

# Introduction to ABAP in the Cloud

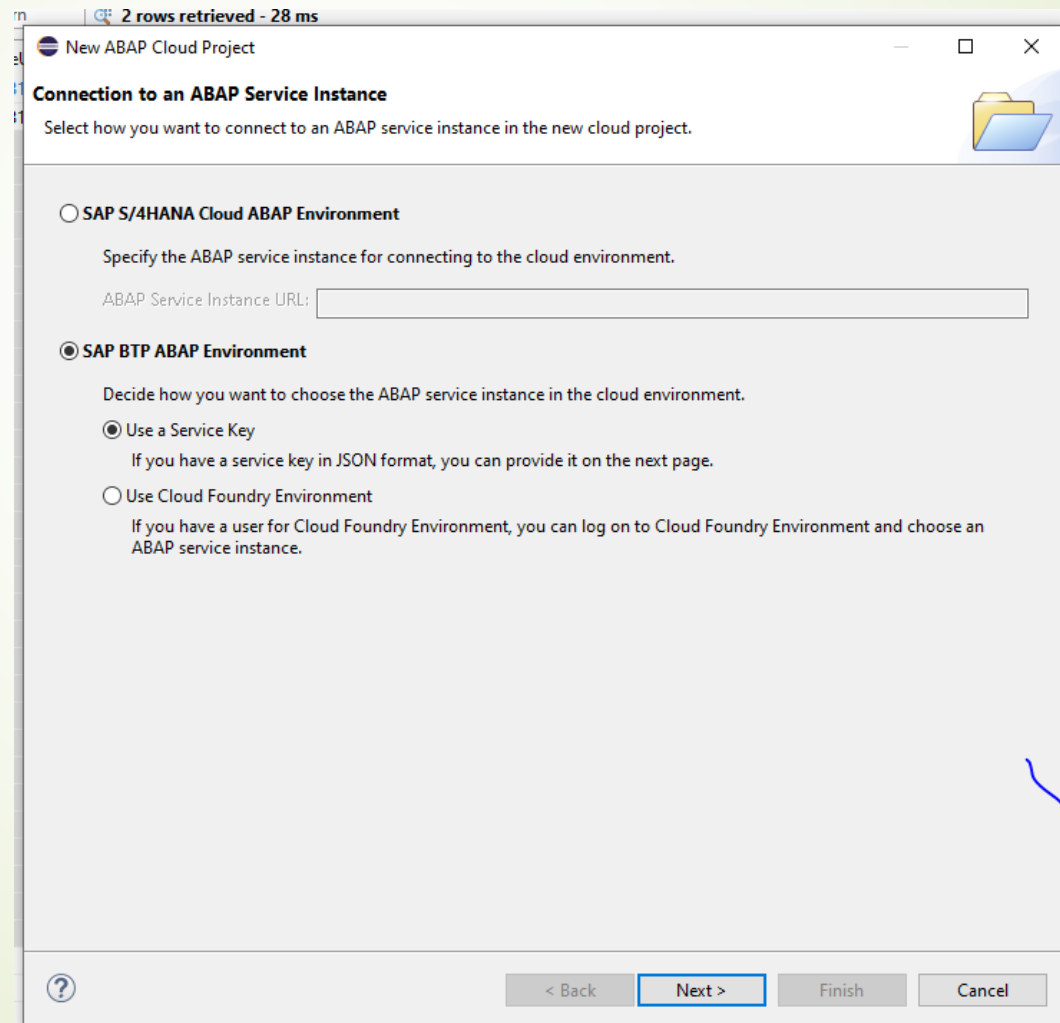
## – how to do side-by-side extensions

*Free SAP learning course*

*<https://learning.sap.com/courses/introduction-to-abap-in-the-cloud>*

# Project built in Eclipse with ADT installed with connection to BTP Cloud

## 1. Create new ABAP cloud project & connect to SAP Cloud System:



2 rows retrieved - 28 ms

New ABAP Cloud Project

**Connection to an ABAP Service Instance**

Select how you want to connect to an ABAP service instance in the new cloud project.

