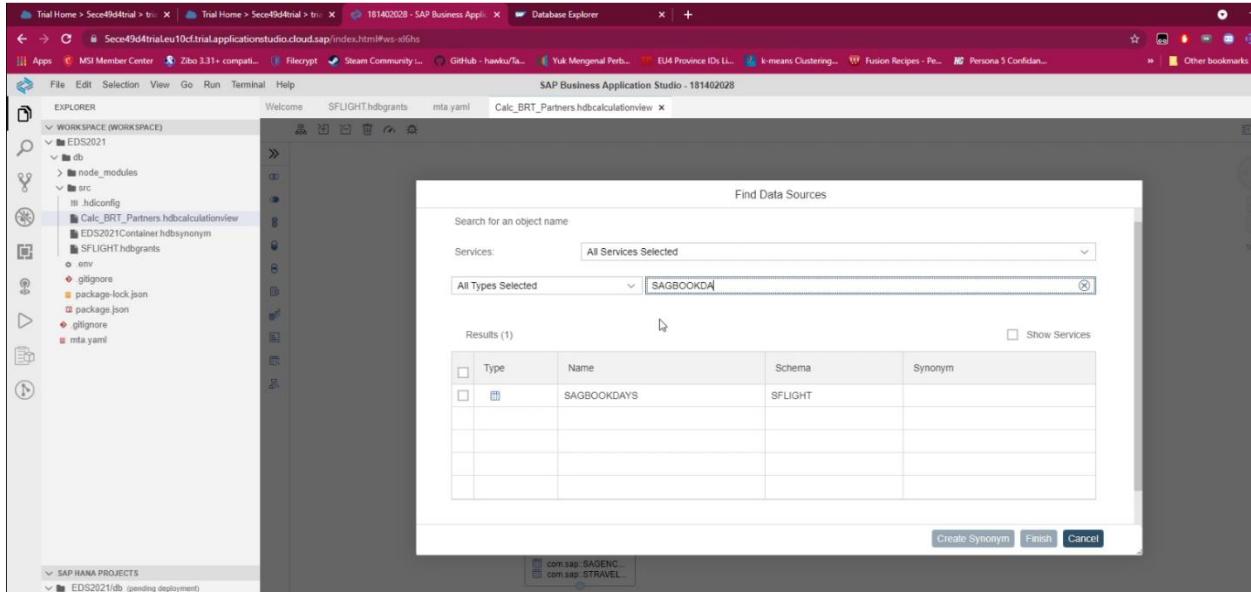
Karena ingin melihat lima hasil teratas dari gabungan ini, tambahkan rank node, setelah selesai deploy project. Untuk memeriksa klik hdi container disamping icon rocket deploy.



The screenshot shows the SAP HANA Database Explorer interface. The left sidebar lists databases and objects. The main area displays the 'RawData' view of the Calc_BRT_Partners table. The table has three columns: AGENCYNUM, NAME, and NUMBOOKINGS. The data is as follows:

	AGENCYNUM	NAME	NUMBOOKINGS
1	00000284	Rainy, Stormy, Cloudy	27870
2	00000122	Fly Low	27869
3	00000101	Bella Italia	27866
4	00000109	Kangaroos	27867
5	00000118	Asia By Plane	27416

Kembali ke tampilan workspace sap business untuk mencari tahu hari apa lima agensi teratas yang memiliki pemesanan terbanyak. Dan menggabungkan output dari rank node ke tabel SAGBOOKDAYS. Pastikan pada column rank terhubung ke column output.



Dapat dilihat lima mitra partners teratas dan hari dimana mereka memiliki pemesanan terbanyak.

