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UTS Enterprise Development Software

SAP HANA

- MODULE 4 (Connecting to and creating data on the SAP HANA CLOUD data lake)

1. Jika belum running, running kan terlebih dahulu SAP HANA database dan data lake

The screenshot shows the SAP BTP Cockpit interface for managing SAP HANA Cloud resources. On the left, a sidebar lists various services: Applications, Services, SAP HANA Cloud (which is selected and highlighted in blue), SAP HANA Cloud Migrations, Routes, Security Groups, Events, and Members. The main content area is titled "SAP HANA Cloud" and displays a "SAP HANA Database Instance" table. The first row in the table is for the instance "191402015_NandaAmelia", which has a status of "Created". It shows "Memory 30 GB" and "CPU 2 vCPUs". To the right of the table, a context menu is open, listing options such as "Copy SQL Endpoint", "Copy Instance ID", and several "Open In" options for SAP HANA Cloud Central, Cockpit, Database Explorer, and SQL Console. Below the table, there is a section for "Data Lake Instances" containing one entry: "NandaAmelia_191402015" (also with a "Created" status). At the bottom of the page, there are links for "Help and Support", "Useful Links", and "Legal Information".

2. Buka open sql console

The screenshot shows the SAP HANA Cloud Central Instances page. A context menu is open for a database instance named 'Tugas2-EDS'. The menu options include:

- Edit
- Copy SQL Endpoint
- Copy Instance ID
- Copy Configuration
- Stop
- Upgrade
- Delete
- Open in SAP HANA Cockpit
- Open in SAP HANA Database Explorer
- Open SQL Console

The 'Open SQL Console' option is highlighted.

3. Buka remote source kemudian show remote source. Klik baguan SYSRDL#CG_SOURCE

The screenshot shows the SAP HANA Database Explorer interface. A context menu is open for a remote source named 'SYSRDL#CG_SOURCE'. The menu options include:

- Add Remote Source
- Show Remote Sources
- Import Catalog Objects
- Export Catalog Objects
- Open SQL Console Ctrl+Alt+C
- Copy Name Ctrl+C
- Refresh

The 'Show Remote Sources' option is highlighted.

4. Ceklis Database selanjutnya create virtual object

Remote Objects (3)				Create Virtual Object(s)
Database	Schema	Object	Type	
<input checked="" type="checkbox"/>	<NULL>	SYSRDL#CG	EVENT	TABLE
<input checked="" type="checkbox"/>	<NULL>	SYSRDL#CG	GKG	TABLE
<input checked="" type="checkbox"/>	<NULL>	SYSRDL#CG	MENTIONS	TABLE

5. Ketik HDCL_ dan pilih SFLIGHT

The screenshot shows the SAP HANA Database Explorer interface. A modal dialog titled "Create Virtual Objects" is open. In the dialog, the "Object Names Prefix:" field contains "HDCL_". The "Schema:" dropdown is set to "SFLIGHT", which is highlighted with a blue selection bar. Below the dropdown, a list of objects is displayed, including "SYS", "SYSHDL_SOURCE", "SYSHDL_MANAGER", "SYSHDL_MANAGERROTATOR", and "SYSHDL_VTCREATOR". At the bottom right of the dialog, there are "Create" and "Cancel" buttons.

6. CREATE

SAP HANA Database Explorer

SYSRDL#CG_SOURCE

Adapter Name: IQODBC
Source Location: indexserver

Database: <NULL> Schema: SYSRDL#CG Object: Type: ANY

Remote Objects (3)

Database	Schema	Object	Type
<NULL>	SYSRDL#CG	EVENT	TABLE
<NULL>	SYSRDL#CG	GKG	TABLE
<NULL>	SYSRDL#CG	MENTIONS	TABLE

- **MODULE 5 (Query Data on SAP HANA Cloud)**

1. Set SCHEMA SFLIGHT

SAP HANA Database Explorer

191402015_NandaAmelia (DBADMIN)

Set SCHEMA SFLIGHT;

Statement: Set SCHEMA SFLIGHT
Client elapsed time: 2.000 ms
Statement prepare time: 1.463 ms elapsed time, 0.9620 ms CPU time
Statement execute time: 0.2940 ms elapsed time, 0.1100 ms CPU time
Peak memory consumed: 3.096 MB

2. Query to create a new table SAGENCYDATA

The screenshot shows the SAP HANA Database Explorer interface. In the center, a SQL console window titled 'SQL Console 7.sql' contains the following SQL code:

```
CREATE TABLE SAGENCYDATTA AS (select SBOOK.AGENCYNUM, count(SBOOK.AGENCYNUM) as NUMBOOKINGS from SBOOK, STRAVELAG where SBOOK.AGENCYNUM=STRAVELAG.AGENCYNUM group by SBOOK.AGENCYNUM order by count(SBOOK.AGENCYNUM)desc);
```

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

Statement: CREATE TABLE SAGENCYDATTA AS (select SBOOK.AGENCYNUM, count(SBOOK.AGENCYNUM) as NUMBOOKINGS from ...
Client elapsed time: 54.00 ms
Statement prepare time: 4.145 ms elapsed time, 3.792 ms CPU time
Statement execute time: 52.77 ms elapsed time, 58.31 ms CPU time
Peak memory consumed: 6.861 MB

The left sidebar shows the database structure under '191402015_NandaAmelia (L)'.

