Technical Articles

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November 27, 2018 6 minute read

AMDP class and methods and how to use in an extractor

This blog contains details of getting started in using AMDP classes

It contains below Topic areas;

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- Select based on an internal table
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Introduction

As mentioned in the help link

https://help.sap.com/doc/abapdocu_751_index_htm/7.51/en-US/abenamdp_classes.htm

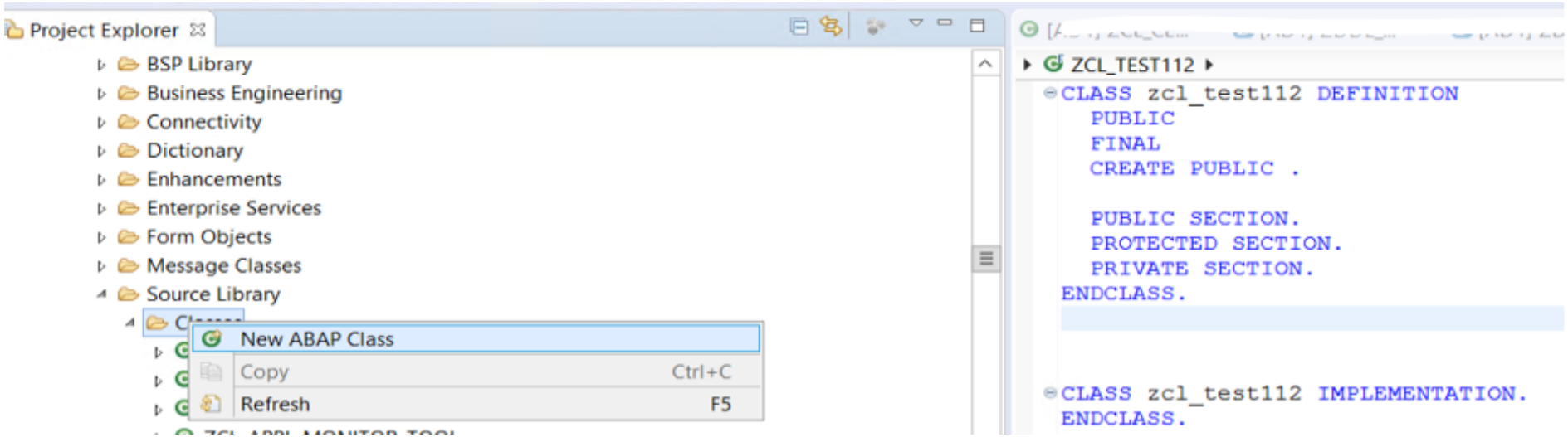
> *An AMDP class is a global class in the class library that contains one or more of the following tag interfaces:*
>
> - *IF_AMDP_MARKER_HDB for the SAP HANA database*
>
> *The names of the interfaces all start with IF_AMDP_MARKER and a suffix indicates the database system for which the ABAP Managed Database Procedures can be implemented in AMDP methods of the class.*
>
> *An AMDP class can contain both regular methods and AMDP methods. It can contain one or more AMDP methods for each database system specified by a tag interface.*

In simple words to select from HANA DB tables instead of using ABAP you can use AMDP which has a slightly different syntax and is way more faster.

Getting started

Creating a class implementation and method.

Create a class and method using HANA studio which automatically populates definition and implementation



Modified the class method to add interface IF_AMDP_MARKER_hdb

Added a Type and table to be returned from the class method get_result and raise exception CX_AMDP_ERROR.

```
CLASS zcl_test_extractor_amdp DEFINITION

PUBLIC

FINAL

CREATE PUBLIC.

PUBLIC SECTION.

INTERFACES if_amdp_marker_hdb .


BEGIN OF ty_attributes,

object_id      TYPE crmt_object_id_db

,guid           TYPE crmt_object_guid

,process_type   TYPE crmt_process_type_db

,P_DESCRIPTION  TYPE crmt_description

,process_desc    type crmt_description

END OF  ty_attributes.


TYPES:

tt_attributes     TYPE STANDARD TABLE OF  ty_attributes,
```

```
CLASS-METHODS get_result

IMPORTING

VALUE(iv_clnt)             TYPE mandt

VALUE(ip_filters)          TYPE string

EXPORTING

VALUE(et_attribute_details) TYPE   tt_attributes

RAISING

cx_amdp_error.

ENDCLASS.
```

Now start with the implementation statement as below

CLASS zcl_test_extractor_amdp IMPLEMENTATION.