☐ SAP S/4HANA Cloud ABAP Environment

Specify the ABAP service instance for connecting to the cloud environment.

ABAP Service Instance URL:

☒ **SAP BTP ABAP Environment**

Decide how you want to choose the ABAP service instance in the cloud environment.

☒ Use a Service Key



If you have a service key in JSON format, you can provide it on the next page.

☐ Use Cloud Foundry Environment

If you have a user for Cloud Foundry Environment, you can log on to Cloud Foundry Environment and choose an ABAP service instance.

? < Back Next > Finish Cancel

Insert service key in JSON format previously saved from btp cloud:



**New ABAP Cloud Project**


**System Connection Using a Service Key**


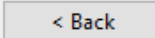
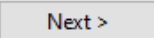
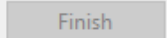
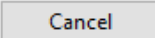
Add the service key in JSON format

Service Key in JSON Format

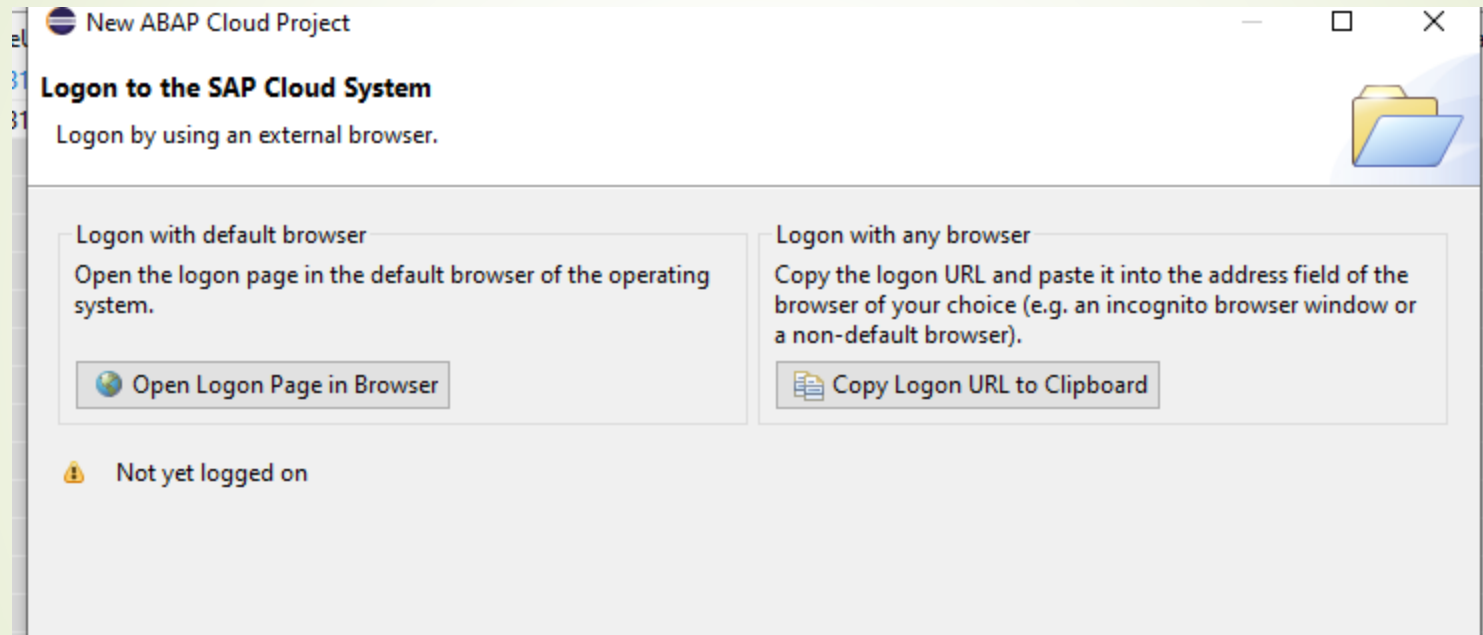
```
{
  "uaa": {
    "tenantmode": "dedicated",
    "sburl": "https://internal-xsuaa.authentication.us10.hana.ondemand.com",
    "subaccountid": "b0922629-2913-4ca7-9433-6b107f9aff6c",
    "credential-type": "binding-secret",
    "clientid": "sb-857158bd-5371-40e9-8fcc-a7edc480a9f2!b343505|abap-trial-service-broker!b3132",
    "xsappname": "857158bd-5371-40e9-8fcc-a7edc480a9f2!b343505|abap-trial-service-broker!b3132",
    "clientsecret": "706c8f10-31cb-4dba-b016-28e9f6d48704$U1IPth6k3jYg37e2eqqRfFBddId_8FoWyKmF9_wUY68=",
    "serviceinstanceid": "857158bd-5371-40e9-8fcc-a7edc480a9f2",
    "url": "https://73c1a634trial.authentication.us10.hana.ondemand.com",
    "uaadomain": "authentication.us10.hana.ondemand.com",
    "verificationkey": "-----BEGIN PUBLIC KEY-----\nMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA6c0O5PpnCjk7g4",
    "apiurl": "https://api.authentication.us10.hana.ondemand.com",
    "identityzone": "73c1a634trial",
    "identityzoneid": "b0922629-2913-4ca7-9433-6b107f9aff6c",
    "tenantid": "b0922629-2913-4ca7-9433-6b107f9aff6c",
    "zoneid": "b0922629-2913-4ca7-9433-6b107f9aff6c"
  },
  "url": "https://23bf02f0-9d4d-4fe7-ae57-cab54ffafb1e.abap.us10.hana.ondemand.com",
  "sap.cloud.service": "com.sap.cloud.abap",
  "systemid": "TRL",
  "endpoints": {
    "abap": "https://23bf02f0-9d4d-4fe7-ae57-cab54ffafb1e.abap.us10.hana.ondemand.com"
  },
  "catalogs": {

