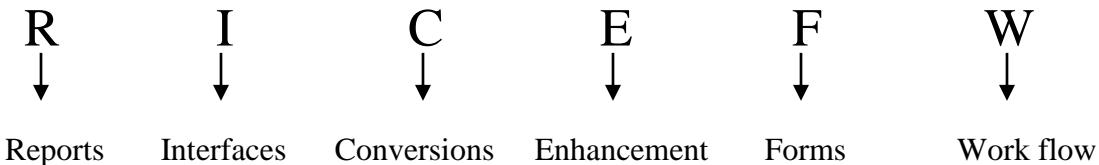


SAP: - System Applications and Products in Data Processing

ABAP: - Advanced Business Application Programming language

ABAP isn't case sensitive.

Role of an ABAPer in real time:-



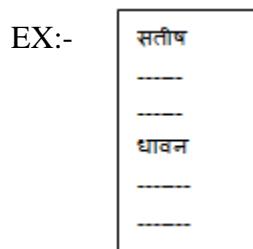
In SAP ABAP each task is called one object.

Report: - Based on the given input we'll fetch [read or get] data from data base and display in a predefined format.

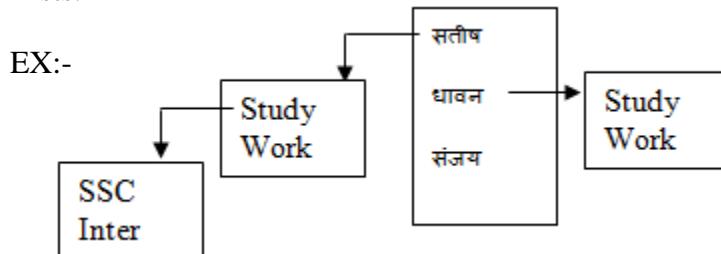
Types of Reports:-

1. Classical Reports
2. Interactive Reports
3. ALV Reports

Classical Reports: - It's nothing but to display the entire information in a single list.



Interactive Reports: - It's nothing but to display the summarized information in the basic list and detailed information in further lists.

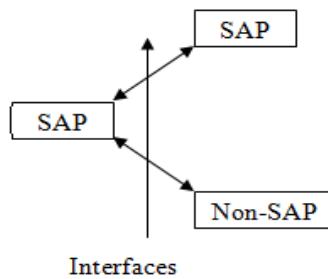


ALV Reports: - This is used to display the data with additional features i.e. Borders, colors, shades, lines etc.

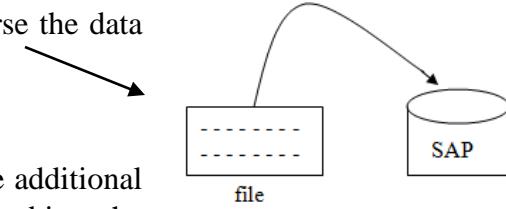
The real time reports are internal purpose.

Interfaces: - Interfaces are used to connecting from SAP to SAP as well as SAP to non-SAP.

Interfaces are ALE/IDOCs, BABI

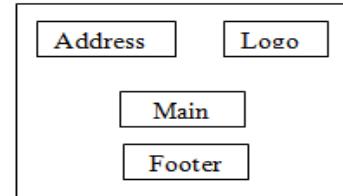


Conversion: - Conversion programs are used to transverse the data from file to SAP system.
Conversion programs are BDC, ISMW



Enhancements: - Enhancements are used to adding some additional functionality to the standard functionality with out disturbing the standard functionality.
Enhancements are BADI, user exists, customer exits enhancement frame work, enhancement spot

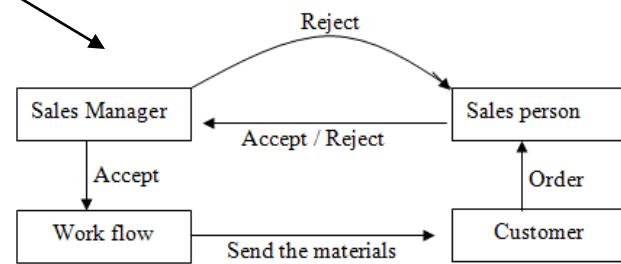
Forms: - Forms are used to design the business documents such as offer letters, experience letters, pay bills etc.
Forms are SAP Script, SMART forms.



Work flow: - Work flow is used to automate the exist business process & used to identify the work load of employee as well as performance of the employee.

Types of project:-

1. Implementation project
2. Up gradation project
3. Maintenance / Support project
4. Roll out project



Implementation project: - When ever we want to develop the SAP from fundamental onwards then we go for implementation project. Implementation project take 1 year to 3 years.

Phases of implementation project:-

1. Project preparation phase
2. Business Blue Print phase
3. Realization phase
4. Post preparation phase
5. Go-live & support phase

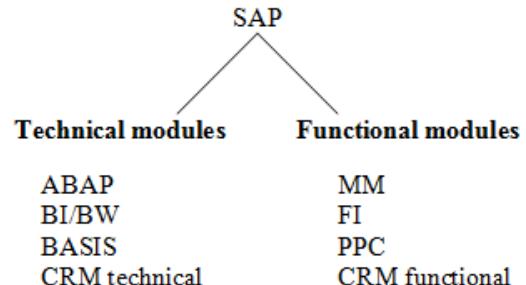
In the implementation project the ABAPer must start from Realization phase.

Up gradation project: - When ever the version is changed if you want to implement the new technologies into existing system then you go for up gradation project. Up gradation project takes 30 days to 3 months.

Maintenance / Support project: - After go level support phase each and every company requires 24*7 supports. Then they go for support project.

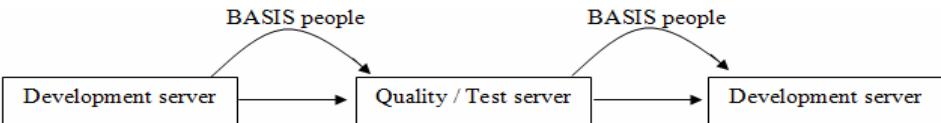
Roll out project: - whenever we purchase a new company if you want to extend the same SAP to new company, then we go for roll out project.

If you want to implement the new module in the existing SAP system then we go for roll out project.



Real time system landscape:-

The source code of an ABAP consists of either a statement or comment.



A statement is the collection of operators, operands, variables and keywords.

Operators: - In ABAP we've 3 types of operators.

Mathematical Operator:-

Operator	Description	Example
+	Addition	$3 + 2 = 5$
-	Subtraction	$3 - 2 = 1$
*	Multiplication	$3 * 2 = 6$
**	Exponential	$3 ** 3 = 3^2 = 9$
/	Division	$4 / 2 = 2$
Mod	Reminder of division Of two numbers	$5 \text{ mod } 2 = 1$

Comparative Operator:-

Operator	Description	Example
< or LT	Less than	$a < b$ or $a \text{ LT } b$
<= or LE	Less than or equal	$a \leq b$ or $a \text{ LE } b$
> or GT	Greater than	$a > b$ or $a \text{ GT } b$
>= or GE	Greater than or equal	$a \geq b$ or $a \text{ GE } b$
= or EQ	Equal	$a = b$ or $a \text{ EQ } b$
\neq or NE	Not equal	$a \neq b$ or $a \text{ NE } b$

Relational or Logical Operator:-

Operator	Description	Example
And	AND	$a < b \text{ and } a < c$
Or	OR	$a < b \text{ or } a < c$
Not	NOT	-----

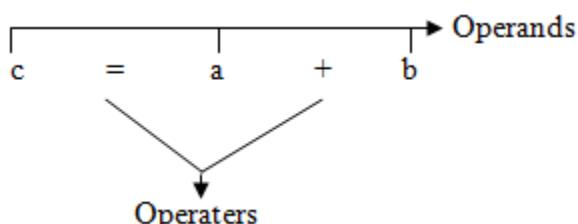
Operands: - Operands are the variables which we need to perform the particular operation.

Ex: -

Variables: - Variable is the name given to the memory location.

Keywords: - Keywords are used to identify the type of the statement. Keywords are (C²D³EO).

1. Calling keyword
2. Controlling keyword
3. Declaration keyword
4. Definition keyword
5. Data base keyword
6. Event keyword
7. Operational keyword



Declaration keyword: - This keyword is used to declare the variables in ABAP. Some of the declarative keywords are Data, Parameters, Tables, and Types etc.

Comment: - Comments are non executable statements. These are used to improve the readability of the program. If you want to comment the entire line then you must place '*' in first column of the line.

Ex: - * a b c ---

If you want to comment the part of the line then you must place in “(double quotations) from double quotation onwards it treats as a comment.

Data types

Numeric Data types

Integer → I

Float → F

Packed Decimal → P

Character data types

char → C

numeric char → N

Date → D

Time → T

Note: - Char is alpha numeric. That means it accept the integer and character.

Note: - Here Integer, Float, Date and Time are fixed length data types & rest of the data types are variable length data types.

Syntax of Integer (I):-

Data <variable name> type I.

Ex: - data A type I.

The initial / default value of integer is ‘0’.

Syntax of Float (F):-

Data <variable name> type F.

Ex: - data A type F.

The initial value of integer is ‘.00’.

Syntax of Packed Decimal (P):-

Data <variable name> (<length>) type P decimals <no>.

Ex: - data A(10) type P decimal 3.

The initial value of packed decimal is ‘.000’ (number of decimals)

Syntax of Char (C):-

Data <variable name> (<length>) type C.

Ex: - data A(5) type C.

The initial value of char is ‘space / empty’.

Syntax of Date (D):-

Data <variable name> type D.

Ex: - data A type D.

The initial format is ‘YYYYMMDD’. ➔ (20140425)

Syntax of Numeric Char (N):-

Data <variable name> (<length>) type N.

Ex: - data A(10) type N.

The initial value of Numeric Char is ‘000’. ➔ (Based on length)

Syntax of Time (T):-

Data <variable name> type T.

Ex: - data A type T.

The initial value of time is '000000'. ➔ format is 'HHMMSS'

In 'C' language

```
Int a, b, c;  
a=10;  
b=10;  
c=a+b;  
Printf("%d",c);
```

In ABAP

```
Data A type I.  
Data B type I.  
Data C type I.  
A = 10.  
B = 20.  
C = A + B.  
Write C.
```

In ABAP each statement ends with dot (.). 'WRITE' is the operational keyword to display the output in ABAP.

If more than one variable having the same keyword list of same keyword every time, we use chain operators & variables are separated by commas (,). And statements end with dot (.)

```
Data: A type I, B type I, C type I.  
A = 10.  
B = 20.  
C = A + B.  
Write C.
```

Technical requirements to create the program

1. Name of the program

In ABAP the name of the program must be starts with 'y' or 'z' because a→x reserved for SAP.

2. Provide the place / folder where we save the program. The place / folder is called development class up to 4.6c version. Now it's calling as package.

Note: - \$TMP is the default package which is provided by SAP. The latest version is ECC6.0 (Enterprise Central Component).

Steps to up the server in our own PC:-

Double click on SAP management consol on desktop. Select the server. Right click all tasks ➔ start. Provide the password 'india123'. Click on 'As ABAP WP Table'. Continuously click on refresh button until the statistics wait. Minimize that one.

Steps to log on to SAP:-

Double click on SAP logon on the desktop. Select server ➔ click on logon. Provide client is 800. User is 'sapuser'. Password is 'india123' and click on enter.

Steps to create the program: -

Execute SE38 (ABAP editor). Provide the program name. Click on create. Provide title. Select type is executable program. Click on save. Click on local object.

Note: - Click on local object means our program will be saved on \$TMP package.

Steps to execute the program:-

Save the program CTRL + S.

Check the program CTRL + F2.

Active the program CTRL + F3.

Execute the program F8.

Parameter is the keyword which accepts the input at runtime.

In 'C' Language

```
Int a, b, c;  
Scanf("%d%d", &a, &b);  
c=a+b;  
Printf("%d", c);
```

In ABAP

Parameter: A type I, B type I.
Data C type I.
 $C = A + B.$
Write C.

Note: - Default is the keyword to provide the default value to the input variable.

Syntax: -

Parameter <name> type <data type> **default** <value>

Ex: - parameter A type I **default** 10.

A

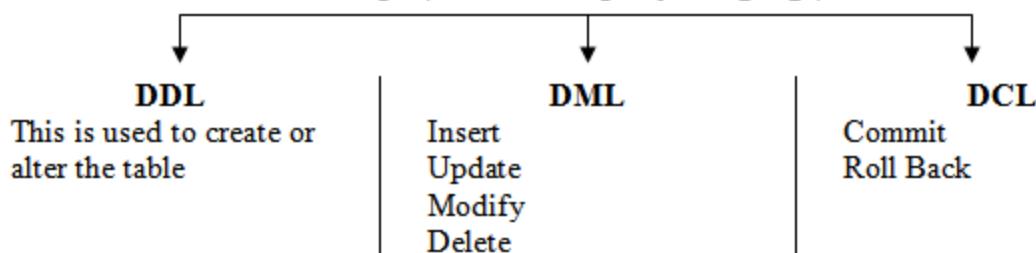
Note: - Obligatory is the keyword to provide input field is as mandatory.