3. Memanggil data SAGENCYDAT

The screenshot shows the SAP HANA Database Explorer interface. In the center, a SQL console window titled 'SQL Console 7.sql' contains the following SQL code:

```
SELECT * FROM SAGENCYDATTA
```

Below the code, the 'Result' tab displays the data from the table:

	AGENCYNUM	NUMBOOKINGS
1	00000284	27870
2	00000122	27869
3	00000109	27867
4	00000101	27866
5	00000118	27416
6	00000087	25936
7	00000061	25935
...

The left sidebar shows the database structure under '191402015_NandaAmelia (L)'.

4. Query to select the top 5 agencies

The screenshot shows the SAP HANA Database Explorer interface. In the top navigation bar, there are tabs for Trial Home, Instances - SAP HANA Cloud, Database Explorer, and a module-specific tab. The main area displays a SQL console with the following query:

```
1 SELECT TOP 5 SAGENCYDATA.AGENCYNUM,
2 STRAVELAG.NAME, SAGENCYDATA.NUMBOOKINGS FROM SAGENCYDATA INNER JOIN
3 STRAVELAG ON SAGENCYDATA.AGENCYNUM = STRAVELAG.AGENCYNUM;
```

The results are displayed in a table titled "Result" 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	00000118	Asia By Plane	27416

5. Query to create STOPAGENCY table

6.

The screenshot shows the SAP HANA Database Explorer interface. In the top navigation bar, there are tabs for Trial Home, Instances - SAP HANA Cloud, Database Explorer, and a module-specific tab. The main area displays a SQL console with the following query:

```
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 results are displayed in a table titled "Messages" with the following output:

```
Statement: CREATE TABLE STOPAGENCY AS (select top 5 SAGENCYDATA.AGENCYNUM, ...
Client elapsed time: 29.00 ms
Statement prepare time: 3.123 ms elapsed time, 2.833 ms CPU time
Statement execute time: 26.84 ms elapsed time, 25.09 ms CPU time
Peak memory consumed: 6.204 MB
```

7. Memanggil STOPAGENCY

The screenshot shows the SAP HANA Database Explorer interface. In the SQL Console tab, the query `SELECT * FROM STOPAGENCY` is run. The results are displayed in a table 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	00000118	Asia By Plane	27416

8. Query to create SAGBOOKDAYS table

The screenshot shows the SAP HANA Database Explorer interface. In the SQL Console tab, the following CREATE TABLE statement is run:

```
CREATE TABLE SAGBOOKDAY5 AS (select AGENCYNUM, dayname(ORDER_DATE) as ORDERDAY, count(dayname(ORDER_DATE)) as DAYCOUNT from SBOOK group by AGENCYNUM, dayname(ORDER_DATE));
```

The message panel displays the execution details:

Statement: CREATE TABLE SAGBOOKDAY5 AS (select AGENCYNUM, dayname(ORDER_DATE) as ORDERDAY, ...
Client elapsed time: 145.0 ms
Statement prepare time: 3.005 ms elapsed time, 3.301 ms CPU time
Statement execute time: 143.0 ms elapsed time, 478.4 ms CPU time
Peak memory consumed: 6.528 MB

9. Memanggil SAGBOOKDAYS

The screenshot shows the SAP HANA Database Explorer interface. In the top navigation bar, the URL is hana-cockpit.cfapps.eu10.hana.ondemand.com/hrrt/sap/hana/cst/catalog/cockpit-index.html?databaseid=C1124742&target=sqconsole. The main area displays a SQL console with the following query:

```
1+ SELECT * FROM SAGBOOKDAYSS
```

The results are shown in a table titled "Result" with 350 rows. The columns are AGENCYNUM, ORDERDAY, and DAYCOUNT. The data includes various agency numbers and their corresponding booking days and counts.

	AGENCYNUM	ORDERDAY	DAYCOUNT
1	00000121	SATURDAY	3406
2	00000087	SATURDAY	3708
3	00000301	FRIDAY	3523
4	00000124	FRIDAY	3476
5	00000152	THURSDAY	2734
6	00000222	SUNDAY	2849
7	00000101	SATURDAY	4001
8	00000000	THURSDAY	4000

10. QUERY to get the max booking days for each of the top 5 agencies

The screenshot shows the SAP HANA Database Explorer interface. In the top navigation bar, the URL is hana-cockpit.cfapps.eu10.hana.ondemand.com/hrrt/sap/hana/cst/catalog/cockpit-index.html?databaseid=C1124742&target=sqconsole. The main area displays a SQL console with the following query:

```
1+ SELECT SAGBOOKDAYS.AGENCYNUM, STOPAGENCY.NAME, SAGBOOKDAYS.ORDERDAY,  
2+ SAGBOOKDAYS.DAYCOUNT from SAGBOOKDAYS INNER JOIN STOPAGENCY on  
3+ SAGBOOKDAYS.AGENCYNUM=STOPAGENCY.AGENCYNUM where SAGBOOKDAYS.DAYCOUNT in  
4+ (select max(DAYCOUNT) from SAGBOOKDAYS group by AGENCYNUM);
```

The results are shown in a table titled "Result" with 5 rows. The columns are AGENCYNUM, NAME, ORDERDAY, and DAYCOUNT. The data lists the top 5 agencies based on total booking days, along with their names and booking days.

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

- Module 6 (Setting Up your First HANA project in SAP Business Application studio)

Trial – instance and subscription

Subaccount: trial - Overview

General

- Entitlements: 78
- Instances and Subscriptions: 5

Subdomain: 10f71b42trial
 Tenant ID: 12204d24-4ecd-4e60-9000-ef096d016c40
 Subaccount ID: 12204d2d-4ecd-4e60-9000-ef096d016c40
 Created On: 15 Sep 2021, 19:46:02 (GMT+07:00)
 Modified On: 15 Sep 2021, 19:46:17 (GMT+07:00)