```

 Import...


    

# Choose 1 of 2 options & login into SAP Cloud system:



## 2. Create table zcourse\_osap1:

```
@EndUserText.label : 'Course Table'
@AbapCatalog.enhancement.category : #NOT_EXTENSIBLE
@AbapCatalog.tableCategory : #TRANSPARENT
@AbapCatalog.deliveryClass : #A
@AbapCatalog.dataMaintenance : #RESTRICTED
define table zcourse_osap1 {
  key client      : abap.clnt not null;
  key course_uuid : abap.raw(16) not null;
  course_id       : abap.char(10);
  course_name     : abap.sstring(60);
  course_length   : abap.int1;
  country         : land1;
  @Semantics.amount.currencyCode : 'zcourse_osap2.currency_code'
  price          : abap.curr(6,2);
  currency_code   : abap.cuky;
  last_changed_at : timestamp1;
  local_last_changed_at : timestamp1;
```



```
@Semantics.amount.currencyCode : 'zcourse_osap2.currency_code'  
price : abap.curr(6,2);  
currency_code : abap.cuky;  
last_changed_at : timestamp;  
local_last_changed_at : timestamp;
```

### 3. Create table zschedule\_osap1:

```
@EndUserText.label : 'Schedule Table'  
@AbapCatalog.enhancementCategory : #NOT_EXTENSIBLE  
@AbapCatalog.tableCategory : #TRANSPARENT  
@AbapCatalog.deliveryClass : #A  
@AbapCatalog.dataMaintenance : #RESTRICTED  
define table zschedule_osap1 {  
  key client : abap.clnt not null;  
  key schedule_uuid : abap.raw(16) not null;  
  course_begin : abap.dats;  
  course_uuid : abap.raw(16);  
  location : abap.sstring(60);  
  trainer : abap.sstring(60);  
  is_online : abap_boolean;  
  last_changed_at : timestamp;  
  local_last_changed_at : timestamp;  
}
```



#### 4. Create class to fill created tables with data:

```
CLASS zcl_test_data_zcourse_osap1 DEFINITION  
  PUBLIC  
  FINAL  
  CREATE PUBLIC .  
  
  PUBLIC SECTION.  
  
  INTERFACES if_oo_adt_classrun .  
  PROTECTED SECTION.  
  PRIVATE SECTION.  
ENDCLASS.
```

## CLASS zcl\_test\_data\_zcourse\_osap1 IMPLEMENTATION.

METHOD if\_oo\_adt\_classrun~main.