Syntax: - parameter <name> type <data type> **obligatory**.

Ex: - parameter A type I **obligatory**.

Note: - Parameter can't accept float data type. Only it accept packet decimal.

SQL (Structured Query Language)

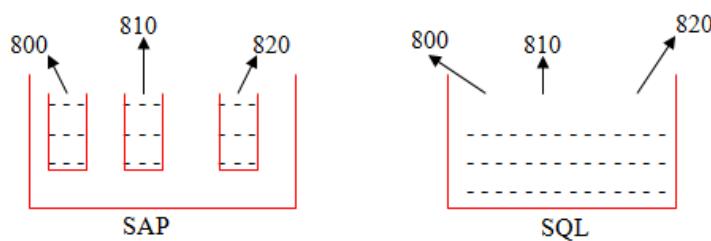


→ SQL is the database dependent & SAP is the database independent. So SAP doesn't support SQL.

→ Open SQL support SAP, because open SQL is the database independent.

→ Open SQL doesn't support DDL. So we can't create the tables by using simple statements like oracle.

→ Open SQL support **DDIC** (Data Dictionary) which is used to create or alter the tables.



DATA DICTIONARY

Data dictionary is the central source of the database management system. The main functionality of the DDIC is to create or alter the tables.

Creating the db table by using DDIC in two ways: -

1. Direct method / Pre defined method / Built in method
2. Data element method.

Technical requirement to create the table: -

1. Name of the table starts with 'y' or 'z' because a→x reserved for SAP.
2. Provide list of fields, data types and lengths.
3. Provide the **delivery class**.
4. Provide the **Technical settings**.

Delivery class: - It defines the owner of the table as well as it controls the transport of the data from one table to another table.

Technical setting is nothing but combination of DATA CLASS & SIZE OF THE CATEGORY.

Data class: - Data class defines the physical area of the database in where our table is logically stored. Some of the important data classes are

APPL 0 → Master data class

APPL 1 → Transaction data class

APPL 2 → Organization data class

Master data class: - Master data class is the data, which data we can access frequently as well as update rarely.

Ex: - customer master data, employee master data

Transactional data: - It's the data, which data we can access frequently as well as updated frequently.

Ex: - Sales order data, purchase order data

Technical data is dependent data.

Organizational data: - It's the data, which data we can access frequently & updated rarely.

Organizational data is created at the time system configures.

Ex: - Company data, branches data

Size category: - It determines the space require for the table.

Each table must have at least one field as primary field that should be the character data type that should be in the first field in the table.

C 10	C 25	C 35
Eid	Ename	Eadd

Steps to create the table by using direct method: -

Execute **SE11** in command prompt. Select the data base table. Provide the table name. Click on create. Provide short description name. Provide delivery class 'A'. Select the **display / maintenance allowed**. Click on fields tag. Click on predefined type button. Provide the field names, data types, lengths and short description.

<u>Field</u>	<u>Key</u>	<u>Data type</u>	<u>Length</u>	<u>Short Description</u>
Eid	✓	CHAR	10	Employee ID
Ename		CHAR	25	Name of the employee
Eadd		CHAR	35	Address of employee

Save the table (CTRL + S). Check the table (CTRL + F2). Click on technical settings. Select the data class as **APPL 0** & size category as **zero**. Save the technical settings. Click on back. Then activate table (CTRL + F3).

Steps to provide the data to the table directly: -

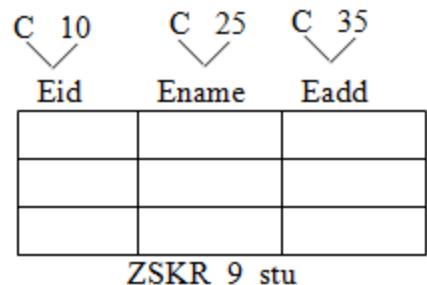
In the menu bar click on utilities → table contents → provide the data. Click on save. Repeat same steps for all employees.

Steps to display the data from table: -

In the menu bar click on utilities → Table contents display. Click on execute.

→ Create the following table by using direct method

Note: - In the real time, we never create the data base table by using direct method or predefined type. Because, if you want to establish the relation between any two tables, then you must maintain the same domain name in both the tables. In direct method there is no domain concept. So we go for data element method.

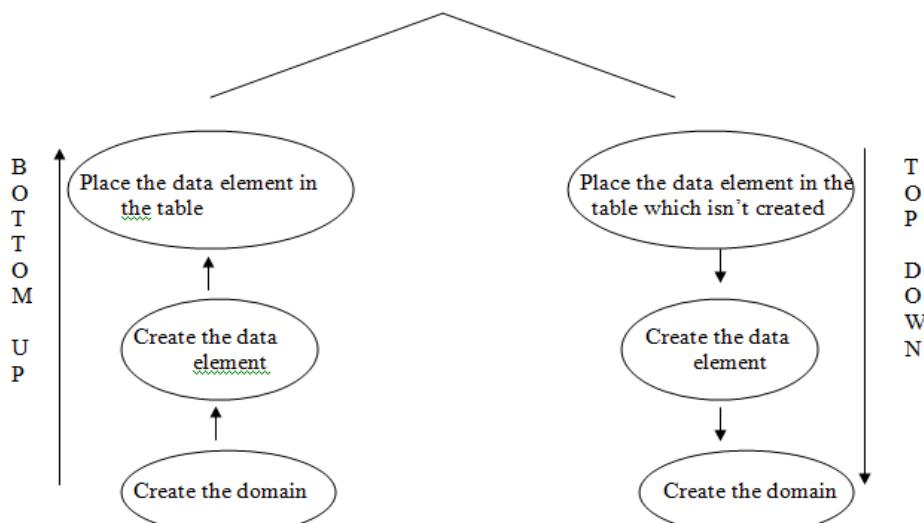


<u>Field</u>	<u>Key</u>	<u>Init</u>	<u>Data Element</u>
Sid	✓	✓	<div style="border: 1px solid black; padding: 10px; width: fit-content;"> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; margin-bottom: 5px;"> <u>Data Type</u> <u>Length</u> </div> <div style="display: flex; align-items: center;"> Char 10 Short description </div> <p style="text-align: center;">Domain</p> <p style="text-align: center;">Data Element</p> </div>

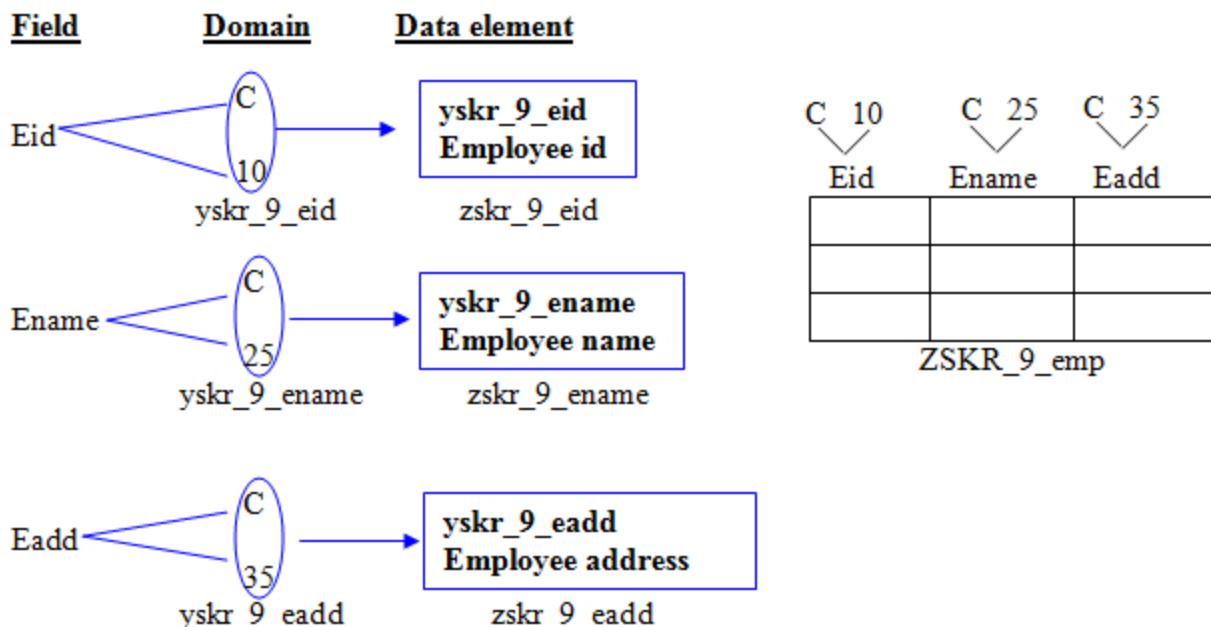
Domain: - Domain is the collection of data types & lengths.

Data Element: - Data element is the collection of domain with short description

**Create the table by using
data element type**



→ Create the employee table by using data element type bottom up approach.



Steps to create the domain: - Execute SE11. Select the radio button domain. Provide the domain name by click on create. Provide short description. Provide the data type & length. Save the domain. Check the domain. Activate the domain. Repeat the same steps for all domains.

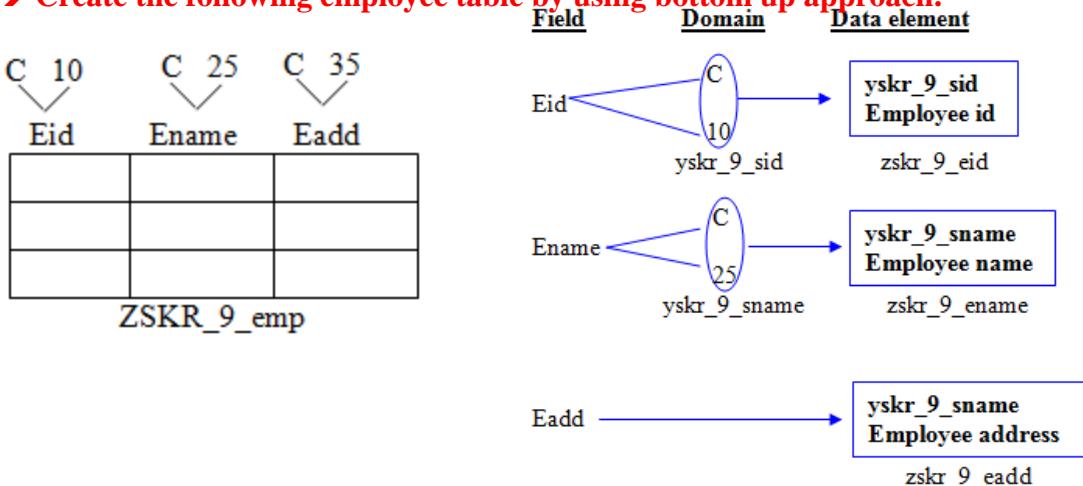
Steps to create the data element: - Execute the **SE11**. Select the radio button data type. Provide the data element name. Click on create. Click on enter. Provide short description. Provide domain which is already created. Save the data element. Check the data element. Activate the data element. Repeat the same steps for all the data elements.

Steps to create the table by using data element type (bottom up approach): - Execute **SE11**. Select the radio button database table. Provide the table name. Click on create. Provide short description. Provide delivery class is 'A'. Select **Display / Maintenance allowed**. Click on file tab. Provide the field name, data elements.

<u>Field</u>	<u>Key</u>	<u>Data Element</u>
Eid	✓	zskr_9_eid
Ename		zskr_9_ename
Eadd		zskr_9_eadd

Save the table. Check the table. Before activate, click on technical settings. Select the data class, size category. Save the technical settings. Click on back. Activate the table.

→ Create the following employee table by using bottom up approach.



Note: - If you get the warning message enhancement category for table missing then in menu bar click on extras → enhancement category → enter → select the radio button can be enhancement (char type or numeric) → enter.

Note: - If you want to provide the data directly to the table then you must select the display maintenance allowed.

Note: - If you select the display maintenance allow with restrictions, then display only possible. Create records not possible.

Note: - If you select the display maintenance not allowed then display & create integer not possible.

→ Create the following employee table by using top down approach.