The screenshot shows the SAP HANA Database Explorer interface. On the left, there is a sidebar with a tree view of database objects under '181402028 (DBADMIN)'. The main area displays a table named 'Calc_BRT_Partners' with the following data:

AGENCYNUM	NAME	ORDERDAY	NUMBOOKINGS	DAYCOUNT
1 00000122	Fly Low	THURSDAY	27869	4037
2 00000118	Asia By Plane	TUESDAY	27416	4004
3 00000101	Bella Italia	THURSDAY	27866	4038
4 00000284	Rainy, Stormy, Cloudy	MONDAY	27870	4108
5 00000109	Kangeroos	THURSDAY	27867	4095

Module 8: Share a Subset of Your Data Securely

Tujuan pada modul ini adalah untuk memungkinkan orang lain melihat tampilan calculation dengan menambahkan role dan memberikan akses.

The screenshot shows the SAP HANA Database Explorer interface. On the left, there is a sidebar with a tree view of database objects under '181402028 (DBADMIN)'. The main area displays a SQL query in the 'SQL Console 1.sql' tab:

```
1 + SELECT TOP 1000
2   "AGENCYNUM",
3   "NAME",
4   "ORDERDAY",
5   SUM("NUMBOOKINGS") AS "NUMBOOKINGS",
6   SUM("DAYCOUNT") AS "DAYCOUNT"
7 FROM "EDS2021_HDT_DB_1"."Calc_BRT_Partners"
8 GROUP BY "AGENCYNUM", "NAME", "ORDERDAY"
```

To the right of the query, there is a 'Statement/Syntax' pane with three items: 'Tables and Views (1)', 'Procedures and Functions', and 'No Results'. A small 'Untitled - Notepad' window is also visible in the bottom right corner.

Kembali ke workspace sap business dan selanjutnya memberikan otorisasi calculation views dengan menambahkan file hdbrole. Lalu buka filde hdbrole dengan code editor dan edit datanya sesuai dengan pdf yang ada pada modul 8.

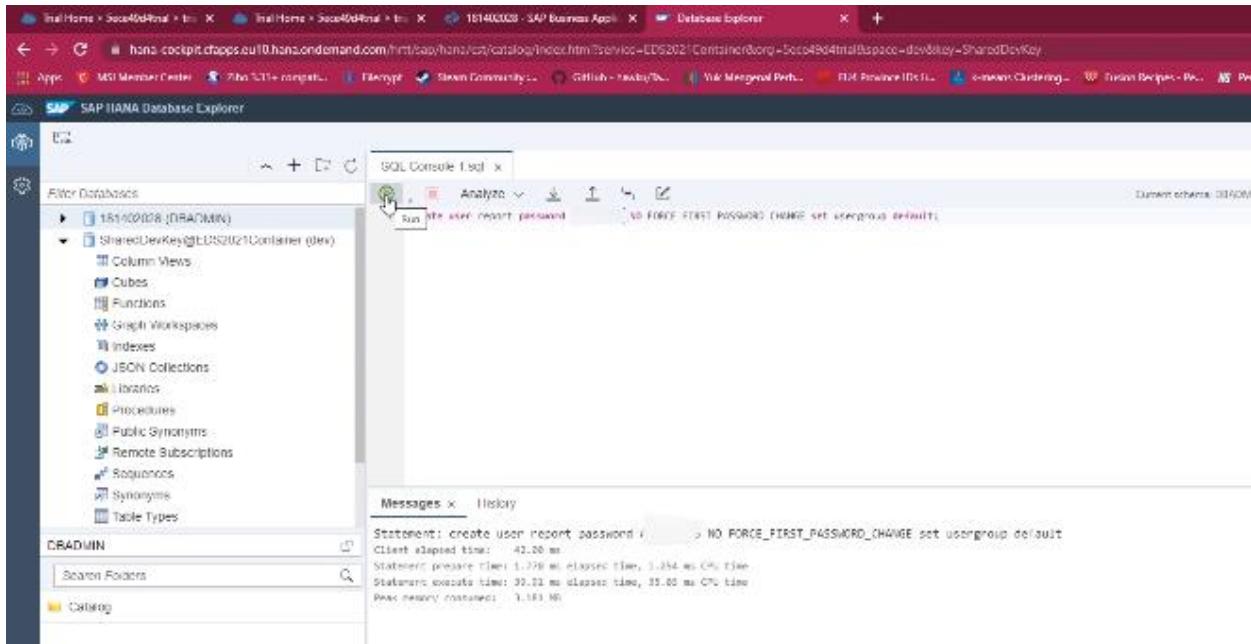
The screenshot shows two instances of SAP Business Application Studio. The top instance is in the 'Create SAP HANA Database Artifact' mode, where a new artifact is being created at the path '/home/user/projects/EDS2021/db/src'. The artifact type is set to 'Role (hdbrole)' and the name is 'publicaccessrole'. The bottom instance shows the code editor with the generated JSON configuration for the 'publicaccessrole.hdbrole' file:

```

1  {
2      "role": [
3          {
4              "name": "PublicAccessSchema",
5              "schema_privileges": [
6                  {
7                      "privileges": [
8                          "SELECT",
9                          "EXECUTE"
10                     ]
11                 }
12             ]
13         }
14     ]

