Week 3 Unit 4: **Core Data Services: View Definition**

Core Data Services: View Definition
Outline

Content

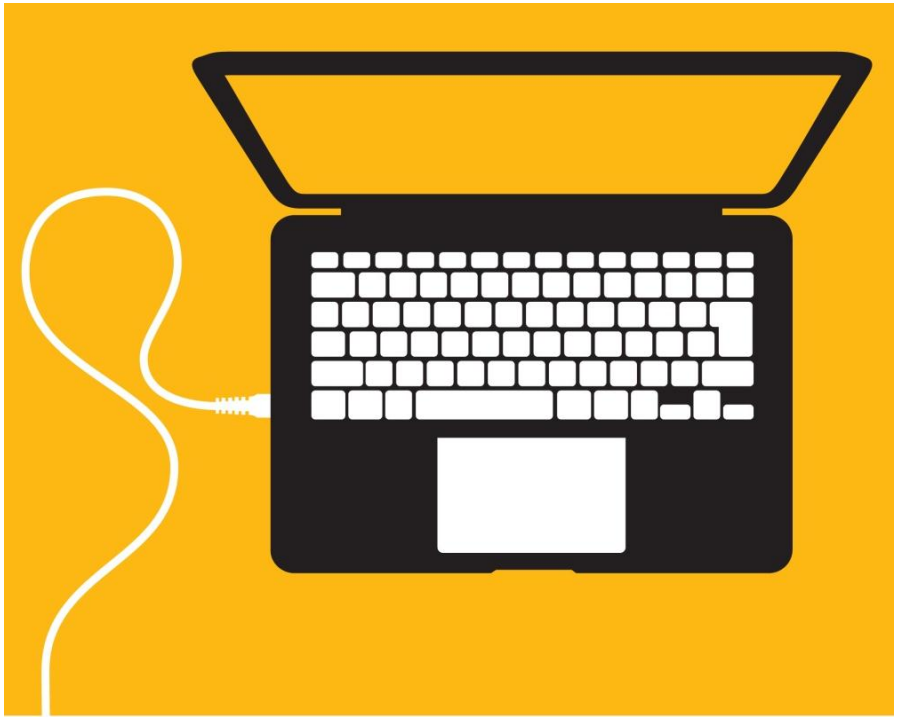
- CDS View Definition Features
  - Projection List
  - Alias
- View-on-View Concept
- CDS View Extensions
- CDS Views with Input Parameters

Core Data Services: View Definition

Demo

CDS View Definition Features

- Projection List:
  - Client Dependency
  - Semantic Information (Key)
  - Aliases
  - Aggregation
  - Literals
  - Arithmetic Expressions
  - Conditional Expressions
- GROUP BY & HAVING Clauses
- View-on-View Example
- CDS View Extensions
- CDS View with Input Parameters



Core Data Services: View Definition

Projection List (1)

Additional Material

ABAP CDS View: Projection List

- Client-dependent view; no explicit client field necessary
- Semantic information (key field)
- Aliases
- Literal values:
  - C-sequence literals (Max length: 1333)
  - Signed integer literals (4-Byte)
- Aggregation functions:
  - **MIN**, **MAX**, **COUNT**, **AVG**, **SUM**
  - Alias required for function results

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_10'
define view zcdsv_aggregations as select
 from snwd_so as so
 inner join snwd_bpa as bpa
         on so.buyer_guid = bpa.node_key
{
  key so_id as customer_id,
  bpa.company_name,
  'Literal' as string_literal,
  42        as integer_literal,
  so.currency_code,
  sum( so.gross_amount ) as
total_gross_amount
}
group by
    bpa.bp_id,
    bpa.company_name,
    so.currency_code
having sum( so.gross_amount ) > 1000
```

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Projection List (2)

Additional Material

ABAP CDS View: Projection List

- Arithmetic expression:
  - Supported operators: +, - , * and unary –
  - Complex expressions and bracketing of sub-expressions possible
- Type casting:
  - Different operand types supported: Literal, column, path expression, build-in function, arithmetic expression
  - Various data types in ABAP namespace supported
  - Result length determined at activation time
  - No nesting of CAST expressions

Alias names required for resulting columns

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_11'
define view zcdsv_arithmetics
as select from snwd_so as so
inner join snwd_bpa as bpa
  on so.buyer_guid = bpa.node_key
{
  key bpa.bp_id as customer_id,
  bpa.company_name,
  so.currency_code,
  ( so.gross_amount - so.net_amount )
    as tax_amount,
  0.85 * cast( so.gross_amount as
abap.fltp )
    as reduced_gross_amount
}
```