C	10	C	25	C	35
Eid		Ename		Eadd	

ZSKR_9_emp1

Field	Key	Initial	Data Element	Data type	Length	Short Description
Eid	✓	✓	zskr_9_eid			

Data Element

Double click

Short Description	Employee ID
Domain	yskr_9_eid

Save
Check
Activation

back

Domain

Double click

Short Description	Domain
Data type	Employee ID
Length	10

Save
Check
Activation

back

Steps to create the table by using top down approach: -

Execute **SE11**. Select the radio button **Data base table**. Provide the table name. Click on create. Provide short description. Provide delivery class is 'A'. Select the **display maintenance allowed**. Click on fields tab. Provide the field name data element which is not created. Double click on data element. Click on yes. Click on local object. Enter. Click on yes. Provide short description. Provide domain name which isn't created. Double click on it. Click on yes. Click on local object. Create the domain. Click on yes. Provide short description, data type, length. Save, check, activate the domain. Click on back. Save, check, activate data element. Click on back. Repeat the same steps for all the other things. Save the table. Check the table. Click on technical settings. Select the data class, size category. Save the technical settings. Click on back. Activate the table.

Note: - If you want to display the particular field information, click on utilities on menu bar. Select the table contents, display. In the menu bar click on settings → format list → choose list. Select our required field check box. Enter. Execute.

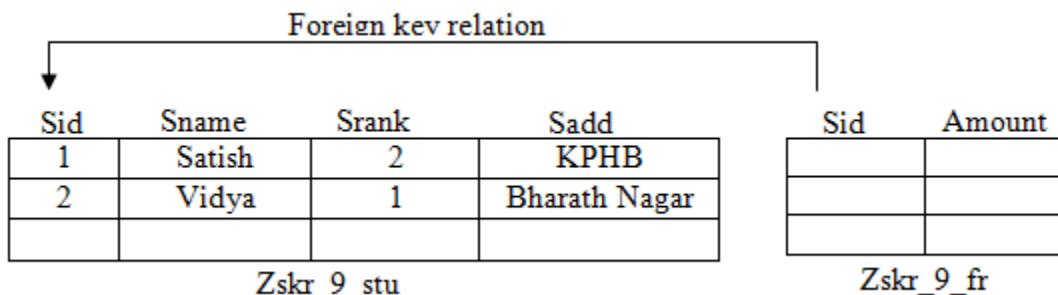
Foreign key: -

Foreign key is a field in one table. This is connected to another table via foreign key relationship. The purpose is to validate the data being entered in one table (foreign key table) by checking against list of possible values in another table.

Technical requirement to establish the foreign key relationship: -

1. The domain of the both fields in both the tables must be the same.
2. The check table field must be the primary.

→ Establish the foreign key relation between employee & salary tables.



Steps to establish the foreign key relation: -

Execute **SE11**. Select the radio button **Data base object**. Provide the foreign key table name. Click on **change**. Select the **fields** for which field we want establish the foreign key relation. Click on **foreign key** icon under fields tab. Provide the check table name. Click on **generate proposal**. Then the system automatically provides the relation between these two tables. Enter. Save, check, activate the table.

Working with reference fields: -

In the real time when ever we are working with amount field then you must provide reference as currency field.

Amount	Currency
250	Dollars
251	Rupees

In real time when ever we are working with quantity field then you must provide reference as unit of measurement field.

Quantity	Unit of measurement
10	LT
20	KG

Field	Data type
Amount	CURR
Currency	CUKY
Quantity	QUAN
Units	UNIT

→ Create the following material table.

C 3	C 10	C 15	QUAN 10	UNIT 3	CURR 10	CUKY 5
MANDT	MNO	MDES	MQTY	MUOM	Mprice	Mcurrency

In the real time when ever we create the data base table then you must provide the MANDT client field. The table contains MANDT fields then the table is client dependent. That is the data in the table can not reflected to all other clients in the same server. If the table doesn't contain MANDT filed then the table is client independent that is the data in data base table automatically reflected to all other clients in the same server.

Steps to provide the reference fields: -

Select the quantity field. Click on currency / quantity fields tab. Provide the reference table and reference field.

Field	Data element	Data type	Reference table	Reference field
MQTY	ZSKR_9_MQTY	QUAN	ZSKR_9_MAT	MUOM

Select the amount / price field. Click as currency / quantity fields tab. Provide the reference table, reference field.

Field	Data element	Data type	Reference table	Reference field
Mprice	ZSKR_9_Mprice	CURR	ZSKR_9_MAT	MCUKY

Note: - T006 is the standard data base table which contains all the unit of measurements.

Note: - In the real time when ever we are working with unit of measurement field then we must establish the foreign key relations with **T006** as a check table. If you want to establish the foreign key relation then you must maintain the SAP domain “**MEINS**” into our field domain.

Steps to establish the foreign key relation: -

Select the unit of measurement in our table. Click on foreign key icon under the fields tab. Then the system will give a proposal with values table T006 as check table. Then click on yes. Enter. Save, check, activate the table.

Note: - “**TCURC**” is the standard data base table which contains all the currencies.

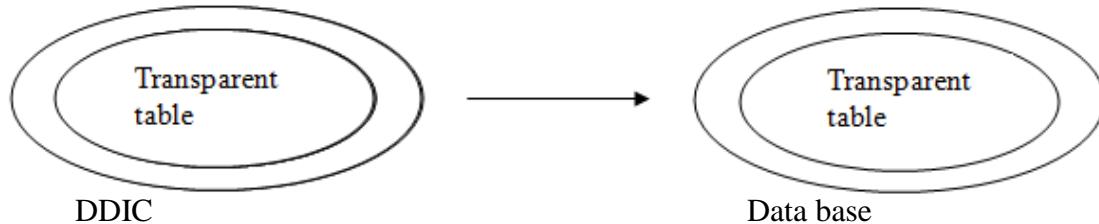
In the real time when ever we are working with currency field then we must establish the foreign key relation with TCURC as check table. If you want to establish the foreign key relation then we must maintain the SAP domain “**WAERS**” into our table field domain.

Select the currency field in our table. Click on foreign key icon under the fields tab. Then the system automatically gives a proposal with TCURC as check table. Click on yes. Enter. Save, check, activate the table.

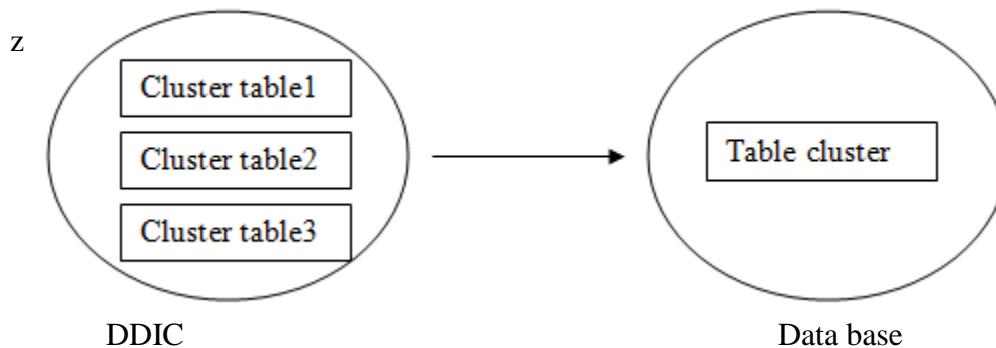
Types of tables: -

1. Transparent tables
2. Cluster tables
3. Pool tables

Transparent tables: - Transparent tables are one to one relationship. That is if you create one transparent table in the data dictionary, then it'll store like only one data base table in the data base.



Cluster table: - This tables are many – one relationship. That is if you create the many clustered tables in DDIC then they will form like a table cluster & store in the data base.

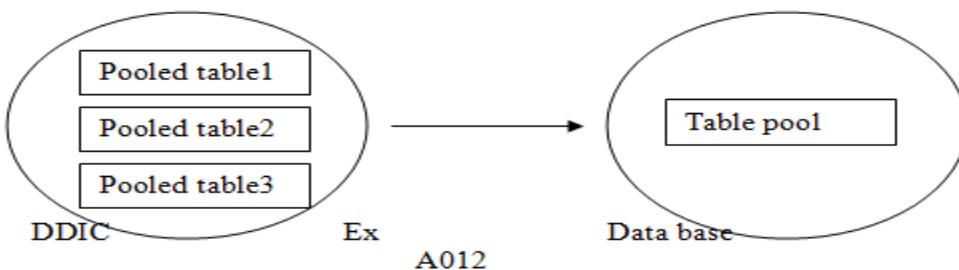


Buffering isn't possible for clustered table. From this reason only fetching the data from clustered table take more time.

Clustered table is suitable when you fetch the fewer amounts of data from more fields.

Pooled table: -

Pooled tables are many – one relationship. That means if you create many pooled tables in DDIC, then they will form like a table pool & stored in the data base.



Pooled tables are suitable when we fetch the large amount of data from fewer fields.

Note: - Joins aren't possible for Clustered & Pooled tables

→ Create the table pool. Create pooled table & attached to the table pool.

Steps to create table pool: -

Execute SE11. In the menu bar click on utilities → other dictionary objects. Select the radio button table pool. Provide the table pool name. Click on create. Select the radio button table pool. Enter. Provide short description. Click on save. In the menu bar click on go to → technical settings. Select the size category. Save. Back. Check & activate the table pool.

Steps to create pooled table: -

Execute SE11. Select the radio button data base table. Provide the pooled table name. Click on create. Provide short description. Provide delivery class is 'A'. Click on fields tab. Provide the field names, data element. Save the table. In the menu bar, click on extras → change table category. Select the radio button pooled table. Enter. Click on delivery & maintenance tab. Provide the table pool. Save, check the table. Click on technical settings. Select the data class size category. Save the technical settings. Click on back. Activate the table.

→ Create the table cluster. Create clustered table & attached to the table clustered.

When ever we create the clustered table then we must maintain the primary fields in the table clustered. When ever we create the clustered table then we must maintain at least one non primary key.

Steps to create table cluster: -

Execute SE11. In the menu bar click on utilities → other dictionary objects. Select the radio button table pool / cluster. Provide the table cluster. Click on create. Select the radio button table cluster. Enter. Provide short description. Click on save. Select the VARKEY & click on minus. Click on + button. Provide the mandatory field of clustered table.

Field name	key	Data type	Length
MANDT	✓	CLNT	3
LIFNR	✓	CHAR	10

Click on save. Click on go to on menu bar → technical settings. Click on back. Check, activate.

Steps to create clustered table: -

Execute SE11. Select the radio button data base table. Provide the table name. Click on create. Provide short description. Provide deliver class is 'A'. Click on field tab. Provide field names, data element.

Field	Key	Initial	Data element
MANDT	✓	✓	MANDT
LIFNR	✓	✓	LIFNR
NAME1			NAME1

Click on save. In the menu bar click on extras → change category. Select the radio button clustered table. Enter. Click on delivery & maintenance tab. Provide the table clustered. Save, check the table. Click on technical settings. Provide data class, size category, save the technical settings. Click on back. Activate the table.

Note: - In the real time we never create cluster & pool tables. Only we can create transparent tables.

Note: - In the real time when ever we're altering the table we get the error structure change of field error. Then we must adjust the data base.

Steps to adjust the data base: -

Click on utilities in menu bar → data base object → data base utility. Click on activate & adjust data base. Click on yes. Now the table is activated.

Index: -

Indexes are used to improve the performance of the select query. There are two types of indexes.

1. Primary index
2. Secondary index

Primary index: - Primary index is the primary fields. Without a primary index we can't create the data base table. We can place up to 16 primary indexes per table. We can create the primary index only for custom tables. Not for standard tables.

Secondary index: - Secondary index is possible for other than primary fields. Without a secondary index we can create the data base table. We can create up to 9 secondary indexes per a table. We can create secondary index for both standard & custom tables.

Note: - We can't delete the domain which is already assigned to data element. We can't delete the data element which is already assigned to data base table. We can create the data base table with out a data element by using direct method or predefined type.

Steps to create secondary index: -

Execute SE11. Select the radio button data base table. Provide the table name for which table we want to display. Click on display. Click on index beside technical settings. Click on create index. Provide the index name. Enter. Provide short description. Click on table fields. Select our require fields. Enter. Save, check, activate.

Some of filed names in T001: -

BUKRS → Company code

BUTXT → Company name

ORT01 → City

LAND1 → Country

Some of field names in

KNA1: -

KUNNR → Customer number

NAME1 → Name

ORT01 → City

LAND1 → Country

SPRAS → Language

Some of the field names in

LFA1 : -

LIFNR → Vendor number

NAME1 → Name

ORT01 → City

LAND1 → Country

SPRAS → Language

Differences between data base table and structure

Data base table

1. Data base table must contain at least one field as primary field.
2. Data base table contains the permanent data.
3. We must provide the size of the data base table.
4. We must provide the delivery class to the table.

Structure

1. Structure doesn't contain any primary fields.
2. Structure doesn't contain any data.
3. We only to provide the size of the structure.
4. We no need to provide the delivery class to the structure.