```

Buka Sql console untuk membuat user baru dengan mengcopy query kedua pada modul 8 pdf. Dan memberikan akses ke role ini.

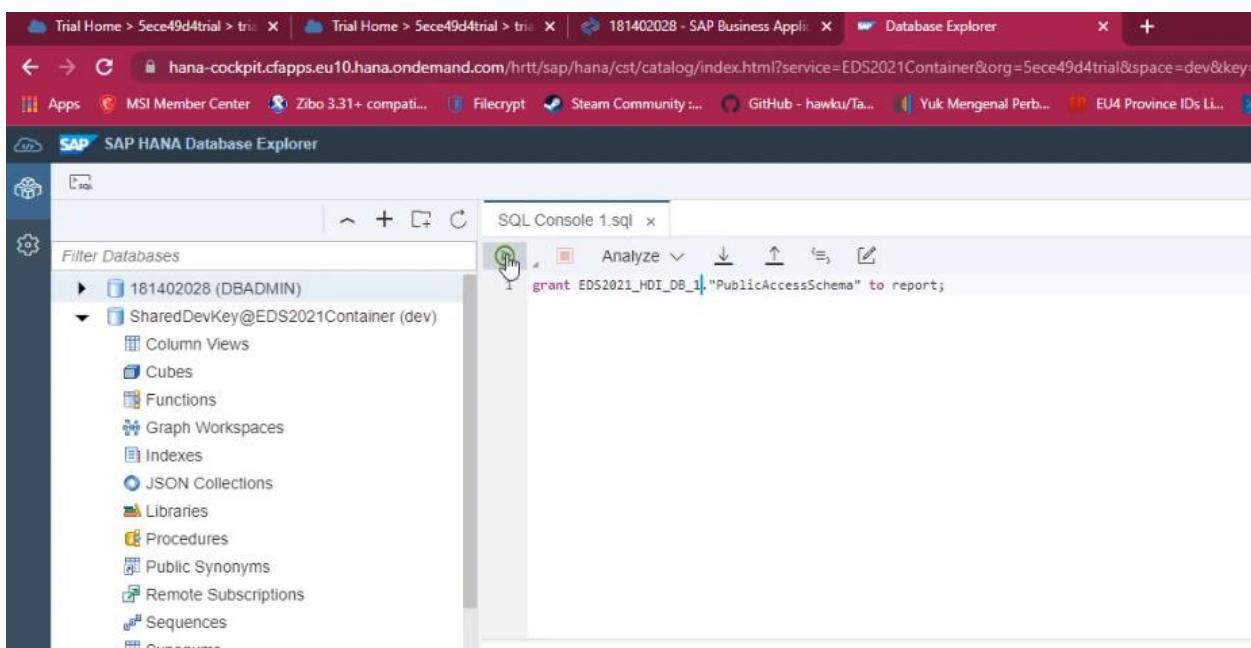


The screenshot shows the SAP HANA Database Explorer interface. In the SQL Console tab, a command is being run:

```
CREATE USER report_password IDENTIFIED BY report_password;
```