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Projection List (3)

Additional Material

Conditional Expressions

- Available CASE constructs
  - Simple CASE
  - Searched CASE
- CASE constructs can be nested “CASE-in-CASE“
- Coalesce expression
  - Syntax short form for a CASE expression with two arguments
  - Returns the first argument if the value is not NULL, otherwise the second argument is returned

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_12'
define view zcdsv_cond_exp
as select from snwd_so as so
left outer join snwd_so_inv_head as inv_head
  on so.node_key = inv_head.so_guid
{
  key so.so_id,
 so.currency_code,
 so.gross_amount,
 case delivery_status
       when ' ' then 'OPEN'
       when 'D' then 'DELIVERED'
       else delivery_status
 end as delivery_status_long,

 case
   when so.gross_amount > 1000
     then 'High Volume Sales Order'
   else ' '
 end as high_volumne_text,

 coalesce( inv_head.payment_status,
           'Not yet invoiced') as payment_status
}
```

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View-Concept

Additional Material

View-on-View

- View can have other views as data basis
- No restriction on the number of layers

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_13A'
define view zcdsv_base as select
from snwd_so as so
{
 key so.so_id as order_id,
 so.buyer_guid,
 so.currency_code,
 so.gross_amount
}
```

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_13B'
define view zcdsv_view_on_view as select
from zcdsv_base
inner join snwd_bpa as bpa
  on bpa.node_key = zcdsv_base.buyer_guid
{
 key bpa.bp_id,
 bpa.company_name,
 zcdsv_base.currency_code,
 zcdsv_base.gross_amount
}
```

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CDS View Extensions

Additional Material

Extend existing/delivered CDS view with:

- Table column
- Arithmetic & CASE expressions
- Literals

Extension “technique”:

- Append to base view

Not allowed on views including:

- Grouping – for example, aggregation
- UNION (ALL) statements

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_13A'
define view zcdsv_base as select
from snwd_so as so
{
 key so.so_id as order_id,
 so.buyer_guid,
 so.currency_code,
 so.gross_amount
}
```

```
@AbapCatalog.sqlViewAppendName: 'ZDDLS_CDS_13C'
extend view zcdsv_base with
zcdsv_customer_extension
{
  so.delivery_status,
  so.billing_status,
  so.created_at,
  so.created_by
}
```

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CDS View with Input Parameters

Additional Material

CDS Views with Input Parameters

- Comma-separated list of scalar input parameters and corresponding type
- Supported parameter types:
  - Predefined data type like abap.char(char_len)
  - Name of a data element
- Parameter can be used in
  - the projection list as element or in arithmetic expressions
  - expressions in WHERE or HAVING clauses
  - expression in ON conditions of JOIN statements
  - …

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_14A'
define view zcdsv_with_input_parameters
  with parameters customer_name : abap.char(80)
as select
from snwd_so as so
join snwd_bpa as bpa
  on bpa.node_key = so.buyer_guid
{
  key so.so_id as order_id,
  $parameters.customer_name as
param_customer_name,

  case
   when bpa.company_name =
$parameters.customer_name
    then 'Found it!'
   else  'Not found'
  end as found_customer
}
where bpa.company_name = parameters.customer_name
```

Not supported on all databases
→ DBSYS-dependent feature

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CDS View with Input Parameters: Consumption (1)

Additional Material

Consumption in a CDS view

- Provide (mandatory) input parameter(s)

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_14B'
define view zcdsv_consume_param_view as select from
zcdsv with input parameters( customer_name : 'SAP' ) as vwp
{
   vwp.param_customer_name
}
```

```
@AbapCatalog.sqlViewName: 'ZDDLS_CDS_14A'
define view zcdsv with input parameters
 with parameters customer_name : abap.char(80)
as select
from snwd_so as so
join snwd_bpa as bpa
  on bpa.node_key = so.buyer_guid
{
  key so.so_id as order_id,
  $parameters.customer_name as param_customer_name,

  case
    when bpa.company_name = $parameters.customer_name
     then 'Found it!'
    else  'Not found'
  end as found_customer
}
where bpa.company_name = $parameters.customer_name
```