and below starts the actual code

Method get_XXX_details by database procedure for hdb language sqlscript
using ekko bseg bkpf.

```
  METHOD get_result
      BY DATABASE PROCEDURE
      FOR HDB
      LANGUAGE SQLSCRIPT
      OPTIONS READ-ONLY
      USING  crmd_orderadm_h    crmc_proc_type     crmc_proc_type_t

   lt_result =

     SELECT DISTINCT

      oh.object_id     AS object_id

     ,oh.process_type  AS process_type

     ,pd.P_DESCRIPTION as P_DESCRIPTION

     ,oh.created_at    AS created_at

     ,oh.created_by    AS created_by

  FROM crmd_orderadm_h

AS oh

  JOIN crmc_proc_type

AS pt ON pt.process_type = oh.process_type and pt.client = IV_CLNT

  JOIN crmc_proc_type_t

AS pd ON pd.process_type = pt.process_type AND pd.langu = 'E'

WHERE oh.object_type = 'BUS2000126' AND oh.process_type = 'ZBKG' and
```

```
oh.client = IV_CLNT

ORDER BY oh.object_id;

 et_attribute_details  = APPLY_FILTER( :lt_result, :ip_filters );

   ENDMETHOD.
```

Syntax for common operations

Select based on importing parameter coming in the class

Here IV_FROMDATE and IV_TODATE are coming as incoming paramaters in the class.

* Fetched the Changed PO details from ECC
lt_ebeln = SELECT ebeln
FROM ekko
WHERE aedat BETWEEN iv_fromdate
AND iv_todate;

Select based on an internal table

Select data based on internal table lt_ebeln.

Note; the internal table is named using a colon:

```
lt_ebeln =   SELECT i.ebeln
   FROM  bkpf as h
   INNER JOIN bseg as i
   on i.bukrs = h.bukrs AND
```

```
        i.belnr = h.belnr AND
        i.gjahr = h.gjahr
    UNION ALL SELECT ebeln from:lt_ebeln;
```

Select Unique records

Select unique records using keyword DISTINCT

lt_re_hyp = SELECT DISTINCT * FROM :lt_re_hyp;

To filter unique values from an internal table

To filter specific value based on value in internal table or variable use Apply_filter.

lt_na = apply_filter(:lt_base, :iv_proj_type_na);

Combine select from 2 internal tables

Get the final result by combining data from multiple internal table

Example lt_cc and lt_wbs using UNION by first selecting from lt_cc and lt_wbs to get the final result in lt_details.

```
    lt_details =
*Cost Center Items
    SELECT DISTINCT
    base_cc.gl_account as gl_account,
    base_cc.ryear as ryear,
    cc_hyp.zz_hpp_project as hp_proj_id,
    from :lt_cc as base_cc
    left outer join :lt_cc_hyp as cc_hyp
```

```
    on base_cc.kostl = cc_hyp.kostl
*WBS Items
    union all
    select distinct
    base_wbs.gl_account as gl_account,
    base_wbs.ryear as ryear,
    wbs_hyp.zz_hpp_project as hp_proj_id,

    from :lt_wbs as base_wbs
    left outer join :lt_wbs_hyp as wbs_hyp
    on base_wbs.projk = wbs_hyp.pspnr ;
```

To add select criteria based on a range

When selecting data use keyword IN and specify the range

```
 LEFT OUTER JOIN tj02t    AS ct ON ct.istat = cs.stat

AND ct.spras = 'E' AND ct.txt04 IN ('CANC','DEF')
```

Using case and end case

CASE and end case to add a specific value

```
et_details =
  select
   base.gl_account as gl_account,
   '' as activity,    case
   when base.period = '001' then 'Jul'
   when base.period = '002' then 'Aug'
```

```
    when base.period = '003' then 'Sep'
    when base.period = '004' then 'Oct'
    when base.period = '005' then 'Nov'
    when base.period = '006' then 'Dec'
    when base.period = '007' then 'Jan'
    when base.period = '008' then 'Feb'
    when base.period = '009' then 'Mar'
    when base.period = '010' then 'Apr'
    when base.period = '011' then 'May'
    when base.period = '012' then 'Jun'
    else 'NA'
    end as period,
    '' as scenario,
    base.year as year,
    SUM ( base.hsl ) as hsl
    from :lt_details as base
    group by gl_account, zzlocbrd, hp_proj_id, prctr, year, period;
```

Syntax for using SUM

To sum up the value using the keyword SUM though I am not still sure if it works as expected