Cloud Foundry Environment

- Org Name: 10f71b42trial
- API Endpoint: <https://api.cf.eu10.hana.ondemand.com>
- Spaces (1)
- Name Applications Service Instances

Cloud Foundry Environment

Org ID: bca2cb62-5c4b-4ef8-9f46-7b1479d550f3

Provider: Amazon Web Services (AWS) Used for Production: No
 Region: Europe (Frankfurt) Beta Features: Disabled

Subscribe - go to application

The screenshot shows the SAP BTP Cockpit interface. On the left, a sidebar lists various services like Services Marketplace, Instances and Subscriptions, Cloud Foundry, and SAP Business Application Studio. The main area displays the SAP Business Application Studio application details: Plan: trial, Status: Subscribed, Created On: 15 Sep 2021, and Changed On: 15 Sep 2021. It also shows a list of Subscriptions (1) and Instances (3). The status bar at the bottom indicates it's 14:40, 30°C, Hujan, and the date is 23/10/2021.

Create a new space : BestRunTravel kemudian create

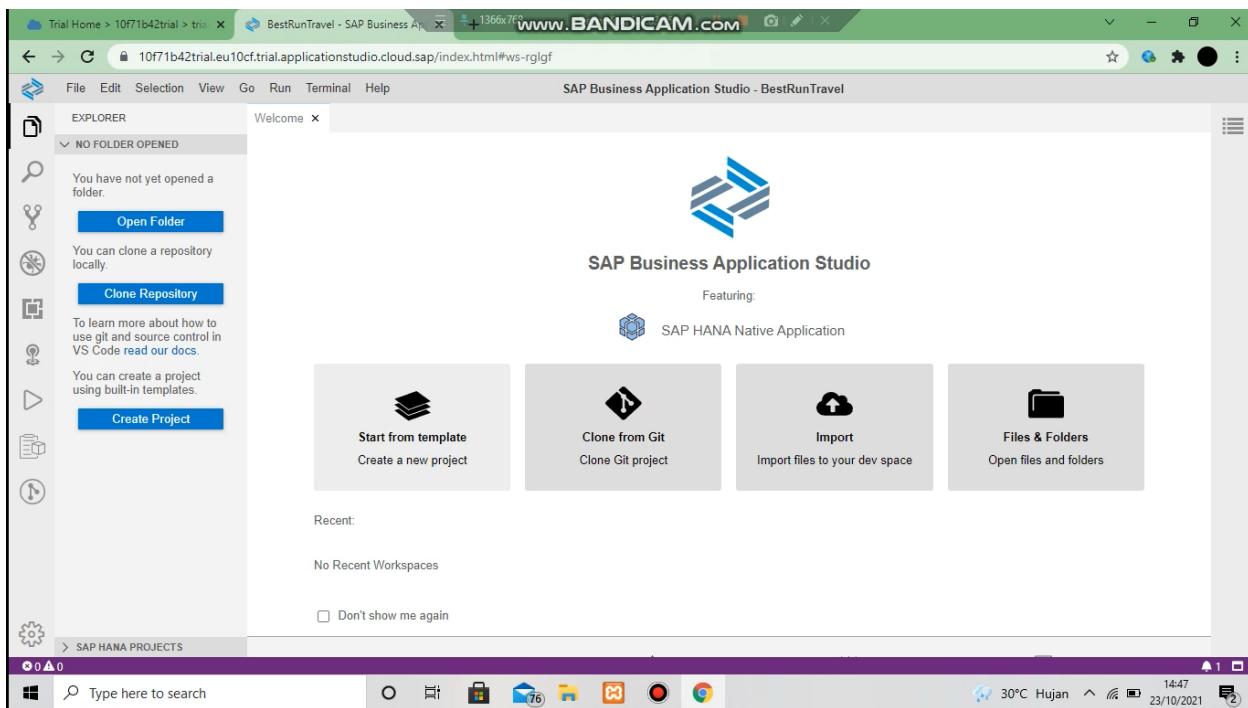