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CDS View with Input Parameters: Consumption (2)

Additional Material

Consumption via Open SQL

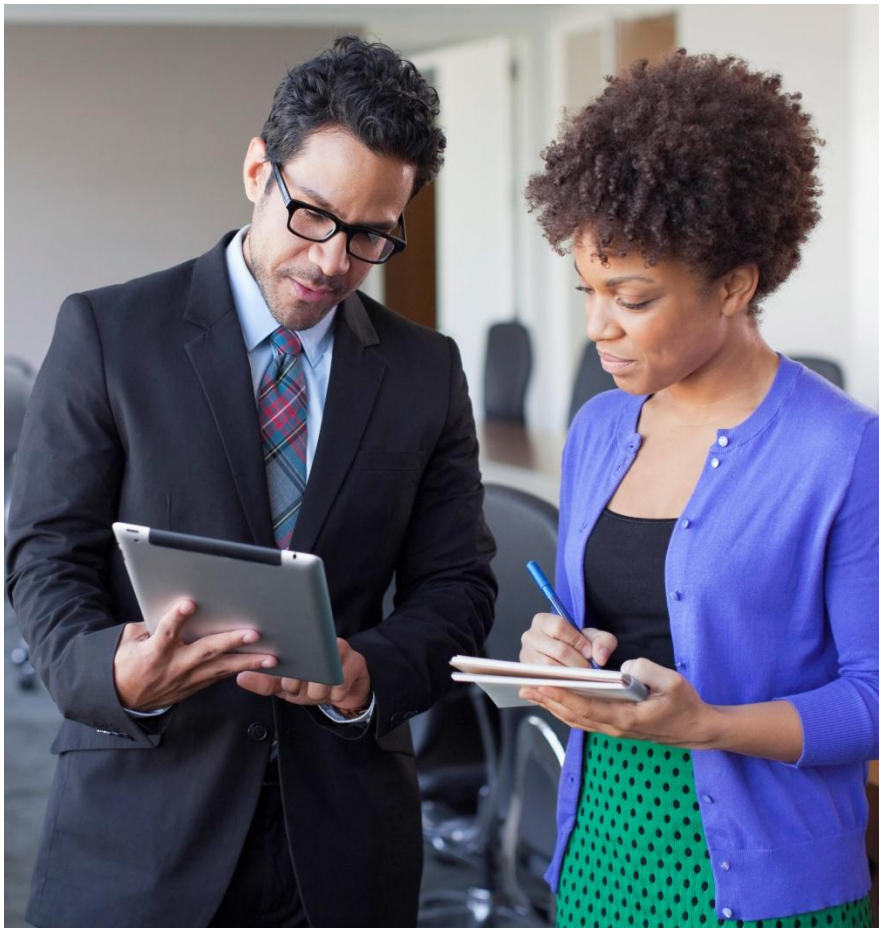
- Check if the feature is supported
- Provide (mandatory) input parameter(s)
- Suppress syntax warning using the pragma
- Provide a “fallback“ implementation / some error handling

```
REPORT zr_cds_01_consumption_vwp.

DATA lv_cust_name TYPE c LENGTH 80 VALUE 'SAP'.

"awesome application logic

DATA(lv_feature_supported) =
 cl_abap_dbfeatures=>use_features(
  EXPORTING
   requested_features  =
    VALUE #( ( cl_abap_dbfeatures=>views_with_parameters ) )
 ).


IF lv_feature_supported = abap_true.
  SELECT *
  FROM zcdsv_with_input_parameters( customer_name = 'SAP' )
  INTO TABLE @DATA(lt_result)
  ##DB_FEATURE_MODE[VIEWS_WITH_PARAMETERS].
ELSE.
  "do some alternative coding here
ENDIF.

"even more awesome application logic
cl_demo_output=>display_data( lt_result ).
```

Core Data Services: View Definition
Conclusion

Key takeaways: CDS views…

- offer a rich set of features to follow the Code-to-Data paradigm
- can have other views as a data basis (View-on-View concept)
- can be extended
- can have scalar input parameters (DBSYS-dependent feature)



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What's Next?

Thank you

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