I prefer to get all values and then sum outside of AMDP

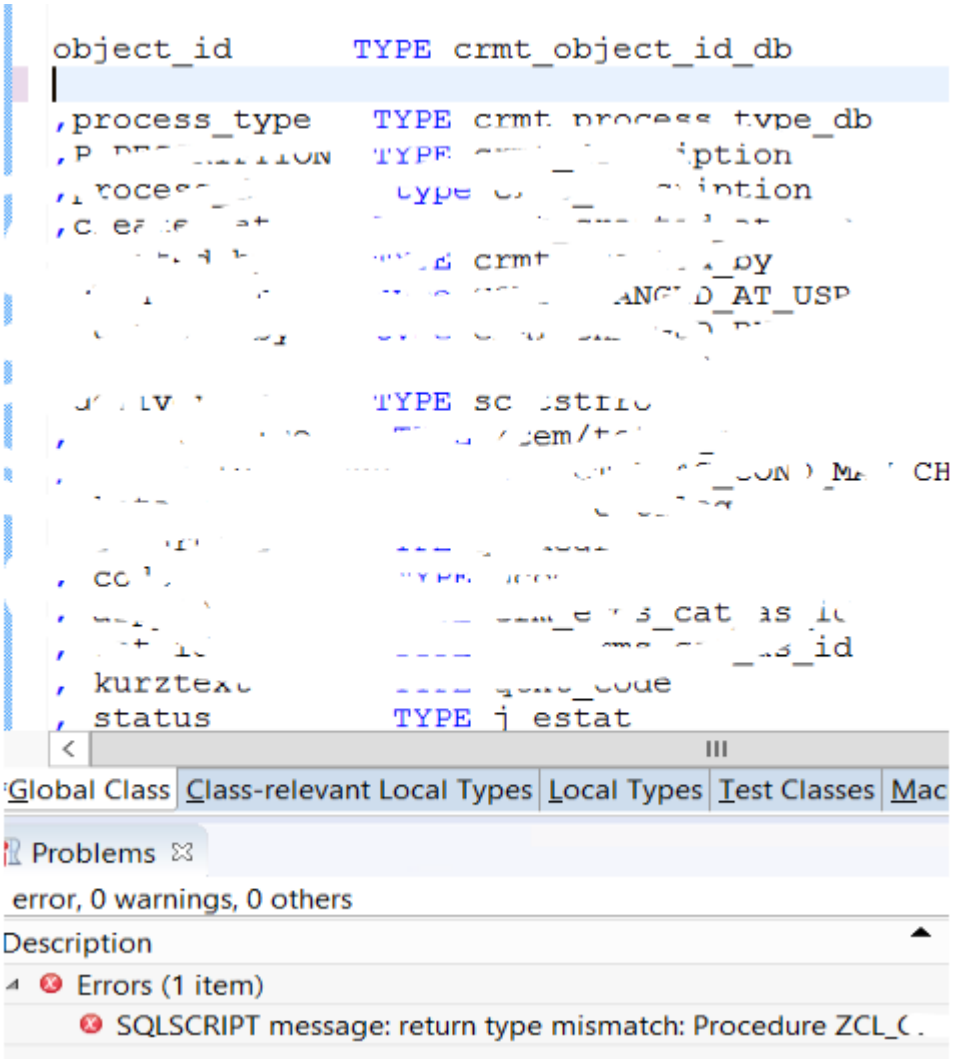
```
lt_sum = SELECT DISTINCT
oh.object_id as object_id ,
sum( pi.net_value ) as total_value

      FROM crmd_orderadm_h     AS oh
```

```
    inner JOIN crmd_orderadm_i     AS oi ON oi.header = oh.guid
  JOIN crmd_pricing_i      AS pi ON pi.guid = oi.guid
  LEFT OUTER JOIN tj02t    AS ct ON ct.istat = cs.stat AND ct.spras = 'E' AND ct.txt04 IN ('CANC','DEF')
  inner JOIN  :et_attribute_details  as base
on oh.object_id = base.object_id
  AND ct.txt30 IS NULL
  GROUP BY oh.object_id , pi.net_value  ;
```