Adding some additional fields
to the data base table

Custom Table (‘Z’ table) Ex: ZSKR

1. By using include structure, we can add additional fields to the custom table.
2. The same structure can be included in any number of custom tables.
3. All steps of include structure saved either in our own package or in \$TMP package.

Standard table Ex: - T001

1. By using Append structure we can add additional fields to the standard data base table.
2. The same structure can be appended to only one standard data base table.
3. All steps of append structure must be saved in our own package only. Because \$TMP is non transportable.

Note: - Adding the following fields to the custom tables ZSKR_9_EMP1 and ZSKR_9_STU by using include structure.

ORT01 → City
LAND1 → Country
SPRAS → Language

If you want to add block of fields or set of fields into more than one custom table instead of maintaining those fields in each and every table it's better to create one structure with those fields & later we include the same structure in all structures.

ZSKR_9_EMP

Eid
Ename
Eadd

ORT01
LAND1
SPRAS

ZSKR_9_STU

Sid
Sname
Sadd

ORT01
LAND1
SPRAS

In this object or task we must create one structure with ORT01, LAND1, SPRAS & later we include this structure in the ZSKR_9_EMP & ZSKR_9_STU custom data base tables.

Note:

'/O' is used to opens a new session without terminating the current session.
'/N' is used to opens a new session with terminating the current session.

Steps to create the structure: -

Execute SE11. Select the radio button data type. Provide the structure name. Click on create. Select the radio button structure. Enter. Provide short description. Provide component, component type.

Component	Component type
ORT01	ORT01
LAND1	LAND1
SPRAS	SPRAS

Save the structure, check, execute the structure.

Steps to include the same structure in any number of custom tables: -

Execute SE11. Select the radio button data base table. Provide the table name. Click on change. Place the cursor where you want to include the structure. Provide the field name ".include". Provide the data element as structure name. Enter. Save, check, activate the table.

Steps to create our own package: -

Execute **SE80**. Click on edit object. Select development coordination. Click on package radio button. Write your package name. Press F5 button or click on create. Provide short description. Click on enter or Save. Click on enter.

Note: In the real time packages are created by BASIS people. Based on the module or based on the object category & request number is created by ABAPer.

→ Add the CMM level field which is CHAR & length '1' to the T001 data base table through APPEND structure.

Steps to add some additional fields to the standard data base table: -

Execute SE11. Select the radio button data base table. Provide the table name for which table we want to add some additional fields. Click on display. Click on append structure on application tool bar. Click on create append. Provide the append structure name. Enter. Provide short description. Provide component, component type, double click on component type or data element. Click on yes. Click on yes. Save our package. Enter. Enter. Provide short description. Provide the domain which isn't created. Double click on domain. Click on yes. Save in our own package. Enter. Click on yes. Provide the short description. Provide data type, size. Save, check, activate domain. Click on back. Save, check, activate the data element. Repeat the same steps for all components. Save the structure, check, activate.

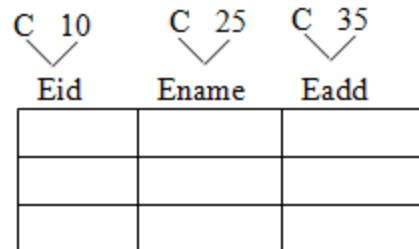
Note: In the real time when ever we develop any task then we must save in our own package & request number not in \$TMP.

Syntax of declaring the structure / table in ABAP editor: -

Data : Begin of <structure / table>,

```
----- } List of fields
-----
```

End of <structure / table>.



Ex: -

Data: Begin of emp,
 Eid(10) type c,
 Ename(25) type c,
 Eadd(35) type c,
 End of emp.

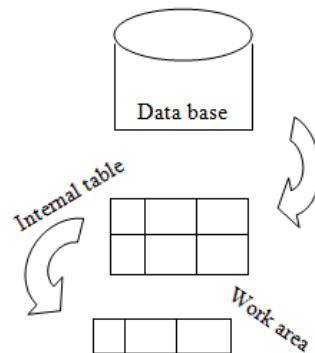
} Work area

Work area always holds only one record at a time. So we go for internal tables.

Internal table: -

1. Internal table is the collection of records.
2. Internal tables are temporary tables. That means the data in internal table won't save anywhere in SAP.
3. Internal tables are dynamic memory location. That means we no need to provide the size of the internal table.
4. The scope of the internal table is up to that program.
5. Placing the data to the internal table as well as getting the data from internal table is always record by record.

Backend picture of SAP ABAP: -



Differences between data base table & internal tables: -

Data base table

1. Data base tables are permanent storage location.
2. We can access the data base table from anywhere in SAP.
3. We must provide the size of the data base tables.

Internal table

1. Internal tables are temporary storage location.
2. We can access the internal table with in the program only.
3. Internal tables are dynamic. So we no need to provide the size.

Syntax of declaring the internal table : -

Data <internal table> like table of <work area>.

Syntax of accessing the fields from work area :-

<work area name> - <file name>

Ex: WA – Eid.

Note: - Append is the key word to transfer the data from work area to internal table.

```

Data: Begin of WA,
      Eid(10) type c,
      Ename(25) type c,
      Eadd(35) type c,
      End of WA.

Data IT like table of WA.
WA-Eid = '1'.
WA-Ename = 'Vidya'.
WA-Eadd = 'Bharat Nagar'.
Append WA to IT.
WA-Eid = '2'.
WA-Ename = 'Satish'.
WA-Eadd = 'Kukatpalli'.
Append WA to IT.
Loop at IT into WA.
Write: / WA-Eid, WA-Ename, WA-Eadd.
Endloop.

```

IT

Eid	Ename	Ename
1	Vidya	Bharat Nagar
2	Satish	Kukatpalli

T001 (company codes)

ORT01 → City
 LAND1 → Country
 BUKRS → Company code
 BUTXT → Company name

KNA1 (customer master table)

KUNNR → Customer number
 NAME1 → Name
 SPRAS → Language

Syntax to select query: -

Select <filed1> <filed2> from <data base table> into table <internal table> where <condition>

→Display the company codes company names & cities

```

Data: Begin of WA,
      BUKRS(4) type C,
      BUTXT(25) type C,

```

```

ORT01(25) type C,
End of WA.
Data IT like table of WA.
Select BUKRS BUTXT ORT01 from T001 into table IT.
Loop at IT into WA.
Write:/ WA-BUKRS, WA-BUTXT, WA-ORT01.
Endloop.

```

→ Display the customer numbers, customer names, cities & countries.

```

Data: Begin of WA,
      KUNR(10) type C,
      NAME1(35) type C,
      ORT01(35) type C,
      LAND1(3) type C,
      END of WA.
Data IT like table of WA.
Select KUNNR NAME1 ORT01 LAND1 from KNA1 into table IT.
Loop at IT into WA.
Write:/ WA-KUNR, WA-NAME1, WA-ORT01, WA-LAND1.
Endloop.

```

Syntax of declaring the field: -

```

Data <filed name>(<length>) type <data type>
      (OR)
Data <filed name> type <data elements>
      (OR)
Data <filed name> type <data base table> - <field name>
Ex: - Data BUKRS(4) type C.
      (OR)
      Data BUKRS type BUKRS
      (OR)
      Data Bukrs type T001-Bukrs

```

→ Display the company codes, company names & cities.

```

Data: Begin of WA,
      BUKRS type T001-BUKRS,
      BUTXT type T001-BUTXT,
      ORT01 type T001-ORT01,
      End of WA.
Data IT like table of WA.
Select BUKRS BUTXT ORT01 from T001 into table IT.
Loop at IT into WA.
Write:/ WA-BUKRS, WA-BUTXT, WA-ORT01.
Endloop.

```

Select-options is the keyword which accepts the single value, multiple single values, single range & multiple ranges.

Syntax of select-options: -

Select-options <name of the select-options> for <variable name>.

Ex: -

Data v1 type T001-BUKRS.

Select-options S_BUKRS for v1.



S_BUKRS to
(c,4)

Data v1 type KNA1-KUNNR.

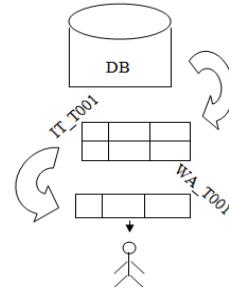
Select-options S_KUNNR for v1.

Syntax of select-options in select query: -

Select <filed1> <filed2> ---- from <database table> into table <Internal Table> where <filed> in <select-options>.

→ Based on given company codes, display the company codes, company names & cities.

```
Data v1 type T001-Bukrs.  
Select-options S_BUKRS for v1.  
Data: Begin of WA_T001,  
      BUKRS type T001-BUKRS,  
      BUTXT type T001-BUTXT,  
      ORT01 type T001-ORT01,  
      End of WA_T001.  
Data IT_T001 like table of WA_T001.  
Select BUKRS BUTXT ORT01 from T001 into table IT_T001 where BUKRS in  
S_BUKRS.  
Loop at IT_T001 into WA_T001.  
  Write: / WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.  
Endloop.
```



→ Based on given country display the customer numbers, customer names & countries.

```
Data v1 type KNA1-LAND1.  
Select-options S_LAND1 for v1.  
Data: Begin of WA_KNA1,  
      KUNNR type KNA1-KUNNR,  
      NAME1 type KNA1-NAME1,  
      LAND1 type KNA1-LAND1,  
      End of WA_KNA1.  
Data IT_KNA1 like table of WA_KNA1.  
Select KUNNR NAME1 LAND1 from KNA1 into table IT_KNA1 where LAND1 in  
S_LAND1.  
Loop at IT_KNA1 into WA_KNA1.  
  Write: / WA_KNA1-KUNNR, WA_KNA1-NAME1, WA_KNA1-LAND1.  
Endloop.
```

Syntax:-

Parameter <name of the parameter> type <data type>

Ex: - parameter P_BUKRS type T001-BUKRS.



P_BUKRS

Syntax of parameter in select query: -

Select <filed1> <filed2> ---- from <database table> into table <Internal Table> where filed = <parameter>

Ex: -

Select BUKRS BUTXT LAND1 from T001 into table IT_T001 where BUKRS = P_BUKRS.

Differences between parameter & select-options: -

Parameter

1. Parameter is the keyword which accepts the single value at run time.
2. Without provide input parameter we can't get data.

Select-options

1. Select-options is the keyword which accept the single value, multiple single values, single range & multiple ranges.
2. Without providing input select-options we can get the entire data from database.

Types of Internal Table: -

- 1 Indexed
 - Standard
 - Sorted
- 2 Hashed

Standard Internal Table: -

1. It accepts the duplicate records.
2. Here all fields are non-unique.
3. Passing data from work area to internal table is always through **Append** keyword.
4. Searching of a record is **linear search**.

Syntax: -

Data <Internal Table> like standard table of <work area>.

Sorted Internal Table: -

1. It may or mayn't accept the duplicate.
2. Here, we must specify at least one filed as unique \ non-unique.
3. Pushing data from work area to internal table is always through **Insert** keyword.
4. Searching of a record is **Binary search**

Syntax: -

Data <Internal Table> like sorted table of <work area> with unique / non-unique key <filed> ---- .

Ex: - data IT like sorted table of WA with unique key Eid.

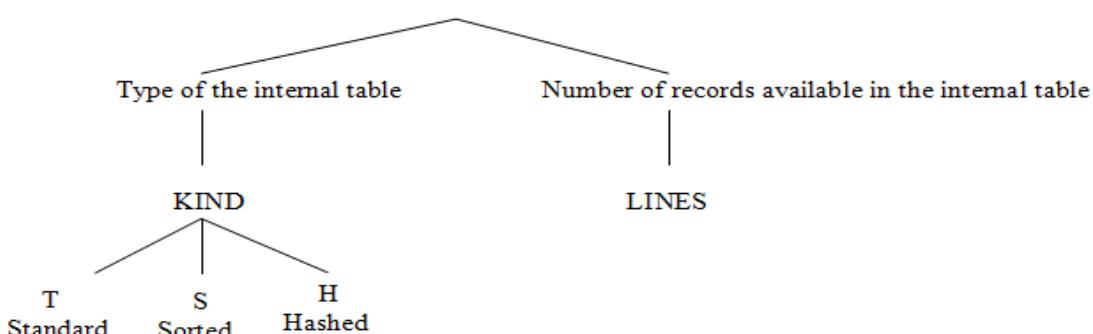
Hashed internal table: -

1. It won't accept the duplicate records
2. Here we must specify at least one filed as unique
3. Pushing data from work area to internal table is always through **Collect** keyword.
4. Searching of a record is by using Hash algorithm.

Syntax: -

Data <internal table> like Hashed table of <work area> with unique / non-unique key <field1><field2> --. In the real time most of the times we use standard internal table because we are working with data of data base table. In the data base there is no duplicate data. Some times we use Hashed internal tables.