DATA: lt\_course TYPE STANDARD TABLE OF zcourse\_osap1 WITH EMPTY KEY,  
lt\_schedule TYPE STANDARD TABLE OF zschedule\_osap1 WITH EMPTY KEY.

TRY.

```
lt_course = VALUE #(
  ( course_uuid = cl_system_uuid=>create_uuid_x16_static( )
    course_id = 'BC400'
    course_name = 'ABAP Development'
    course_length = 5
    country = 'DE'
    price = 1000
    currency_code = 'EUR' )
```

```
( course_uuid = cl_system_uuid=>create_uuid_x16_static( )
  course_id = 'BC401'
  course_name = 'ABAP Objects'
  course_length = 5
  country = 'DE'
  price = 1000
  currency_code = 'EUR' )
```





```
( course_uuid = cl_system_uuid=>create_uuid_x16_static( )  
  course_id = 'BC402'  
  course_name = 'ABAP Advanced Development'  
  course_length = 5  
  country = 'DE'  
  price = 1000  
  currency_code = 'EUR' ) ).
```

```
DELETE FROM zcourse_osap1.
```

```
INSERT zcourse_osap1 FROM TABLE @lt_course.
```

```
out->write( |{ sy-dbcnt } entries in ZCOURSE_osap1 modified| ).
```

```
lt_schedule = VALUE #(
```

```
( schedule_uuid = cl_system_uuid=>create_uuid_x16_static( )  
  course_uuid = lt_course[ 1 ]-course_uuid  
  course_begin = '20200301'  
  trainer = 'John Doe'  
  is_online = abap_false  
  location = 'Walldorf' )
```

## 5. Create CDS ZI\_COURSE\_O SAP1 :

```
@AccessControl.authorizationCheck: #CHECK
@EndUserText.label: 'Data Definition for ZCOURSE_O SAP1'
define root view entity ZI_COURSE_O SAP1 as select from zcourse_osap1 as Course
  composition [0..*] of ZI_SCHEDULE_O SAP1 as _Schedule
  association [0..1] to I_Currency      as _Currency on $projection.CurrencyCode =
    _Currency.Currency
  association [0..1] to I_Country      as _Country on $projection.Country = _Country.Country

{
  key Course.course_uuid      as CourseUuid,
    Course.course_id          as CourseId,
    Course.course_name        as CourseName,
    Course.course_length      as CourseLength,
    Course.country            as Country,
    Course.price              as Price,
    Course.currency_code      as CurrencyCode,
    @Semantics.systemDateTime.lastChangedAt: true
    Course.last_changed_at    as LastChangedAt,
    @Semantics.systemDateTime.localInstanceLastChangedAt: true
    Course.local_last_changed_at as LocalLastChangedAt,


    _Schedule,
    _Currency,
    _Country
}
```

## 6. Create CDS ZI\_SCHEDULE\_O SAP1 :

```
@AccessControl.authorizationCheck: #CHECK
@EndUserText.label: 'Data Definition for ZCOURSE_O SAP1'
define root view entity ZI_COURSE_O SAP1 as select from zcourse_osap1 as Course
  composition [0..*] of ZI_SCHEDULE_O SAP1 as _Schedule
  association [0..1] to I_Currency      as _Currency on $projection.CurrencyCode =
    _Currency.Currency
  association [0..1] to I_Country      as _Country on $projection.Country = _Country.Country

{
  key Course.course_uuid      as CourseUuid,
    Course.course_id          as CourseId,
    Course.course_name        as CourseName,
    Course.course_length      as CourseLength,
    Course.country            as Country,
    Course.price              as Price,
    Course.currency_code      as CurrencyCode,
    @Semantics.systemDateTime.lastChangedAt: true
    Course.last_changed_at    as LastChangedAt,
    @Semantics.systemDateTime.localInstanceLastChangedAt: true
    Course.local_last_changed_at as LocalLastChangedAt,

    _Schedule,
    _Currency,
    _Country
}
```



```
( schedule_uuid = cl_system_uuid=>create_uuid_x16_static( )  
  course_uuid = lt_course[ 2 ]-course_uuid  
  course_begin = '20200308'  
  trainer = 'Mary Jane'  
  is_online = abap_true  
  location = 'VLC' ) ).
```

```
DELETE FROM zschedule_osap1.
```

```
INSERT zschedule_osap1 FROM TABLE @lt_schedule.
```

```
out->write( |{ sy-dbcnt } entries in ZSCHEDULE_osap1 modified| ).
```

```
COMMIT WORK.
```

```
CATCH cx_uuid_error.
```

```
  "handle exception
```

```
ENDTRY.
```

```
ENDMETHOD.
```

```
ENDCLASS.
```