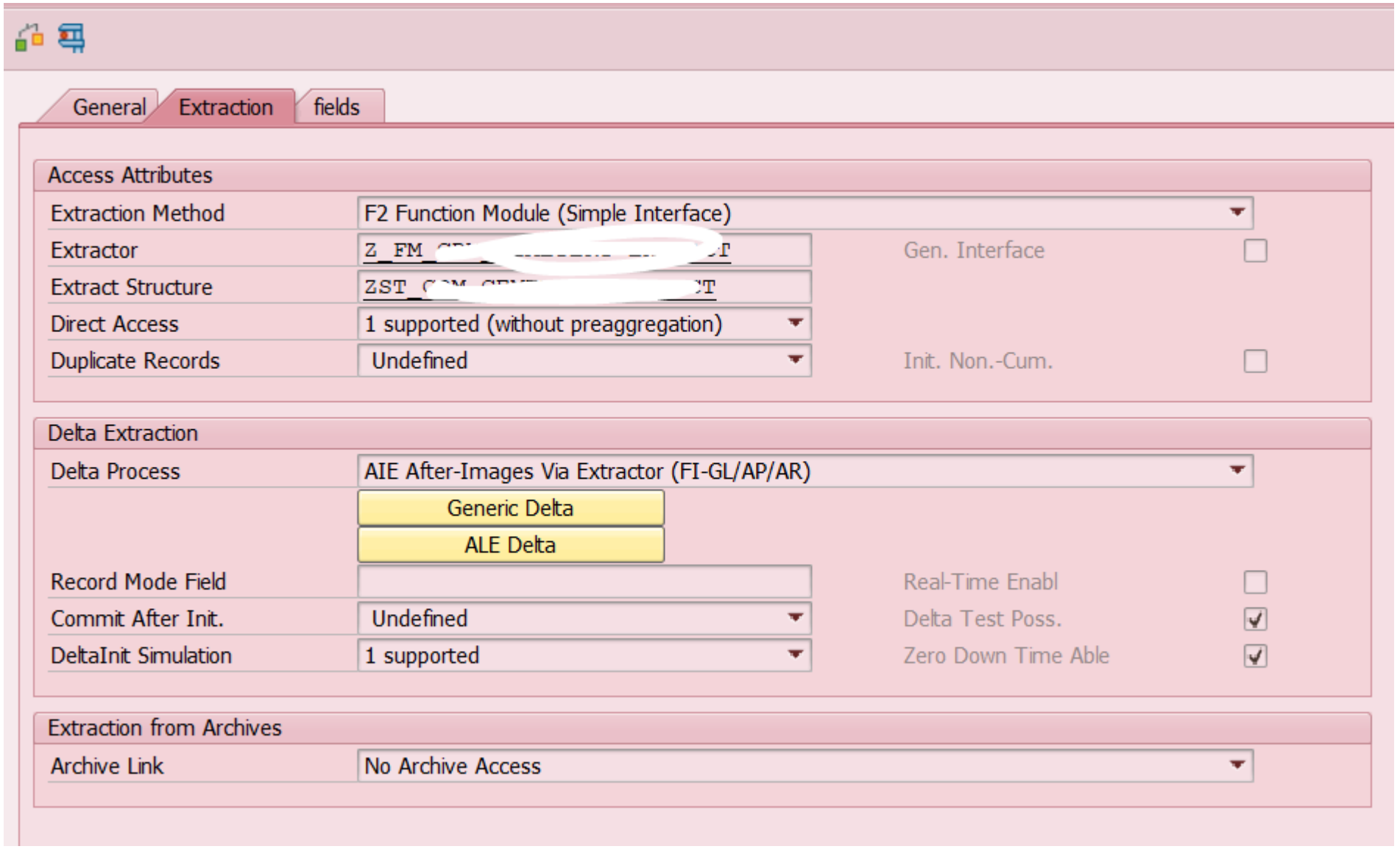
Endnotes

- Important to add IV_MANDT to ensure that specific client data is only selected
- AMDP classes are best called when you want to send data to the BI team and include it as a part of an extractor as they are very fast compared to traditional way of calling a ABAP based select statement
- When you select value it should have same select sequence example if your return table has a sequence as object_id, GUID, Process_type then select statement should also select in the same sequence else it gives an error “SQLSCRIPT Return type mismatch”