Attribute at internal table



Kind is the keyword which returns the type of internal table. If the internal table type is standard then writes T. Sorted writes S. Hashed writes H. Lines is the keyword which returns the number of records in internal table.

Syntax:-

Describe table <internal table> KIND <variable1> lines <variable2>
 ↓ ↓
 Optional Optional

By default variable is the character data type & length is 1.

```
Data v1.  
Data v2 type i.  
Data: Begin of WA_KNA1,  
      KUNNR type KNA1-KUNNR,  
      NAME1 type KNA1-NAME1,  
      ORT01 type KNA1-ORT01,  
      End of WA_KNA1.  
Data IT_KNA1 like table of WA_KNA1.  
Select KUNNR NAME1 ORT01 from KNA1 into table IT_KNA1.  
Describe table IT_KNA1 KIND v1 LINES v2.  
Write: / v1, v2.
```

By default internal table is standard internal table.

MARA (Material Master table)

MATNR → Material number

MTART → Material type

MATKL → Material group

MEINS → Unit of measurement

Types of declaring Internal tables:-

1. Declaring the internal table with some of the fields from any one of the database table:-

Syntax:-

Data: begin of <work area>,

End of <work area>.

Data <IT> like table of <work area>.

Ex:-

```
Data: Begin of wa_t001,  
      Bukrs type t001-bukrs,  
      Ort01 type t001-ort01,  
      end of wa_t001.  
Data IT like table of wa_t001.
```

2. Declaring the internal table with all fields from any one of data base tables:

Syntax:-

Data begin of <work area>.

Include structure <data base table>.

Data end of <work area>.

Data <internal table> like table of <work area>.

Ex:-

```

Data begin of wa_t001.
    Include structure t001.
Data end of wa_t001.
Data IT like table of wa_t001.

```

3. Declaring the internal table by referring database table: -

Syntax: -

Data <work area> like <data base table>.

Data <Internal Table> like table of <work area / database table>

Ex:-

Data wa like t001.

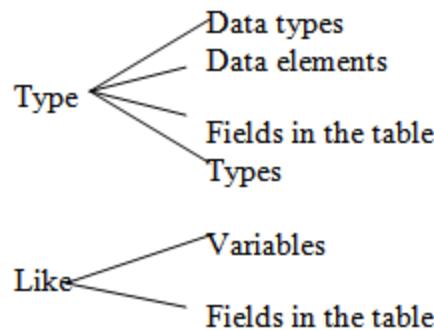
Data IT like table of wa.

(OR)

Data IT like table of t001.

Data wa like line of IT.

Note: - Type is used to refer the data types, data elements, fields in the table & types. Where as like is used to refer the variable or fields in the table.



4. Declaring the internal tables by using types keyword: -

Syntax:

Types: Begin of <type name>,

End of <type name>.

Data <wa> type <table name / type name>.

Data <internal table> like table of <work area>.

(or)

Data <internal table> type table of <type name>.

Ex: -

```

Types: begin of ty_t001,
    Bukrs type t001-bukrs,
    Ort01 type t001-ort01,
    End of ty_t001.
Data wa_t001 type ty_t001.
Data IT type table of ty_t001.
                                            (Or)
Data IT like table of wa_t001.

```

Note: - If you want to comment the multiple lines then select the all lines. Click on CTRL + Less than. If you want to uncomment then select all lines, click on CTRL + Grater than.

→ Display the all companies & their entire fields information

* Data wa_t001 like t001.
* Data IT_t001 like table of wa_t001.

* Data IT_t001 like table of t001.
* Data wa_t001 like line of IT_t001.

```
Types begin of ty_t001.  
    Include structure t001.  
Types end of ty_t001.  
Data wa_t001 type ty_t001.  
Data IT_t001 type table of ty_t001.  
Select * from t001 into table it_t001.  
Loop at IT_t001 into wa_t001.  
    Write: / wa_t001-bukrs, wa_t001-butxt.  
Endloop.
```

Internal table with header line: -

By default with header line creates one work area with the name of internal table. That means the name of the work area as well as name of the internal table as similarly.

Declaring the IT with header by using occurs keyword: -

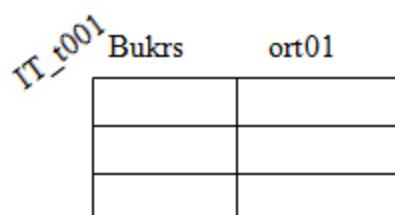
Syntax: -

Data: begin of <internal table> occurs 0,

End of <internal table>.

Ex: -

```
Data: begin of IT_t001 occurs 0,  
    Bukrs type t001-bukrs,  
    Ort01 type t001-ort01,  
    End of IT_t001.
```



Here occurs 0 by default allocates 8 kb of memory for the internal table. If the data in the internal table exceeds 8 kb, then it'll provide one more 8 kb of memory ... up to 2 GB.

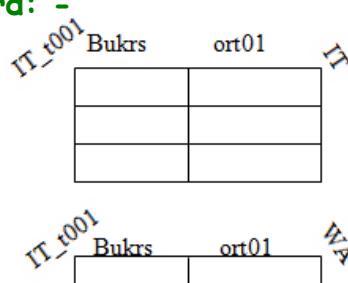
Occurs 'n': - By default it allocates 'n' records of memory for internal table. If the data in the internal table exceeds 10 records. Then it'll be allocates one more 'n' records of memory ---- up to 2 GB.

Declaring the internal table with header by using types keyword: -

Types: begin of <type name>.

End of <type name>.

Data <internal table> type table of <type name> with header line.



Ex:-

```
Types: begin of ty_t001,
      Bukrs type t001-bukrs,
      Ort01 type t001-ort01,
      End of ty_t001.
```

Data it_t001 type table of ty_t001 with header line.

Note: - By default tables keyword creates one **work area** with the name of **database table name** and also it contains all the fields of data base table.

Syntax:-

Tables<database table name>.

Tables t001.

Bukrs	butxt	ort01	-----

1 Append IT_t001 to t001.

2. Loop at it_t001 into t001.

Initializing techniques: -

1. Clear
2. Refresh
3. Free

Clear: - clear clears the contents of the work area & also clear is used to clear the contents of the internal table.

Syntax:-

Clear <work area>

Clear <internal table>

Ex:-

Clear WA_t001.

Clear IT_t001.

Bukrs	butxt	Ort01
100	TCS	Hyd

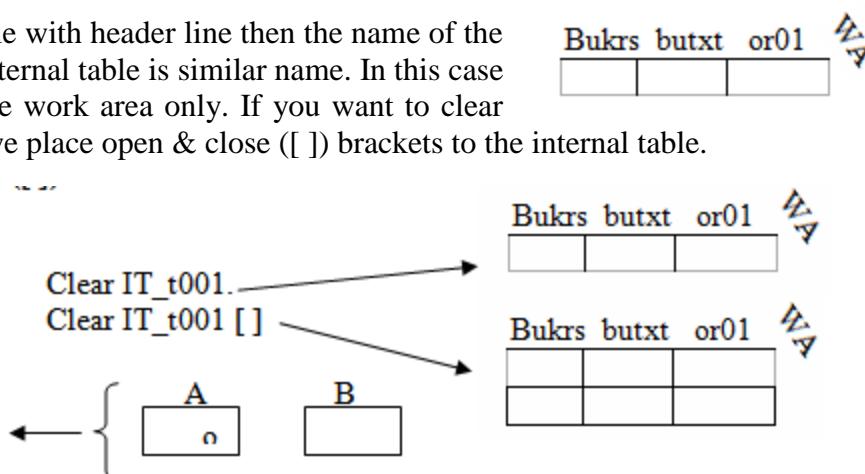
After clear ↓

Bukrs	butxt	Ort01

If we are working with internal table with header line then the name of the work area as well as name of the internal table is similar name. In this case also clear clears the contents of the work area only. If you want to clear the contents of internal table then we place open & close ([]) brackets to the internal table.

Ex:-

```
Data A type I.
Data B(5) type C.
A = 10.
B = 20.
Clear: A, B.
Write:/ A, B.
```



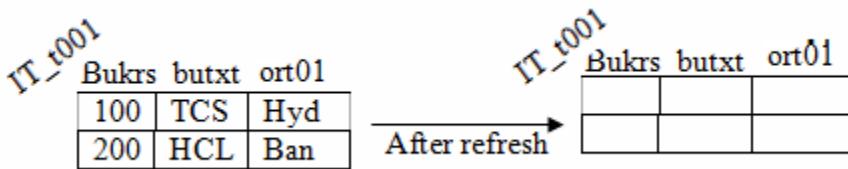
Refresh:-

Refresh always clears the contents at the internal table only.

Syntax: -

Refresh <internal table>.

Ex: - Refresh IT_t001.



Note: - If you're working with internal table with header line also refresh always clear the content of the internal table.

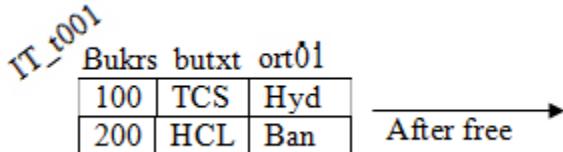
Free: -

Free acts like refresh.

1. Refresh clears the contents of internal table only. Not the memory which is allocated for that.
2. Free clears the contents of the internal table as well as memory which is allocated for that.

Syntax: - Free <internal table>.

Ex: - Free IT_t001.



Operations on Internal Table: -

1. Pushing data from work area to internal table by using
 - a. Append → Standard table
 - b. Insert → Sorted table
 - c. Collect → Hashed table
2. Reading the data from internal table

Single Record Multiple Records (Loop at)

3. Modify the data in an internal table by using **modify** keyword.
4. Delete the data in an internal table by using **delete** keyword.
5. Sort the data in an internal table by using **sort** keyword.

Append: - Append is the keyword to transfer the data from work area to at the last record of internal table.

Syntax: -

Append <work area> to <internal table>.

Ex: - Append WA_t001 to IT_t001.

Insert: - Insert is the keyword to transfer the data from work area to internal table based on the key field.

Syntax: -

Insert <work area> into table <internal table>.

Ex: -

Insert WA into table IT.

Note: - If we use insert keyword to standard internal table then it acts like append.

Collect: - Collect checks the internal table whether the record is available or not based on the key field. If not it acts like append (record adds first). Otherwise it adds the numeric fields from work area to number field in the internal table.

Syntax: -

Collect <WA> into <IT>.

Ex: - Collect WA into IT.

Whether we are working with collect keyword then we must declare **other than numeric** (data types) files are unique.

Sno	Esal
3	5000
7	4000
Sno	Esal
1	4000
2	6000
3	2000
4	3000
7	5000

→ 2000+5000 = 7000

Reading a single record from internal table based on index

Syntax: -

Read table <internal table> into <work area> index <no>.

Ex: -

Read table IT into WA index 2.

We never use 1st condition in real time.

Reading a single record for the internal table based on condition

Syntax: -

Read table <internal table> into <work area> with key condition.

Ex: -

Read table IT into WA with key BUKRS = '2000'.

OP: - 1000 IBM Chennai

Reading multiple records from the internal table based on index.

Syntax: -

Loop at <internal table> into <work area> from <index no> to <index no>.

Endloop.

Ex: -

Loop at IT into WA from 2 to 3.

Write: / WA_t001-BUKRS, WA_t001-BUTXT, WA_t001-ORT01.

Endloop.

OP: - 200 IBM Chennai
300 HCL Hyderabad

BUKRS	BUTXT	ORT01
100	TCS	Hyderabad
200	IBM	Chennai
300	HCL	Hyderabad
400	HP	Mumbai
500	CSC	Bangalore

Reading multiple records from the internal table based on condition

Syntax: -

Loop at <internal table> into <work area> where <condition>.

Endloop.

Ex: -

Loop at IT_t001 into WA_t001 where ORT01 = 'Hyderabad'.

Write: / WA_t001-BUKRS, WA_t001-BUTXT, WA_t001-ORT01.

Endloop.

OP: -	100	TCS	Hyderabad
	300	HCL	Hyderabad

Modify the data in internal table by using modify keyword

This is 2 step procedure.

1. Fill the latest information into the work area.
2. Modify the index table based on work area.

Syntax:

Modify <internal table> from <work area> transporting <field1> <field2> where <condition>.

Ex: -

WA_t001-ORT01 = 'BAN'.

Modify IT_t001 from WA_t001 transporting ORT01 where BUKRS = '2000'.

If we are maintaining all the fields information in the work area (key field)

Syntax: - Modify <internal table> from <work area>.

Delete the data from internal table by using delete keyword

Based on index: -

Syntax: -

Delete <internal table> index <index no>.

Ex: -

Delete IT_t001 index 3.

Based on condition: -

Syntax: -

Delete <internal table> where <condition>.

Ex: -

Delete IT_t001 where ORT01 = 'Hyderabad'.