## 5. Create consumption cds view ZC\_COURSE\_OSAP1 :

@EndUserText.label: 'Projection view for ZI\_COURSE\_OSAP1'

@AccessControl.authorizationCheck: #CHECK

@Search.searchable: true

@Metadata.allowExtensions: true

define root view entity ZC\_COURSE\_OSAP1 as projection on ZI\_COURSE\_OSAP1

```
{
  key CourseUuid,
    @Search.defaultSearchElement: true
  CourseId,
    @Search.defaultSearchElement: true
  CourseName,
  CourseLength,
    @Search.defaultSearchElement: true
  @Consumption.valueHelpDefinition: [{ entity: { name: 'I_Country', element: 'Country'}}]
  Country,
    @Semantics.amount.currencyCode: 'CurrencyCode'
  Price,
    @Consumption.valueHelpDefinition: [{ entity: { name: 'I_Currency', element: 'Currency'}}]
  CurrencyCode,
  LastChangedAt,
  LocalLastChangedAt,

  /* Associations */
  _Country,
  _Currency,
  _Schedule : redirected to composition child ZC_SCHEDULE_OSAP2
}
```



## 6. Create consumption cds view ZC\_SCHEDULE\_O SAP1:

@EndUserText.label: 'Projection view for ZI\_SCHEDULE\_O SAP1'

@AccessControl.authorizationCheck: #CHECK

@Search.searchable: true

@Metadata.allowExtensions: true

define view entity ZC\_SCHEDULE\_O SAP1 as projection on ZI\_SCHEDULE\_O SAP1

```
{  
  key ScheduleUuid,  
    CourseBegin,  
    CourseUuid,  
    @Search.defaultSearchElement: true  
  Location,  
    @Search.defaultSearchElement: true  
  Trainer,  
  IsOnline,  
  LastChangedAt,  
  LocalLastChangedAt,
```

```
  /* Associations */
```

```
  _Course : redirected to parent ZC_COURSE_O SAP2
```

```
}
```



## 7. Create METADATA EXTENSION for ZC\_COURSE\_O SAP1

### @Metadata.layer: #CORE

```
@UI: {  
  headerInfo: { typeName: 'Course',  
                typeNamePlural: 'Courses',  
                title: { type: #STANDARD, value: 'CourseId' } },  
  
  presentationVariant: [{ sortOrder: [{ by: 'CourseId', direction: #ASC }] }] }  
  
annotate view ZC_COURSE_O SAP1 with  
{  
  @UI.facet: [ { id:      'Course',  
                 purpose:  #STANDARD,  
                 type:     #IDENTIFICATION_REFERENCE,  
                 label:    'Course Details',  
                 position:  10 },  
    { id:      'Schedule',  
      purpose:  #STANDARD,  
      type:     #LINEITEM_REFERENCE,  
      label:    'Schedule List',  
      position:  20,  
      targetElement: '_Schedule' } ]
```



```
@UI.hidden: true  
CourseUuid;
```

```
@UI: { lineItem: [ { position: 10, label: 'Course ID' } ],  
  identification: [ { position: 10, label: 'Course ID' } ],  
  selectionField: [ { position: 10 } ] }  
CourseId;
```

```
@UI: { lineItem: [ { position: 20, label: 'Course Name' } ],  
  identification: [ { position: 20, label: 'Course Name' } ],  
  selectionField: [ { position: 20 } ] }  
CourseName;
```

```
@UI: { lineItem: [ { position: 30 } ],  
  identification: [ { position: 30 } ],  
  selectionField: [ { position: 30 } ] }  
Country;
```

```
@UI: { lineItem: [ { position: 40, label: 'Length' } ],  
  identification: [ { position: 40, label: 'Length' } ] }  
CourseLength;
```

```
@UI: { lineItem: [ { position: 50, label: 'Price' } ],  
  identification: [ { position: 50, label: 'Price' } ] }  
Price;
```

```
@UI: { identification: [ { position: 70, label: 'Last Changed' } ] }  
LastChangedAt;
```

```
@UI.hidden: true  
LocalLastChangedAt;  
}
```