The command is preceded by a note: "NO FORCE_FIRST_PASSWORD_CHANGE set usinggroup default". The Messages panel shows the execution results:

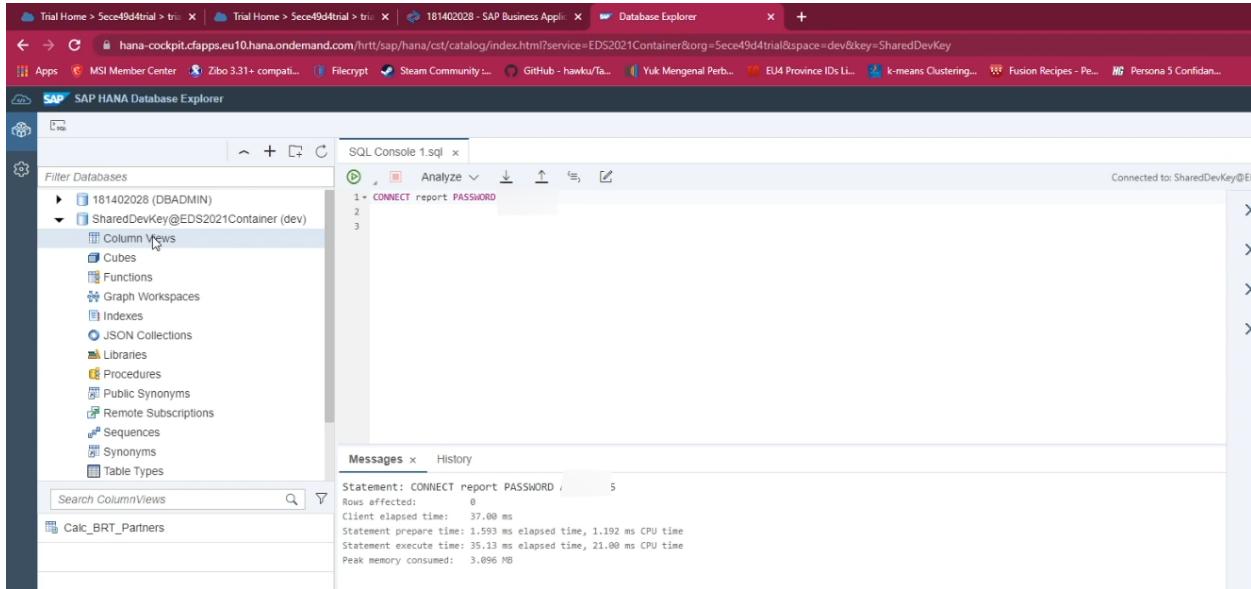
```
Statement: create user report_password > NO FORCE_FIRST_PASSWORD_CHANGE set usinggroup default
Client elapsed time: 42.00 ms
Statement prepare timer: 1.79 ms elapsed time: 1.744 ms CPU time
Statement execute timer: 30.21 ms elapsed time: 31.00 ms CPU time
Rows returned: 1,181 kB
```



The screenshot shows the SAP HANA Database Explorer interface. In the SQL Console tab, a grant command is being run:

```
grant EDS2021_HDI_DB_1 "PublicAccessSchema" to report;
```

Dengan kredensial user baru ini, siapa pun dapat menjalankan select statement pada tampilan Calculation, untuk mengujinya pertama login dengan user baru yang telah dibuat.