Sort the data in an internal table

Syntax: -

Sort <internal table> by <field1> <field2>.

Ex: -

Sort IT_t001 by BUKRS.

OP: -

BUKRS	BUTXT	ORT01
100	TCS	Hyderabad
200	IBM	Chennai
300	HCL	Hyderabad
400	HP	Mumbai
500	CSC	Bangalore

By default sort is ascending order. If you want to descending order

Syntax: - Sort <internal table> by <field 1> descending.

Ex:- Sort IT_t001 by BUKRS descending.

Note: - Before using the delete, to delete duplicates we must sort the table based on comparing fields.

Syntax of delete adjacent duplicates: -

Delete adjacent duplicates from <internal table> comparing <filed 1> <filed 2>.

Ex: - Delete adjacent duplicates from IT comparing BUKRS.

✓ 100	TCS	Hyderabad	200	IBM	Chennai
100	TCS	Hyderabad	100	TCS	Hyderabad
100	TCS	Hyderabad	300	HCL	Hyderabad
✓ 200	IBM	Chennai	400	HP	Mumbai
200	IBM	Chennai	100	TCS	Hyderabad
✓ 300	HCL	Hyderabad	400	HP	Mumbai
✓ 400	HP	Mumbai	100	TCS	Hyderabad
400	HP	Mumbai	200	IBM	Chennai

← After sorted

Transferring the data from internal table to another table which are similar structure

If the second internal table is empty

Syntax: -

<internal table 2> = <internal table 1>.

Ex: -

IT = IT_t001.

If the second internal table have data

Syntax: -

Append lines of <internal table 1> to <internal table 2>.

Ex: -

Append lines of IT_t001 to IT.

Syntax: -

Insert lines of <internal table 1> into table <internal table 2>.

Ex: -

Insert lines of IT_t001 into table IT.

```
Data: begin of WA,  
      Eid(10) type C,  
      Esal type I,  
      End of WA.
```

```
Data IT like hashed table of WA with unique key Eid.
```

```
WA-Eid = '1'.
```

```
WA-Esal = '10000'.
```

```
Collect WA into IT.
```

IT_t001		
bukrs	butxt	ort01
100	TCS	Hyd
200	IBM	Che
300	HCL	Ban

WA_t001		
bukrs	butxt	ort01

IT		
bukrs	butxt	ort01
400	HP	Ban

 Loop at IT_t001 into WA_t001.
Append WA_t001 to IT.
Endloop.

```

WA-Eid = '2'.
WA-Esal = '30000'.
Collect WA into IT.
WA-Eid = '4'.
WA-Esal = '60000'.
Collect WA into IT.

Loop at IT into WA.
  Write: / WA-Eid, WA-Esal.
Endloop.
Uline.

WA-Eid = '3'.
WA-Esal = '30000'.
Collect WA into IT.

Loop at IT into Wa.
  Write: / WA-Eid, WA-Esal.
Endloop.

```

Working with collect

1	10000
2	30000
4	60000

1	10000
2	30000
4	60000
3	30000

```

Types: begin of ty,
      Eid(10) type C,
      Ename(25) type C,
      End of ty.

Data WA type ty.

Data IT like sorted table of WA with unique key Eid.

WA-Eid = '1'.
WA-Ename = 'Vidya'.
Insert WA into table IT.
WA-Eid = '3'.
WA-Ename = 'Latha'.
Insert WA into table IT.

Loop at IT into WA.
  Write : / WA-Eid, WA-Ename.
Endloop.
Uline.

WA-Eid = '2'.
WA-Ename = 'Satiah'.
Insert WA into table IT.

Loop at IT into WA.
  Write: / WA-Eid, WA-Ename.
Endloop.

```

Working with inset key word

1	Vidya
3	Latha

1	Vidya
2	Satish
3	Latha

→ Based on the employee, salary internal table data display the Eid, Ename and Esal.

```

Data: begin of WA_Emp,
      Eid(10) type C,
      Ename(25) type C,
      End of WA_Emp.

Data IT_Emp like table of WA_Emp.

```

```

Data: begin of WA_Sal,
      Eid(10) type C,
      Esal(10) type C,
      End of WA_Sal.
Data IT_Sal like table of WA_sal.

```

```

Data: begin of WA,
      Eid(10) type C,
      Ename(25) type C,
      Esal(10) type C,
      End of WA.
Data IT like table of WA.

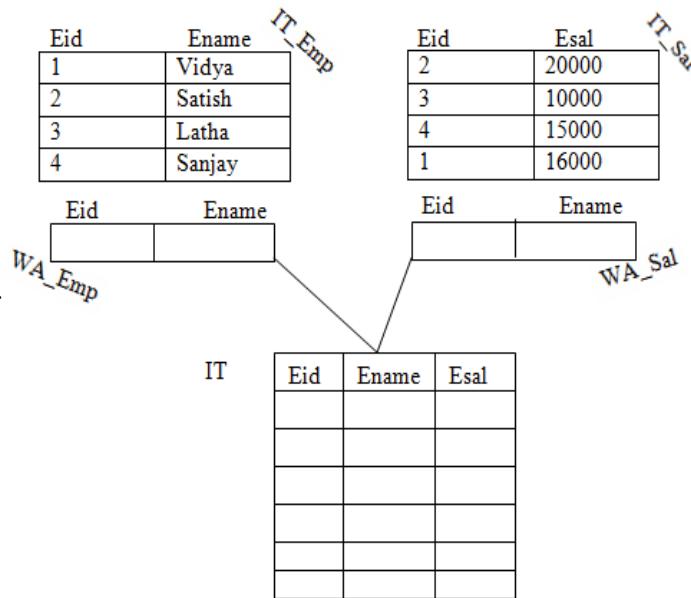
```

* filling the employee information

```

WA_Emp-Eid = '1'.
WA_Emp-Ename = 'Vidya'.
Append WA_Emp to IT_Emp.
WA_Emp-Eid = '2'.
WA_Emp-Ename = 'Satish'.
Append WA_Emp to IT_Emp.
WA_Emp-Eid = '3'.
WA_Emp-Ename = 'Latha'.
Append WA_Emp to IT_Emp.
WA_Emp-Eid = '4'.
WA_Emp-Ename = 'Sanjay'.
Append WA_Emp to IT_Emp.

```



```

Loop at IT_Emp into WA_Emp.
  Write: / WA_Emp-Eid, WA_Emp-Ename.
Endloop.
Uline.
* Filling the data salary internal table
WA_Sal-Eid = '2'.
WA_Sal-Esal = '20000'.
Append WA_Sal to IT_Sal.
WA_Sal-Eid = '3'.
WA_Sal-Esal = '10000'.
Append WA_Sal to IT_Sal.
WA_Sal-Eid = '4'.
WA_Sal-Esal = '15000'.
Append WA_Sal to IT_Sal.
WA_Sal-Eid = '1'.
WA_Sal-Esal = '16000'.
Append WA_Sal to IT_Sal.

Loop at IT_Sal into WA_Sal.
  Write: / WA_Sal-Eid, WA_Sal-Esal.
Endloop.
Uline.
* Based on emp and salary table fill the final table

```

```

Loop at IT_Emp into WA_Emp.
  WA_Eid = WA_Emp-Eid.
  WA_Ename = WA_Emp-Ename.
  Read table IT_Sal into WA_Sal with key Eid = WA_Emp-Eid.
  WA_Esal = WA_Sal-Esal.
  Append WA to IT.
  Clear WA.
Endloop.
Loop at IT into WA.
  Write: / WA_Eid, WA_Ename, WA_Esal.
Endloop.

```

→ Update the rank field in the student internal table based on rank internal table data.

```

Data: begin of WA_Stu,
      Sid(5) type C,
      Sname(25) type C,
      Srank(5) type C,
      End of WA_Stu.
Data IT_Stu like table of WA_Stu.
Data: begin of WA_rank,
      Sid(5) type C,
      Srank(5) type C,
      End of WA_rank.
Data IT_rank like table of WA_rank.
* Filling the student internal table
WA_Stu-Sid = '1'.
WA_Stu-Sname = 'Vidya'.
Append WA_Stu to IT_Stu.
WA_Stu-Sid = '2'.
WA_Stu-Sname = 'Satish'.
Append WA_Stu to IT_Stu.
WA_Stu-Sid = '3'.
WA_Stu-Sname = 'Latha'.
Append WA_Stu to IT_Stu.
WA_Stu-Sid = '4'.
WA_Stu-Sname = 'Sharadha'.
Append WA_Stu to IT_Stu.

Loop at IT_Stu into WA_Stu.
  Write: / WA_Stu-Sid, WA_Stu-Sname, WA_Stu-Srank.
Endloop.
Uline.
* Filing the rank internal table
WA_rank-Sid = '4'.
WA_rank-Srank = '3'.
Append WA_rank to IT_rank.
WA_rank-Sid = '3'.
WA_rank-Srank = '4'.
Append WA_rank to IT_rank.
WA_rank-Sid = '1'.

```

```

WA_rank-Srank = '1'.
Append WA_rank to IT_rank.
WA_rank-Sid = '2'.
WA_rank-Srank = '2'.
Append WA_rank to IT_rank.

Loop at IT_rank into WA_rank.
  Write: / WA_rank-Sid, WA_rank-Srank.
Endloop.
Uline.
* Modify student rank with rank internal table data.

Loop at IT_Stu into WA_Stu.
  Read table IT_rank into WA_rank with key
  Sid = WA_Stu-Sid.
  WA_Stu-Srank = WA_rank-Srank.
  Modify IT_Stu from WA_Stu.
Endloop.
* Display
Loop at IT_Stu into WA_Stu.
  Write: / WA_Stu-Sid, WA_Stu-Sname, WA_Stu-Srank.
Endloop.

```

Search Help: -

Search help is used to provide the list of possible values to the input variable. There are two types of search helps. 1. **Elementary search help** 2. **Collective search help**.

This is two step procedure.

1. Create the search help
2. Attach the search help to data element.

→ **Create the elementary search help to identify the company code based on the company name.**

Steps to create elementary search help: -

Execute SE11. Select the radio button search help. Provide the search help name (zsashi1). Click on create. Click on enter. Provide short description. Provide the selection method is table name (T001). Provide the hot key as any name. Enter. Provide search help parameter.

Search help parameter	IMP	EXP	LPOS	SPOS
BUKRS	✓	✓	1	1
BUTXT		✓	2	2

Save, check, activate the search help.

Steps to attach the search help to data elementary: -

Execute SE11. Select the radio button data type. Provide the data element name (ZSPT_9_BUKRS). Click on create. Enter. Provide short description. Provide domain name [(zbukrs) (4, char)]. Click on further characteristics tab. Provide the search help name (zsashi1), parameter (BUKRS). Save, check, activate. Execute SE38.

Parameter P_BUKRS type ZSPT_9_BUKRS.

Save, check, activate, execute.

LFB1 (Vendors under company): -

BUKRS → Company code

LIFNR → Vendor number

AKONT → Recon Account.

Collective search help: - Collective search help is the collection of elementary search help.

→ **Create the collective search help to identify the company code based on company name & identify the company code based on vendor number.**

Execute SE11. Select the radio button search help. Provide the collective search help name (zsashi3). Click on create. Select the radio button collective search help. Enter. Provide short description. Provide the search help parameter (BUKRS) & data element (BUKRS). Import, export, click on include search help tab. Provide the all the elementary search helps. Select the each element search help. Click on parameter assignment. Click on yes. Enter. Save, check, activate the collective search help.

Steps to create data element for collective search help: -

Execute SE11. Select the radio button data type. Provide the data element name. Click on create. Enter. Provide short description. Provide the domain name. Click on characteristic tab. Provide the collective search help name, parameter. Save, check, activate.

Execute /OSE38.

Parameter P_BUFRS type ZSPT_9_BUFRS.

Hot key: -

The Hot key permits the user to select an elementary search help from the collective search help directly in the input field with the short notation.

After executing the program we provide the input as equal to hot key (=A) & click on **F4**. Then we get the elementary search help, which contains the specified hot key as default.

Letters & digits are allowed as a hot key.

Lock Objects: -

Lock object is used to avoid the concurrent access of multiple users on the same data base. When ever we create & activate the lock object it generates two function modules. 1. Enqueue (locking) 2. Dequeue (unlock). The lock object name must be start with EZ or EY.

Steps to create lock object: -

Execute SE11. Select the radio button lock object. Provide the lock object name. Click on create. Provide short description. Click on tables tab. Provide the table name (T001). Select the lock mode as read lock. Save, check, activate. In the menu bar click on go to → lock modules. Identify the functional modules. (ENQUEUE – lock object name, DEQUEUE – Lock object name).

Types of lock modules: -

Write lock (or) exclusive lock: -

The locked data can be read or processed by one user only.