## 8. Create METADATA EXTENSION for ZC\_SCHEDULE\_O SAP1 :

@Metadata.layer: #CORE

@UI: {

headerInfo: { typeName: 'Schedule',  
                  typeNamePlural: 'Schedules',  
                  title: { type: #STANDARD, value: 'CourseBegin' } },

presentationVariant: [{ sortOrder: [{ by: 'CourseBegin', direction: #ASC }] }] }


annotate view ZC\_SCHEDULE\_O SAP1 with

{

@UI.facet: [ { id: 'Schedule',  
                  purpose: #STANDARD,  
                  type: #IDENTIFICATION\_REFERENCE,  
                  label: 'Schedule Details',  
                  position: 10 } ]

@UI.hidden: true

ScheduleUuid;



```
@UI: { lineltem:    [ { position: 10, label: 'Begin' } ],  
      identification: [ { position: 10, label: 'Begin' } ] }  
CourseBegin;
```

```
@UI.hidden: true  
CourseUuid;
```

```
@UI: { lineltem:    [ { position: 20, label: 'Location' } ],  
      identification: [ { position: 20, label: 'Location' } ] }  
Location;
```

```
@UI: { lineltem:    [ { position: 30, label: 'Instructor' } ],  
      identification: [ { position: 30, label: 'Instructor' } ] }
```

```
Trainer;
```

```
@UI: { lineltem:    [ { position: 40, label: 'Online' } ],  
      identification: [ { position: 40, label: 'Online' } ] }  
IsOnline;
```

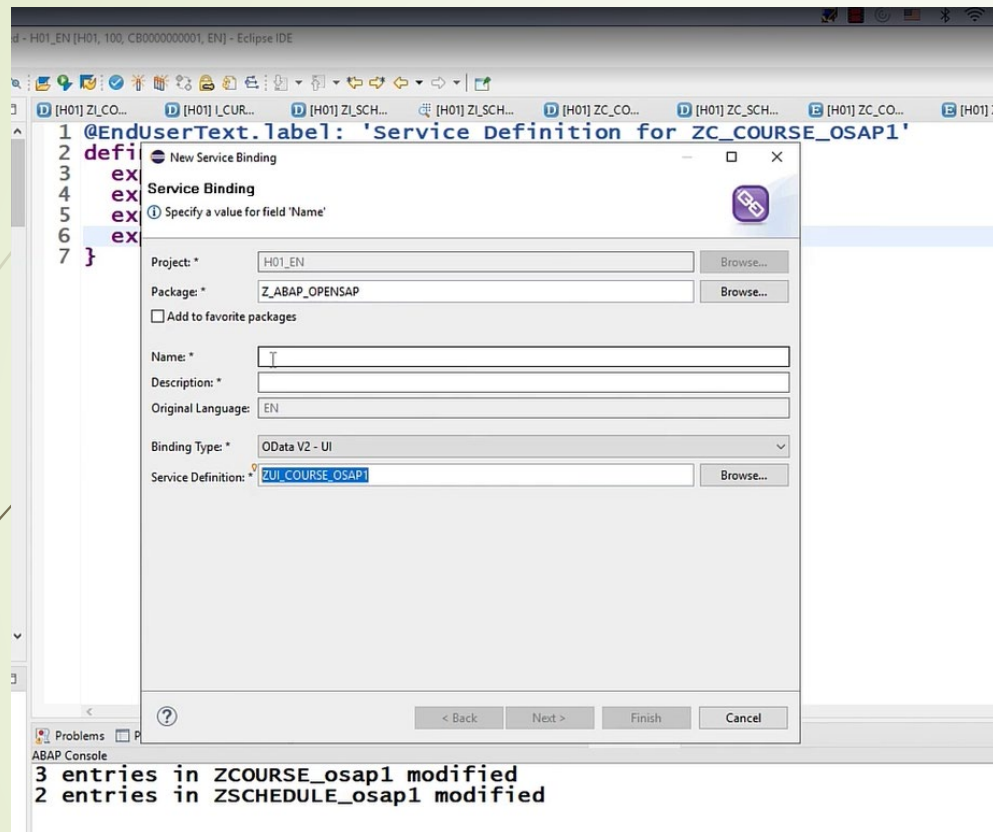
```
@UI:{ lineltem:    [ { hidden: true } ],  
      identification: [ { position: 50, label: 'Last Change' } ] }  
LastChangedAt;
```

```
@UI.hidden: true  
LocalLastChangedAt;  
}
```