The screenshot shows the SAP Business Application Studio Dev Space Manager. A modal window titled "Create a New Dev Space" is open, showing the name "BestRunTravel" entered. Below the name, a tooltip provides validation rules: "The name must start with a letter or number and may contain any alphanumeric characters or underscores. Special characters can't be used." The "SAP HANA Native Application" option is selected. To the right, there are sections for "SAP HANA Native Application Dev Space" (describing native SAP HANA applications), "SAP Predefined Extensions" (listing Basic Tools, SAP HANA Calculation View Editor, and SAP HANA Database Explorer), and "Additional SAP Extensions" (listing SAPUI5 Adaptation Project, CDS Graphical Modeler, and CAP Tools). At the bottom right of the modal are "Cancel" and "Create Dev Space" buttons.

Kita tunggu sampai runing

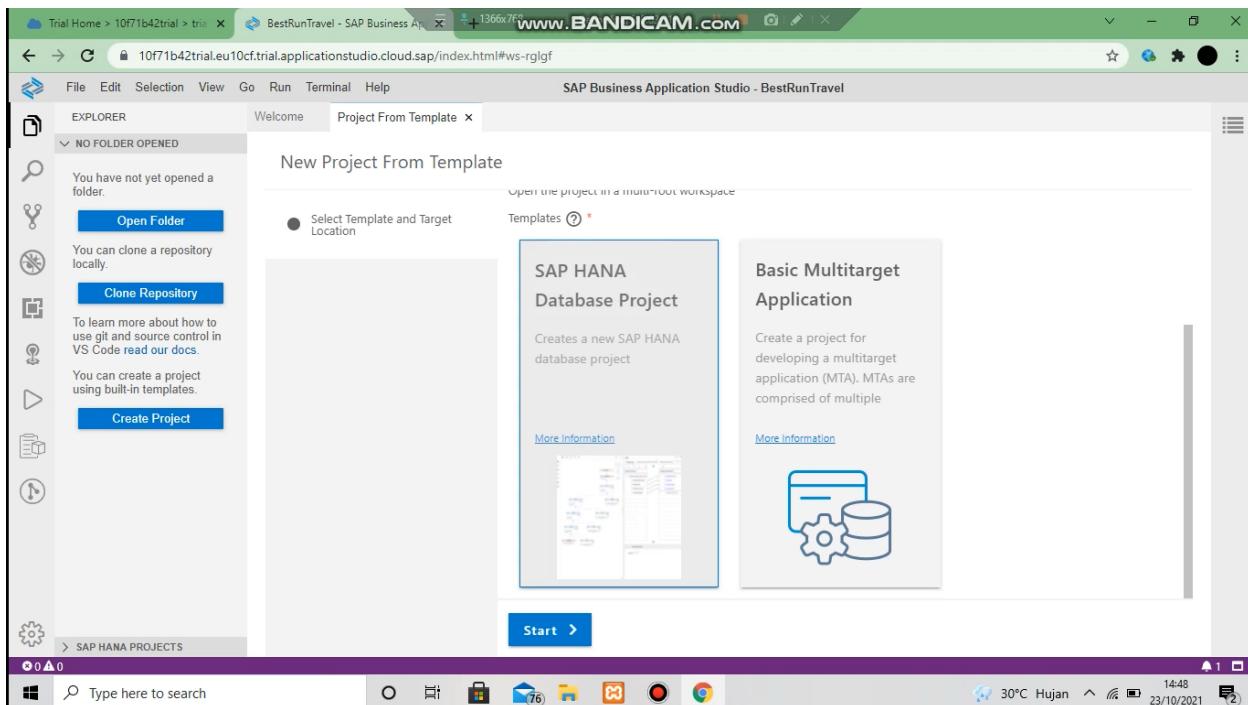