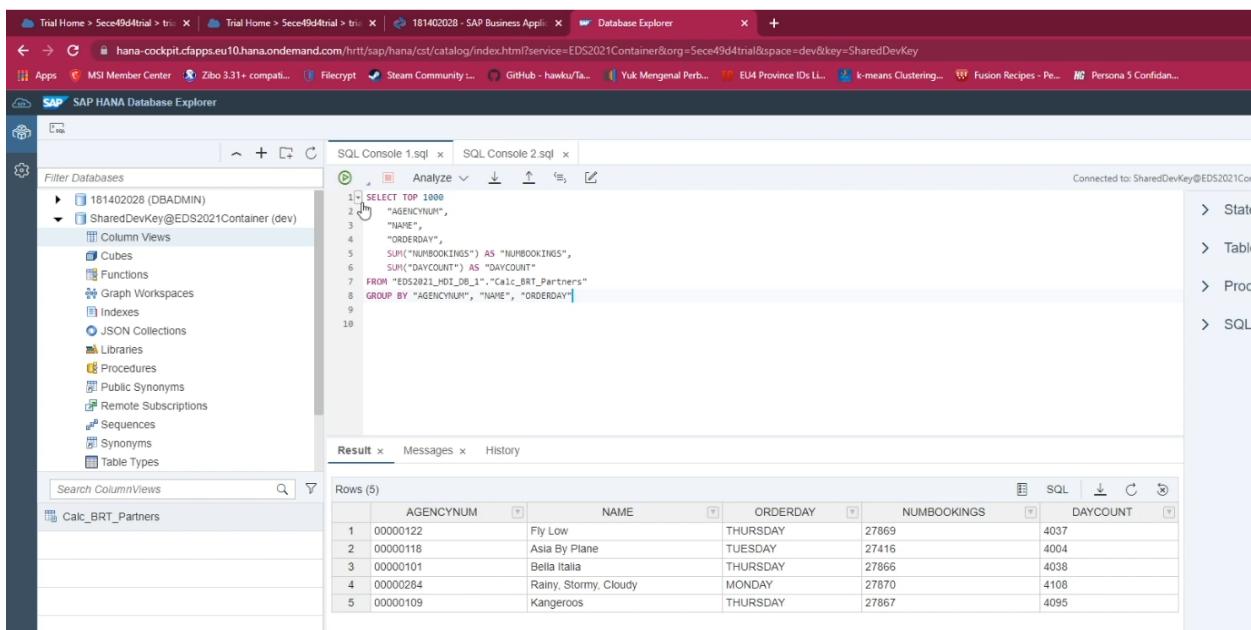
The screenshot shows the SAP HANA Database Explorer interface. The left sidebar lists databases and objects under 'SharedDevKey@EDS2021Container (dev)'. The main area contains a SQL console window titled 'SQL Console 1.sql' with the following content:

```
CONNECT report PASSWORD
```

Below the SQL code, the 'Messages' tab displays the execution results:

```
Statement: CONNECT report PASSWORD
Rows affected: 0
Client elapsed time: 37.00 ms
Statement prepare time: 1.593 ms elapsed time, 1.192 ms CPU time
Statement execute time: 35.13 ms elapsed time, 23.00 ms CPU time
Peak memory consumed: 3.096 MB
```

Akhirnya selesai untuk membuat role user baru dan memberikan akses ke Calculation views.



The screenshot shows the SAP HANA Database Explorer interface. The left sidebar lists databases and objects under 'SharedDevKey@EDS2021Container (dev)'. The main area contains a SQL console window titled 'SQL Console 1.sql' with the following complex query:

```
SELECT TOP 1000
    "AGENCYNUM",
    "NAME",
    "ORDERDAY",
    SUM("NUMBOOKINGS") AS "NUMBOOKINGS",
    SUM("DAYCOUNT") AS "DAYCOUNT"
FROM "EDS2021_HDI_DB_1"."Calc_BRT_Partners"
GROUP BY "AGENCYNUM", "NAME", "ORDERDAY"
```

Below the SQL code, the 'Result' tab displays the query results:

AGENCYNUM	NAME	ORDERDAY	NUMBOOKINGS	DAYCOUNT
00000122	Fly Low	THURSDAY	27869	4037
00000118	Asia By Plane	TUESDAY	27416	4004
00000101	Bella Italia	THURSDAY	27866	4038
00000284	Rainy, Stormy, Cloudy	MONDAY	27870	4108
00000109	Kangeroos	THURSDAY	27867	4095