## 9. Create service definition:

```
@EndUserText.label: 'Service definition'  
define service ZUI_COURSE_OSAP1 {  
  expose ZC_COURSE_OSAP1 as Course;  
  expose ZC_SCHEDULE_OSAP1 as Schedule;  
  expose I_Country as Country;  
  expose I_Currency as Currency;  
}
```

## 10. Create service binding :







# PUBLISH & PREVIEW:

23bf02f0-9d4d-4fe7-ae57-cab54ffafb1e.abap-web.us10.hana.ondemand.com/sap/bc/adt/businessservices/odatav2/feap/ngVsWcfigYscgUdF77W77777ngVsWcfigYscgUdFsjUb77DDDE/index.html?sap-ui-xx-viewCache=false&sap-ui-l...

Welcome to Week 1... SAP Easy Access SAP S/4HANA - Lea... Hello World - GitHu... Archive of Ritual Ob... MARCY... מולטימדיה API Reference - De... (25) How To Create... First Web Dynpro D... SAP Web Dynpro -... sapes5.sapdevcente...

Google Chrome isn't your default browser Set as default

Standard

Search

Adapt Filters Enter

Bank Account ...	Bank Key	Bank Numb...	Country/Region Key	Country/Region Name	EU Member	Indicator: Use ...	ISO code	ISO Code 3...	ISO Code N...	Length of B...	Rule For Chec...	Rule For Chec...
			Andorra 1 German (AD)	Andorra 1 German	No	No	AD	AND	20			>
			United Arab Emirates (AE)	United Arab Emirates	No	No	AE	ARE	784			>
			Afghanistan (AF)	Afghanistan	No	No	AF	AFG	4			>
			Antigua and Barbuda (AG)	Antigua and Barbuda	No	No	AG	ATG	28			>
			Anguilla (AI)	Anguilla	No	No	AI	AIA	660			>
			Albania (AL)	Albania	No	No	AL	ALB	8			>
			Armenia (AM)	Armenia	No	No	AM	ARM	51			>
			Angola (AO)	Angola	No	No	AO	AGO	24			>
			Antarctica (AQ)	Antarctica	No	No	AQ	ATA	10			>
			Argentina (AR)	Argentina	No	No	AR	ARG	32			>
			American Samoa (AS)	American Samoa	No	No	AS	ASM	16			>
			Austria (AT)	Austria	Yes	No	AT	AUT	40			>
			Australia (AU)	Australia	No	No	AU	AUS	36			>
			Aruba (AW)	Aruba	No	No	AW	ABW	533			>
			Aland Islands (AX)	Aland Islands	No	No	AX	ALA	248			>
			Azerbaijan (AZ)	Azerbaijan	No	No	AZ	AZE	31			>
			Bosnia and Herzegovina (BA)	Bosnia and Herzegovina	No	No	BA	BIH	70			>
			Barbados (BB)	Barbados	No	No	BB	BRB	52			>
			Bangladesh (BD)	Bangladesh	No	No	BD	BGD	50			>

211 / 10/30/