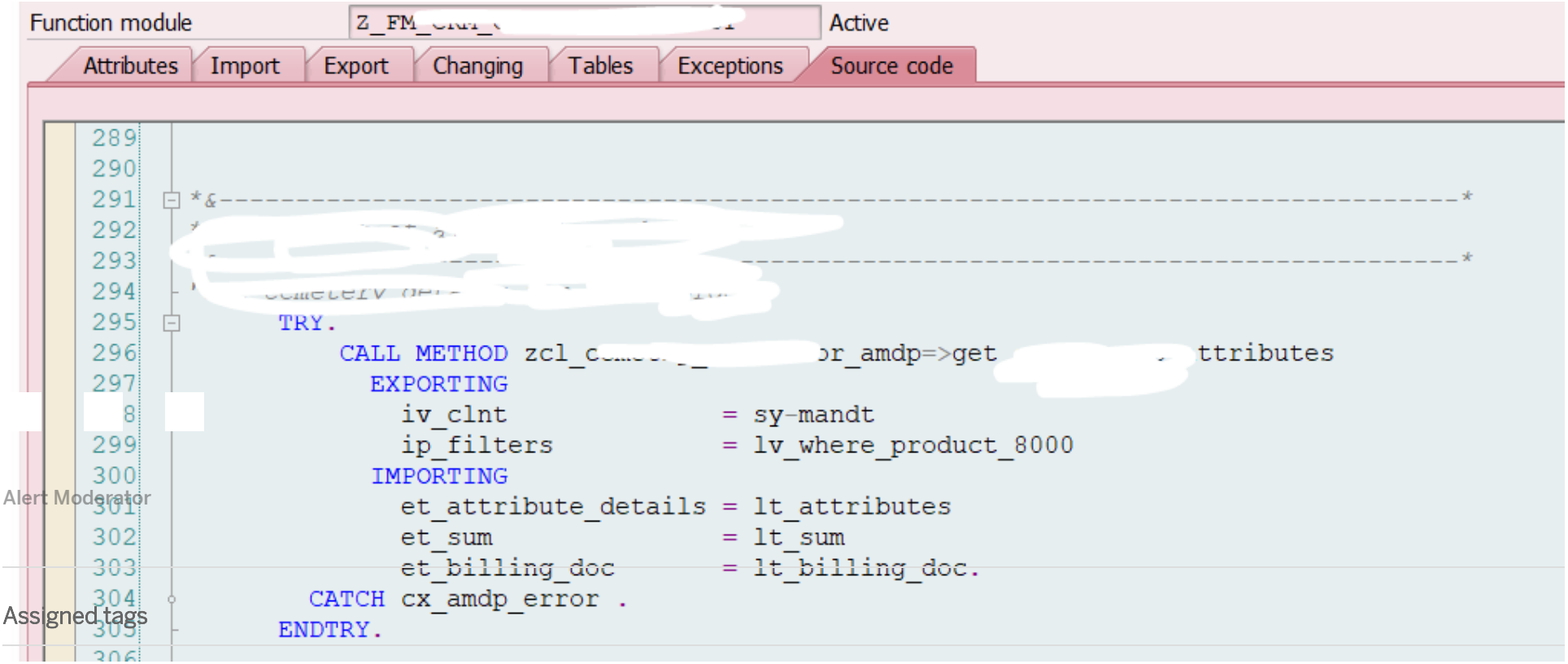


- There is no need to explicitly declare the tables you can mention lt_table = SELECT * .... and it would define the structure to be same as what you select
- AMDP class and methods can only be edited in HANA studio and can only be debugged from there
- Not easy to debug them (or maybe I don't know how to)
- If you require calculations to be done its best to get the data in AMDP and do the remaining calculations outside.

- I found a comparable difference between the speed of result returned from an ABAP report vs AMDP select query AMDP query took 2 min to fetch 10000 records and ABAP query (with same select parameters) took 14 mins
- AMDP class does not allow a lot of calculation to be done and would rather be used just as a select query post calculations, summing calculations etc to be done manually
- Using AMDP in an extractor. Transaction RSA2 for creating an extractor and add Z_ Function module as shown



Inside this FM I am calling the AMDP class



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4 Comments

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Michael Wegener

November 27, 2018 at 5:08 am

Thanks for this interesting post.

I have a question regarding section 'Select based on an internal table': Is there a specific reason to use the UNION approach for this? I would have expected an INNER JOIN or a WHERE ... IN (SELECT ...) with the internal table.

Also it's worth noticing that you can use the ABAP class 'CL_SHDB_SELTAB' to create the filter string based on ABAP SELECT-OPTIONS, as described in this blog post https://blogs.sap.com/2015/03/30/handling-of-select-options-parameters-within-amdp/.

Best regards, Michael

Like (1)

Michelle Crapo

November 27, 2018 at 1:58 pm

Thank you for the comment – not my blog, but reading this makes it a richer experience. So thank you.

Like (0)

Vinita Kasliwal | Post author

December 15, 2018 at 5:43 pm

Oh ok noted. I think there are different ways of doing it mine was just one of them

Like (0)

Michelle Crapo

November 27, 2018 at 1:59 pm

Nice blog – the step by step is very helpful.

Like (1)

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