Read lock (or) shared lock: -

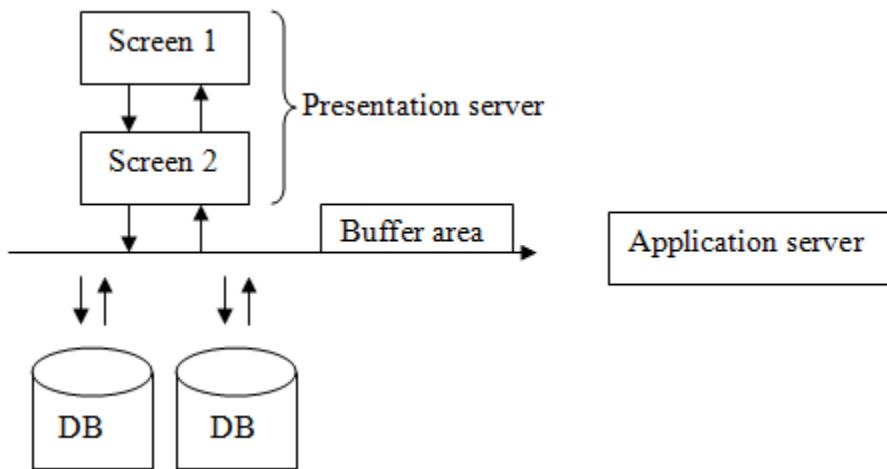
Several users can read the same data at the same time but only one user can edit the data.

Exclusive not cumulative lock: -

Several users can access the same data as well as update the same data.

Buffering: -

Buffering is the temporary place in the application server. When ever we execute any object then the system goes to application server and check the required data is available or not in buffer area. If the data is available then it gets from buffer area & displays it. If the data isn't available in the buffer area then it goes to data base & picks the data from data base server & placed into buffer area & displays it.



Note: - Buffering is always available in the technical setting of a table.

Types of buffering: -

Single record buffering: -

In this kind of buffering the selected data will be stored into buffered area.

Generic area buffering: -

In this kind of buffering the key information stored in the buffered area.

Fully buffered: -

In this type of buffering the entire data of database is load into the buffering.

Note: - If you want to display the data in a single line then you must provide the line-size.

Ex: - Report <Report name> Line-size 1023.

MAKT (Material Description table)

MATNR → Material number

SPRAS → Language

MAKTX → Material Description

EKKO (Purchasing document number table): -

EBELN → Purchasing document number

BEDAT → Document date

LIFNR → Vendor number

BUKRS → Company code

BSART → Document type.

T001 (Plant description table): -

WERKS → Plant number

NAME1 → Plant name

EKPO (Purchasing document item table): -

EBELN → Purchasing document number

EBELP → Item number

MATNR → Material number

MENGE → Quantity

MEINS → Unit of measurement

NETPR → Net price

MARC (Material & Plant table): -

MATNR → Material number

WERKS → Plant number

MARD (Material, Plant storage location): -

MATNR → Material number

WERKS → Plant number

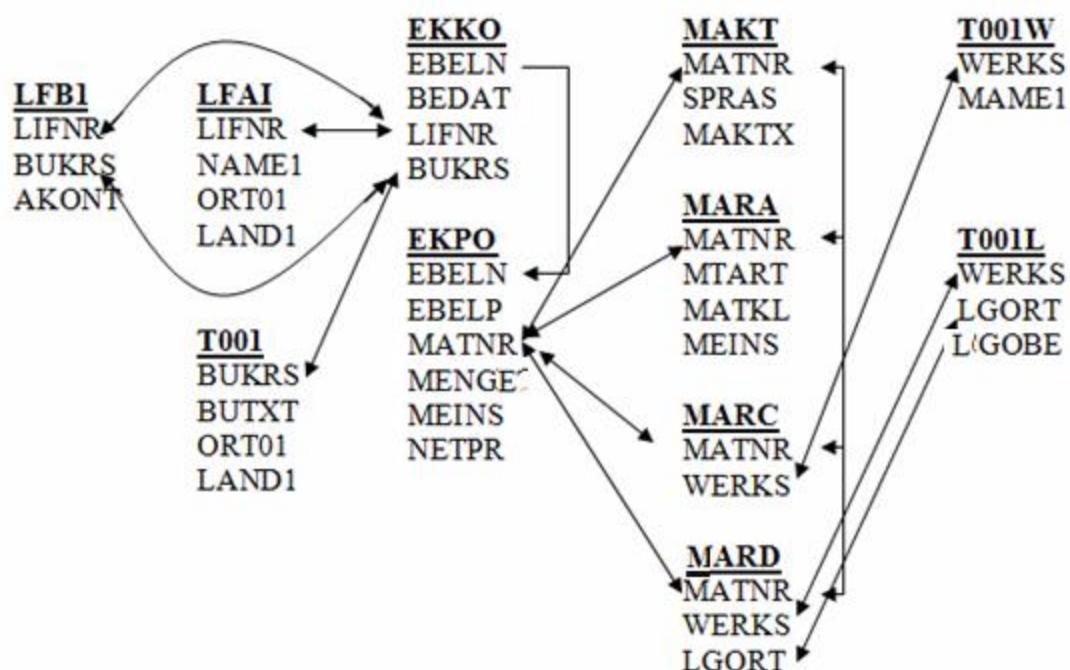
LGORT → Storage location

T001L (Storage location description table): -

WERKS → Plant number

LGORT → Storage location

LGOBE → Storage location description



TMG (Table Maintenance Generator)

Table Maintenance Generator is used to insert, update and delete the data of data base table with out any code (with out DML Commands). Table Maintenance Generator is only possible for custom tables. The transaction code for TMG is SM30.

Steps to create Table Maintenance Generator: -

Execute SE11. Select the radio button data base table. Provide the data base table name for which table we want to create the TMG. Click on change. In the menu bar click on utilities → Table Maintenance Generator. Select the authorization group which is provided by BASIS people. Provide the function group as table name. Select the Maintenance type is one step or two step.

Provide the screen number (any number). Click on create. Save in our own package. Click on save, back, active.

Steps to maintain the data by using TMG: -

Execute SM30. Provide table or view name as our table name (ZHAI11). Click on maintain. Enter. And perform the operations of the data (insert, update, delete).

Steps to create transaction code for the table or TMG: -

Execute SE93. Provide the transaction code as same table name. Click on create. Provide short description. Select the radio button transaction with parameter. Provide transaction (SM30). Select the check box skip initial screen. Select the GUI check boxes. Provide the default values.

Name of the screen field	value
Update	X

Click on save.

Now we execute this table name as a transaction code then we get the screen and perform the operations. There are two types of Maintenance. One step and two step.

One Step Maintenance: -

It means both maintaining the data and display the data in a single screen.

Two step Maintenance: -

It means maintain the data in one screen and display the data in some other screen.

Some of the events in TMG

1. Before saving the data in the data base
2. After saving the data in the data base.
3. Before deleting the data display
4. After deleting the data display.
5. Creating a new entry

Steps to implement the events in TMG: -

Execute SE11. Open the table in change mode. In the menu bar click on utilities → Table Maintenance Generator. In the menu bar click on environment → modification events. Enter. Click on new entries in the application tool bar. Select the event. Provide the form name. click on save. Click on editor. Enter. Implement the code in between form end form. Save, check, activate. Back, save, back.

Table type: - Table type is the collection of structure records or structure fields by using table type we declare the internal table in the ABAP editor. Creation table type is two step procedures. 1. Create the structure, 2. Create the table type based on the structure.

→ **Create the table type with BUKRS BUTXT ORT01**

Steps to create the structure: -

Execute SE11. Select the radio button data type. Provide the structure name. click on create. Select the radio button structure. Enter. Provide short description. Provide the component, component type.

Component	Component type
BUKRS	BUKRS
BUTXT	BUTXT
ORT01	ORT01

Save, check, activate.

Steps to create table type based on the structure: -

Execute SE11. Select the radio button data type. Provide the table type name. click on create. Select the radio button table type. Enter. Provide short description. Provide line type as structure name. Enter. Save, check, activate the table type.

Data it_t001 type zhai11.

Data wa_t001 like line of it_t001.

Select bukrs butxt ort01 from t001 into table it_t001.

Loop at it_t001 into wa_t001.

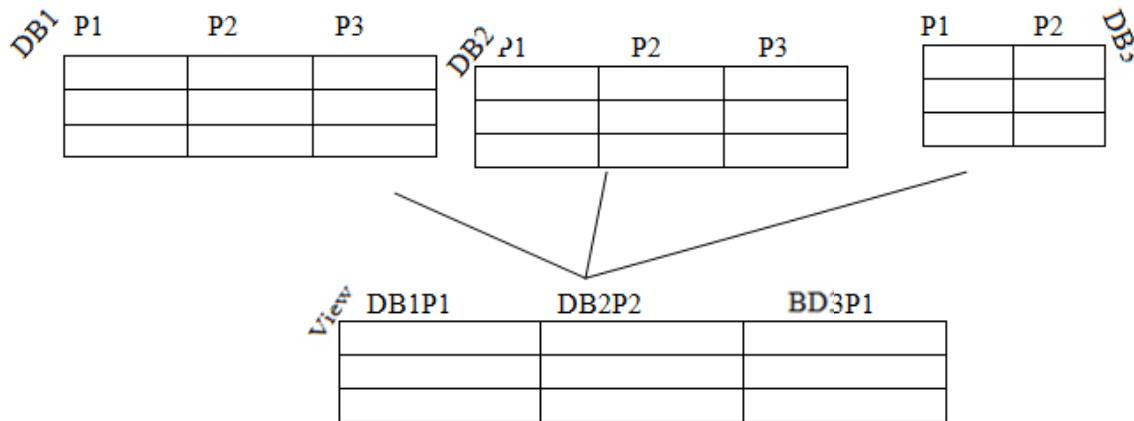
Write: / wa_t001-bukrs, wa_t001-butxt, wa_t001-ort01.

Endloop.

Views: -

Each application has its own data base tables. If you want to display the part of data from each table then we pick the data from each table & merge the data & display the data. If it's regular activity then it's better to create a view.

Views are logical databases. It doesn't contain the data permanently. At run time only view contains the data.



There are 4 types of views.

1. Projection view
2. Data base view
3. Help view
4. Maintenance view

Projection view: -

If you want to display the part of data from single database table, if it's a regular activity then it's better to create projection view.

Projection view is always involving single database table.

Steps to create projection view: -

Execute SE11. Select the radio button view. Provide the projection view name. Click on create. Select the radio button projection view. Enter. Provide short description. Provide the basis table. Click on table fields button. Select the required fields check box. Enter. Save, check, activate.

Ex: -

Select BUKRS BUTXT ORT01 from ZSPT_9AM_PV into table IT_T001.

Note: - Fetching the data from view is faster than fetching the data from database table.

Data base view: -

If you want to display the data from more than one table then we pick the data from each table & merge it & display it. If it's a regular activity, then it's better to create database table. Database view is always involved with more than one table.

→ Create the database view with BUKRS BUTXT LIFNR

Steps to create database view: -

Execute SE11. Select the radio button view. Provide the data base view name. Click on create. Enter. Provide short description. Provide the related tables in left table. Select all tables. Click on relationships.

Select the check box. Enter. Click on view fields tab. Click on table fields button. Select the each table. Click on choose. Select the required fields. Enter. Save, check, activate.

Ex: -

Select BUKRS BUTXT LIFNR from ZSPT_9AM_DV into table IT_Final.

Database view picks the data from both the tables. If and only if there is one or more entries is available in the right hand side table with corresponding left hand side table.

BUKRS BUTXT *TOOL*

1000	TCS
2000	IBM
3000	HCL
4000	HP
5000	CSC

BUKRS LIFNR *LFB1*

1000	241
1000	251
3000	116
4000	745
4000	795

BUKRS BUTXT LIFNR *IT_Final*

1000	TCS	241
1000	TCS	251
3000	HCL	116
4000	HP	745
4000	HP	795

Help view: -

Help view pick the data from left hand side table. Even though there is no match in the right hand side table.

Help view always involve in two data base tables.

Note: - Data base view & help views are used in selection method of elementary search.

Steps to create the help view: -

Execute SE11. Select the radio button view. Provide the help view name. Click on create. Select the radio button help view. Enter. Provide short description. Provide the initial table. Click on relationships button. Select the required table check box. Enter. Click on view fields tab. Click on table fields. Select the each table.

Click on choose. Select the required fields. Enter. Save, check, activate.

BUKRS BUTXT *TOOL*

1000	TCS
2000	IBM
3000	HCL
4000	HP
5000	CSC

BUKRS LFNR *LFB1*

1000	241
1000	251
3000	116
4000	745
4000	795

BUKRS BUTXT LFNR

1000	TCS	241
1000	TCS	251
2000	IBM	
3000	HCL	116
4000	HP	745
4000	HP	795
5000	CSC	

Control break statement / event in internal table: -

Control break statements are work with in the loop at internal table. Before using the control break statements. We must sort the internal table based on At new field. Control break statements are 1> At First
2> At New <field name> 3> At End of <field name> 4> At last
Each control break statement ends with Endat.