The screenshot shows the SAP Business Application Studio Dev Spaces interface. A dev space named "BestRunTravel" is listed, categorized as a "SAP HANA Native Application". The status is "STARTING". It was created on 23/10/2021 at 14:43. The ID is ws-rglhf. The disk usage is currently unavailable. There are standard icons for edit, delete, and download.

The screenshot shows the SAP Business Application Studio Dev Spaces interface again. The dev space "BestRunTravel" is now in a "RUNNING" state. It was created on 23/10/2021 at 14:43. The ID is ws-rglhf. The disk usage is 16 MB / 3.9 GB. The interface includes a search bar, a toolbar with various icons, and a system tray at the bottom showing the date and time as 23/10/2021 14:43.

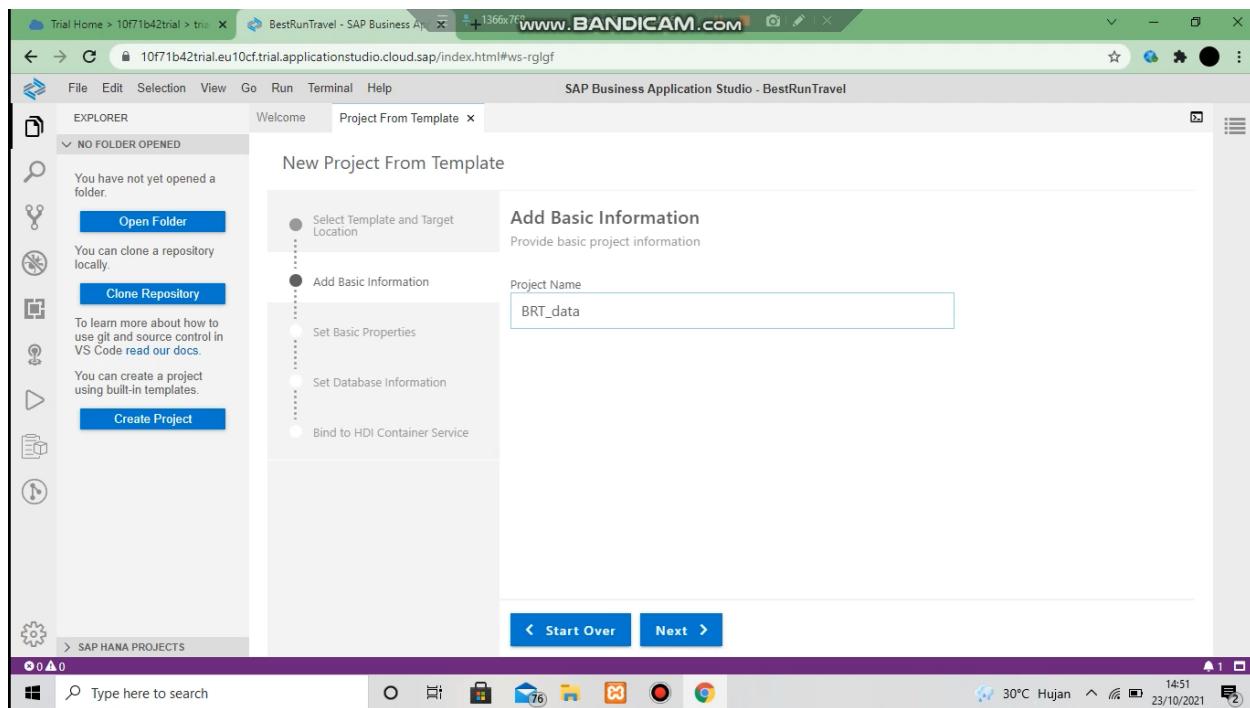
Start from template



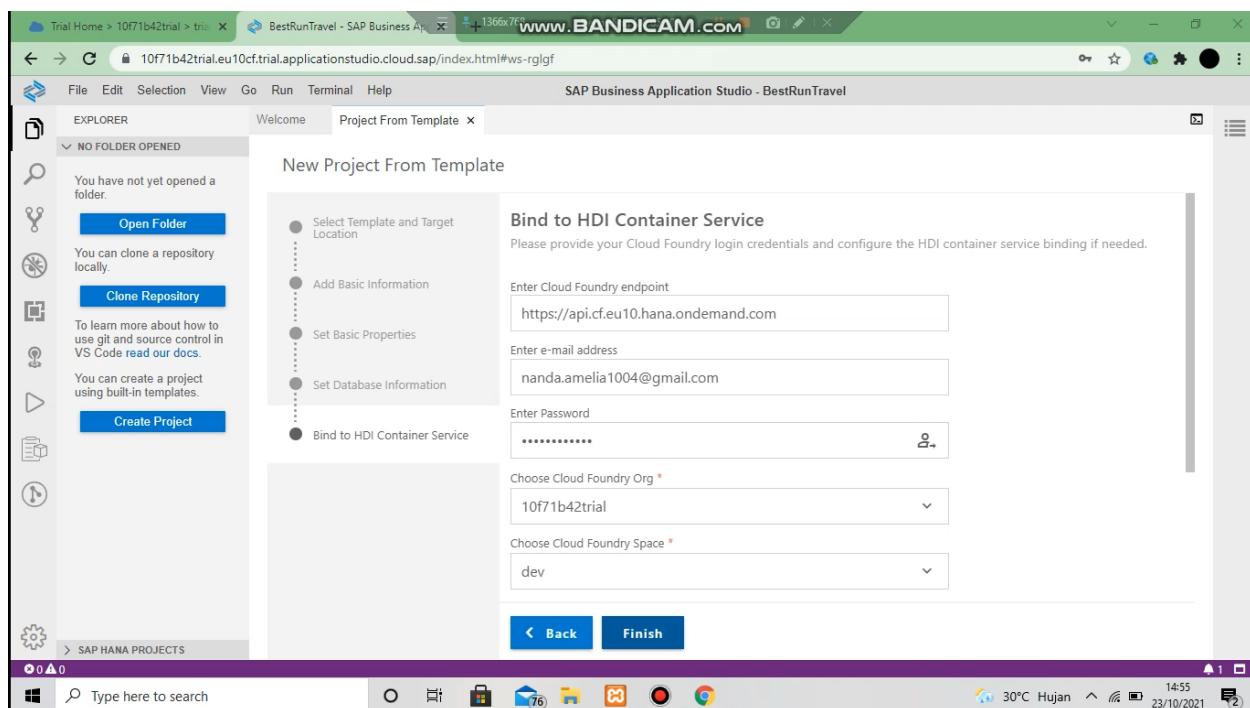
Start saphana database project

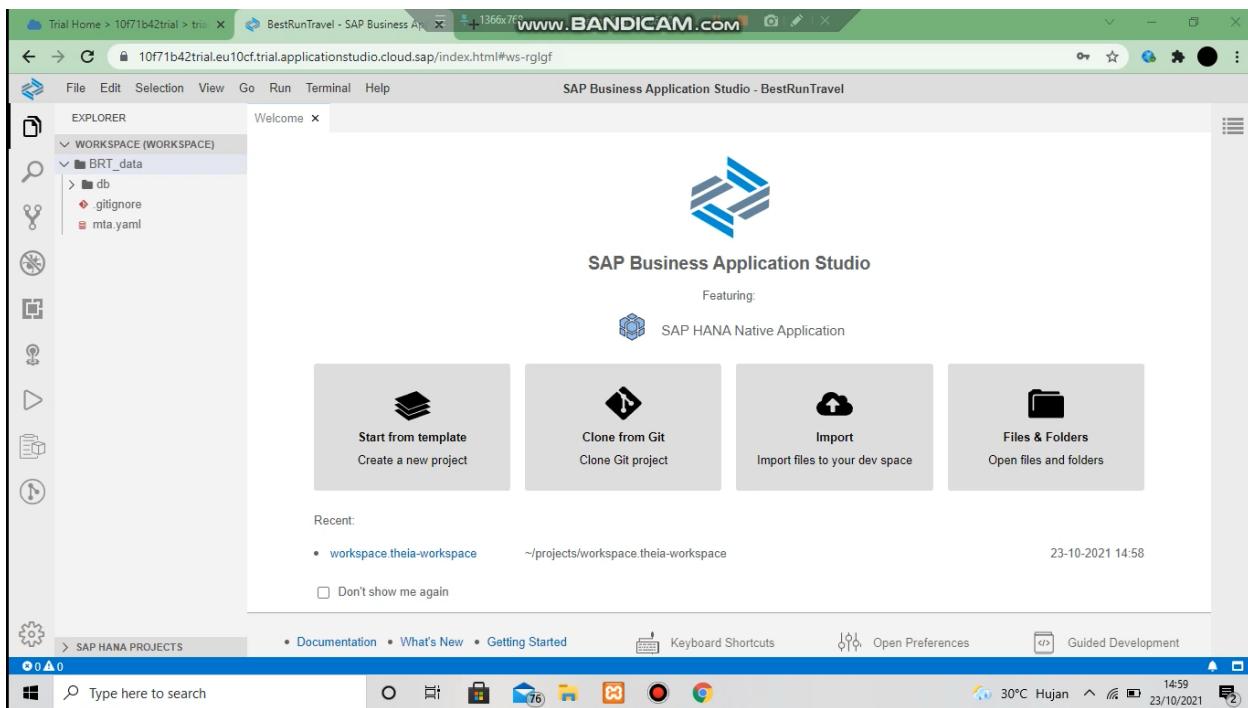


Project name : BRT_data

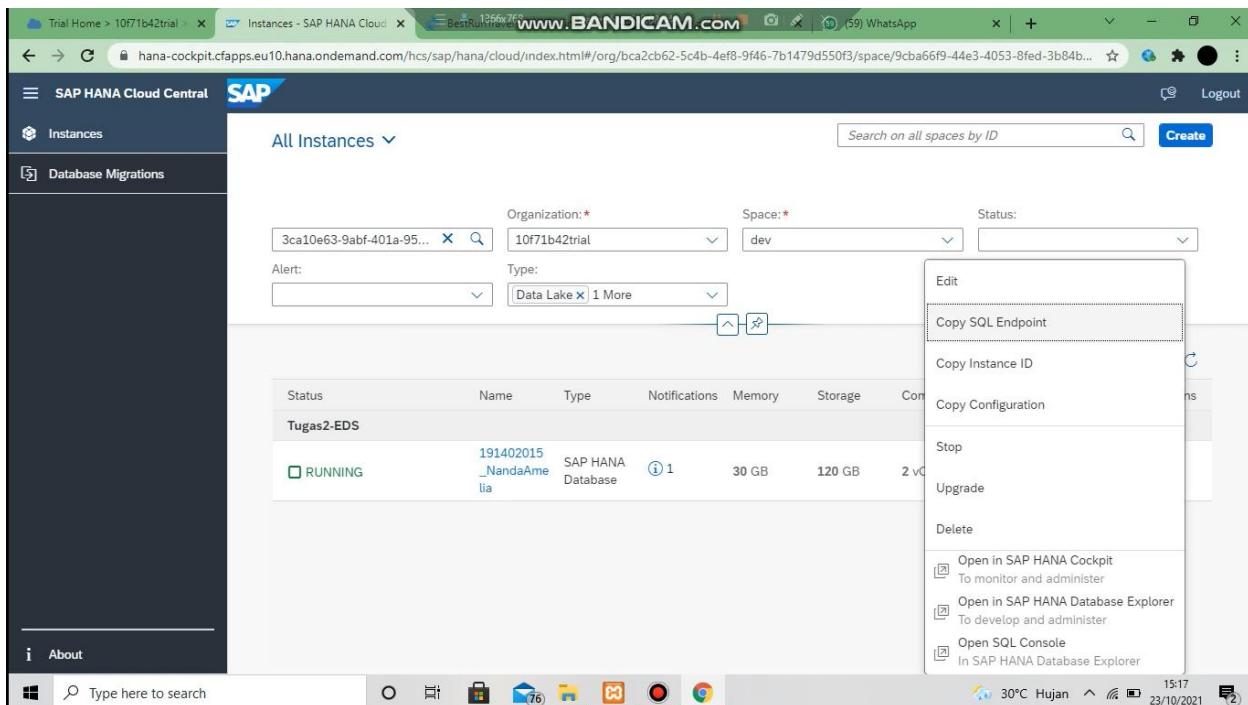


Masukkan email dan password kemudian finish





Copy sql end point



Paste kan sql ke file berikut

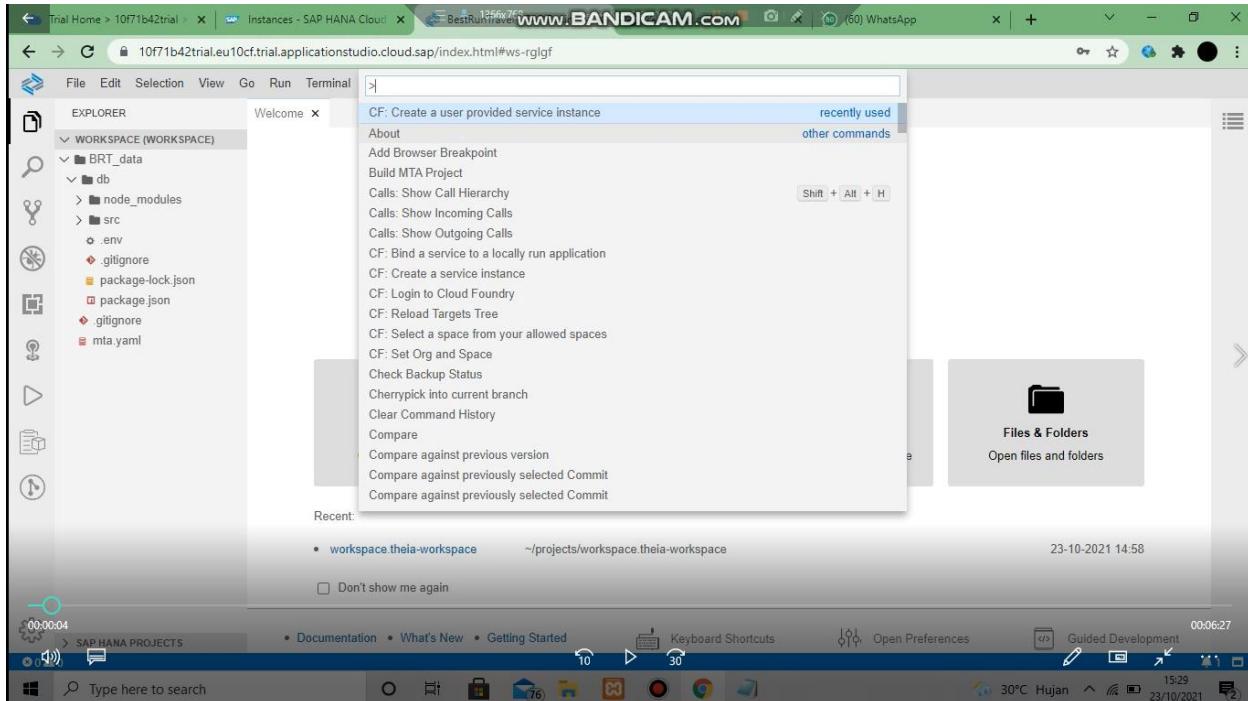
```

*certificate - Notepad
File Edit Format View Help
"host": "3ca10e63-9abf-401a-9518-19b1c730a53f.hana.trial-eu10.hanacloud.ondemand.com",
"port": "443",
"user": "<@DBADMIN>",
"password": "<Kesayangan1.>",
"driver": "com.sap.db.jdbc.Driver",
"tags": [
"hana"
],
"endpoint": "https://api.cf.sap.hana.ondemand.com",
"encrypt": true,
"validate_certificate": true,
"certificate": "-----BEGIN CERTIFICATE-----\nMIIDrzCCApegAwIBAgIQCQDvgVpCRrGhdWjWZHHSjANBgkqhkiG9w0BAQUFADBh\nnMQswC\nQDVQQGEwJVUzEVMBIGA1UEChMMRGInaUNIcnQgSw5JMRAwFwYDVQQLExB3\nnd3czGlnawNI\ncnQuY29tMSAwHgYDVQQLExdEaWdp02VydCBhbG91YwglUm9vdCD\nn7QTAeFw0wNjExMTAwMDA\nwMDAwMDBaMGExCzA3BqNVBAYTA1VT\nmRUwEwYDVQQLExEwAldpQ2VydC\nBjbmMxGTAXBgNVBAsTEHd3y5kaIdpV2ydc5jnb20xIDaBjNVBAMTFRpZ21DZXJIEdsb\n23hbCBsb290IE8MII1B1jANBgkqhkiG9w0BAQEFAAOCAQ8AMII1BcgkCAQEAAjvhExLegTT\no1eqUKPC3eQyaK17hL011sB\nnCSMAZonTjC3U/dBxGKA531jSLdhwZAIEzs4bg7/fzTt\nxRulWzscFs3nf097\nnnhh6Fe63SM12tavew5BmV/S10FvBf7q77uNld0f3p4mFag5cIz\nJl\nv07A6Ppt/n43C/dxC//AH2hdm0RBByMq11GNRorSH4idq9jox+EkIYiuvX7Q6h+hqkpMf\nT7Pvn19sd16gSzeRntw15m30FBqQasv+zBMUZBfHwmeM\n/7rvTC0Lqz7Bmt0M0/4/ngd\nw7Jp/TrvSSiicloxBL33shbTApoB6jtsjletX+jkMoVjwIDAQABo2MwYTao\nnBgNvH088A\n#8EBAMCAYYwDwDV/RTAQH/BALuWAvEB/zAdBgNvH04EfgoQU95QWbR\nnLtm8KP1Gxv01719\n0VJuHwYDVR0jBggwFoAU95QWbRTLtm8KP1Gxv017190VJu\nnDQYJKoZIhvcNAQEFBQADggE\nBAMcN6pIExiK-t1EnE95sPtTfrgT1exKtOyQ\n/Fsr/nhMatudxH/vTBHjLuGzenc1nmCmrEb\nXjckChzlyImZ0MkD1qw8cvOp/2PV5Adg\nn60\n/VsJ8dNo41P0jmP6P6fbtGbYmbw0V5bj\nfIttep3Sp+dwOIrCwBAT+0tK1JF\nnPlukiaY4IBIqDfv8NZ5YBber0gzw6sRBc4l0na4UU+\nKrk2U886Uab3LujEV01s\\YSEY1QSteDwsQb0rp+uvFRTp21nBuThs4pFsi9kuXc1VzDAGyS\nj4dzp30d8tbQk\\nCAUw7C29C79Fv1C5qfPrmAEsrciIxpgoX40KPMbp1ZWbd4=\n-----END\nCERTIFICATE-----"

```



Kemudian buka view dan masukkan name MBRT, didalam {} masukkan file yang telah kita copy tadi



Masukkan file berikut

The screenshot shows the SAP Business Application Studio interface with the title "SAP Business Application Studio - BestRunTravel". The left sidebar shows the "EXPLORER" view with a tree structure of the workspace, including "WORKSPACE (WORKSPACE)", "BRT_data", "db", "node_modules", "src", "hdiconfig", and "SFLIGHT.hdbgrants". The "SFLIGHT.hdbgrants" file is selected. The main editor area displays the following JSON content:

```
1 "MyConnection": {  
2   "object_owner": {  
3     "schema_privileges": [  
4       {  
5         "reference": "SFLIGHT",  
6         "privileges_with_grant_option": ["SELECT"]  
7       }  
8     ]  
9   },  
10  "application_user": {  
11    "schema_privileges": [  
12      {  
13        "reference": "SFLIGHT",  
14        "privileges_with_grant_option": ["SELECT"]  
15      }  
16    ]  
17  }  
18}  
19}  
20}  
21}
```

The status bar at the bottom indicates "Ln 1, Col 1 LF UTF-8 Spaces: 4 JSON with Comments".

Edit file berikut menjadi seperti ini

The screenshot shows the SAP Business Application Studio interface with the title "SAP Business Application Studio - BestRunTravel". The left sidebar shows the "EXPLORER" view with a tree structure of the workspace, including "WORKSPACE (WORKSPACE)", "BRT_data", "db", "node_modules", "src", "hdiconfig", and "SFLIGHT.hdbgrants". The "mta.yaml" file is selected. The main editor area displays the following YAML content:

```
1 _schema-version: "2.1"  
2 ID: BRT_data  
3 version: 0.0.1  
4 modules:  
5 - name: db  
6   type: hdb  
7   path: db  
8   requires:  
9     - name: hd1_db  
10    properties:  
11      TARGET_CONTAINER: ~{hd1-container-name}  
12    - name: MVBR  
13   resources:  
14     - name: hd1_db  
15       type: com.sap.xs.hdi-container  
16       properties:  
17         hd1-container-name: ${service-name}  
18     - name: MVBR  
19       type: org.cloudfoundry(existing-service)  
20
```

The status bar at the bottom indicates "Ln 19, Col 42 LF UTF-8 Spaces: 2 YAML".

Deploy module