AT FIRST: -

This is an event which is triggered at the first record of internal table.

Advantage: - This is used to display the header information for internal table.

AT NEW <field name>: -

It's an event which is triggered at the first record of each block.

Advantage: - It's used to display the individual fields.

AT END OF <field name>: -

This is used to display at the last record of each block.

Advantage: -This is used to display the sub total.

AT LAST: -

This is an event which is triggered at the last record of internal table.

Advantage: - It's used to display the grand total.

→ Based on the given purchasing document numbers display the purchasing item details as shown in the figure.

EBELN	EBELP	MENGE	MEINS	NETPR
3004	01	10	Kg	250.00
3004	02	2	Pcs	150.00
3005	01	3	Nos	450.00
3006	01	9	Pcs	120.00
3006	02	2	Box	180.00
3006	03	2	Nos	200.00

EBELN	EBELP	MENGE	MEINS	NETPR

At first =====► These are PO details

At new =====► 3004

01	10	Kg	250.00
02	2	Pcs	150.00

At end of =====► Sub total 400.00

3005			
01	3	Nos	450.00
		Sub total	450.00

3006			
01	9	Pcs	120.00
02	2	Box	180.00
03	2	Nos	200.00
		Sub total	500.00

At last =====► Grand total 1350.00

Note: - When ever we are working with at new & at end of the right side fields of mention field values display as stars if it's a character data type & displayed as zeros if it's a numeric data type.

```
DATA V1 TYPE EKKO-EBELN.  
SELECT-OPTIONS S_EBELN FOR V1.  
DATA: V2 TYPE EKPO-NETPR, V3 TYPE EKPO-NETPR.  
TYPES: BEGIN OF TY_EKPO,  
        EBELN TYPE EKPO-EBELN,  
        EBELP TYPE EKPO-EBELP,  
        MENGE TYPE EKPO-MENGE,  
        MEINS TYPE EKPO-MEINS,  
        NETPR TYPE EKPO-NETPR,  
        END OF TY_EKPO.  
DATA WA_EKPO TYPE TY_EKPO.  
DATA IT_EKPO TYPE TABLE OF TY_EKPO.  
DATA WA LIKE WA_EKPO.  
SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO WHERE  
EBELN IN S_EBELN.  
SORT IT_EKPO BY EBELN.  
LOOP AT IT_EKPO INTO WA_EKPO.  
WA = WA_EKPO.  
AT FIRST.  
WRITE / 'THESE ARE PO DETAILS'.  
ENDAT.  
AT NEW EBELN.  
WRITE: / WA_EKPO-EBELN, WA_EBELP, WA-MENGE.  
ENDAT.  
WRITE: / WA_EKPO-EBELP, WA_EKPO-MENGE, WA_EKPO-MEINS,  
WA_EKPO-NETPR.  
V2 = V2 + WA_EKPO-NETPR.  
V3 = V3 + WA_EKPO-NETPR.  
AT END OF EBELN.  
WRITE: / 'SUB TOTAL', V2.  
CLEAR V2.  
ENDAT.  
AT LAST.  
WRITE:/ 'GRAND TOTAL', V3.  
ENDAT.  
ENDLOOP.
```

Working with ON CHANGE OF: -

Ex: -

Loop at IT_EKPO into WA_EKPO.
ON CHANGE OF WA_EKPO-EBELN.
Write:/ WA_EKPO-EBELN, WA_EKPO-EBELP, WA_EKPO-MENGE.
Endon.
Endloop.

Differences between AT NEW, ON CHANGE OF

AT NEW

1. AT NEW work within the loop of internal table
2. The right side fields of the mentioned field values display as **stars** if it's a character data type & display '0's if it's numeric data type.
3. In the AT NEW we can't use the logical operations (and, or, not)
4. This is used in ABAP objects.

Note: - Now a days ON CHANGE OF is out dated (Don't use).

If you want to remove the title in the output, then you must provide '**NO STANDARD PAGE HEADING**' in the name of the report.

SY_ULINE is the system variable which is used to draw the horizontal line. **SY_VLINE** is the system variable which is used to draw the vertical line.

```

DATA V1 TYPE T001-BUKRS.
SELECT-OPTIONS S_BUKRS FOR V1.
TYPES: BEGIN OF TY_T001,
        BUKRS TYPE T001-BUKRS,
        BUTXT TYPE T001-BUTXT,
        ORT01 TYPE T001-ORT01,
        END OF TY_T001.
DATA WA_T001 TYPE TY_T001.
DATA IT_T001 TYPE TABLE OF TY_T001.
SELECT BUKRS BUTXT ORT01 FROM T001 INTO TABLE IT_T001 WHERE BUKRS IN
S_BUKRS.
WRITE SY-ULINE(57).
WRITE: / SY-VLINE, 2 'COCD' COLOR 5, 6 SY-VLINE, 7 'COMPANY NAME'
      COLOR 5, 32 SY-VLINE, 33 'COMPANY CITY' COLOR 5, 57 SY-VLINE.
WRITE / SY-ULINE(57).
LOOP AT IT_T001 INTO WA_T001.
  WRITE: / SY-VLINE, 2 WA_T001-BUKRS, 6 SY-VLINE, 7 WA_T001-BUTXT,
         32 SY-VLINE, 33 WA_T001-ORT01, 57 SY-VLINE.
  WRITE / SY-ULINE(57).
ENDLOOP.

```

VBAK (Sales document header table)

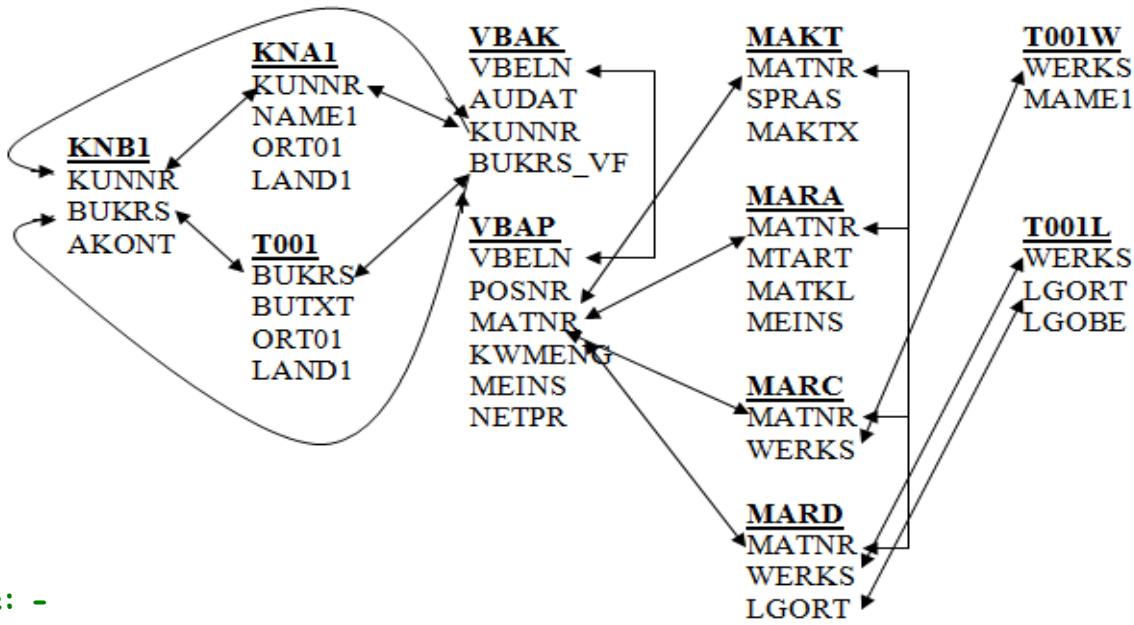
VBELN → Sales document number
AUART → Sales document type.
AUDAT → Sales document date
KUNNR → Customer number
BUKRS_VF → Company code

ON CHANGE OF

1. ON CHANGE OF work with in the any loop.
2. The right side field values of mention fields never change.
3. We can use logical operations.
4. This isn't used in ABAP objects.

VBAP (Sales document item table)

VBELN → Sales document number
POSNR → Item number
MATNR → Material number
KWMENG → Material quantity
MEINS → UOM
NETWR → Net value



Continue: -

The continue statement only used in loops if it's used the current loop pass is ended immediately & the program flow is continues.

→ Based on the given purchasing document numbers, display the item numbers, quantity, units of measurements & price if the amount is more than 20 by using continue statement.

Ex: -

Loop at IT_EKPO into WA_EKPO.

If WA_EKPO-NETPR < 20.

Continue.

Endif.

Write:/ WA_EKPO-EBELN, WA_EKPO-EBELP, WA_EKPO-MENGE, WA_EKPO-MEINS, WA_EKPO-NETPR.

Endloop.

Exit: -

Exit statement is used in within a loop. It leaves the loop by ending the current loop process.

→ Based on the given purchasing document numbers to display the first 5 item details by using exit command

Select EBELN EBELP MENGE MEINS NETPR from EKPO into IT_EKPO where EBELN in S_EBELN.

Loop at IT_EKPO into WA_EKPO.

Write:/ WA_EKPO-EBELP, WA_EKPO-EBELN, WA_EKPO-MENGE, WA_EKPO-MEINS, WA_EKPO-NETPR.

V2 = V2 + 1.

IF V2 = 5.

Exit.

Endif.

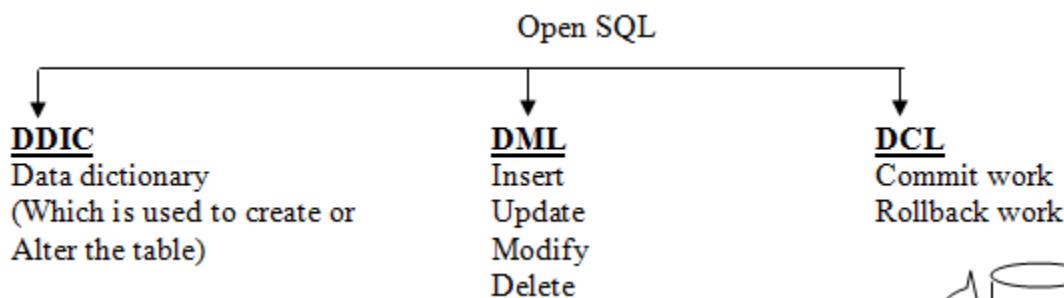
Endloop.

Check: -

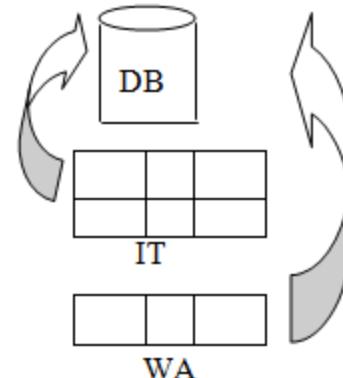
Check statement is used to terminate the sub routine conditional.

Stop:-

This is used in at selection-screen & start-of-selection events. This is used to stop the process of these event code.



Note: - Insert, update, modify a single record into the data base table is always through work area & multiple records through internal table.



Note: - When ever we are working with data base tables then we must maintain the structure of the work area as well as structure of the internal table must be the similar structure of data base table.

<u>Data base tables</u>	<u>Key fields</u>
T001	→ BUKRS
KNA1	→ KUNNR
LFA1	→ LIFNR
KNB1	→ KUNNR, BUKRS
LFB1	→ LIFNR, BUKRS
MARA	→ MATNR
MAKT	→ MATNR, SPRAS
EKKO	→ EBELN
EKPO	→ EBELN, EHELP
MARC	→ MATNR, WERKS
MARD	→ MATNR, WERKS, LGORT
T001W	→ WERKS
T001L	→ WORKS, LGORT
VBAK	→ VBELN
VBAP	→ VBELN, POSNR

Insert (single record): -

Inset inserts a record into the data base table based on the key field if there is no match found in the data base. Other wise it ignores the record.

Syntax:-

Insert <data base table> from <work area>.

Note: - SY-SUBRC is the system variable which contains zero with the above statement executed successfully otherwise it contains non zero. Most of the times it contains '4'.

```

Data wa_T001 like T001.
WA_T001-BUKRS = '0786'.
WA_T001-BUTXT = 'SATISH INFO'.
WA_T001-ORT01 = 'HYD'.
  
```

```

WA_T001-LAND1 = 'IN'.
Insert T001 from WA_T001.
If SY-SUBRC = 0.
Write 'Inserted'.
Else.
Write 'Not inserted'.
Endif.

```

Insert (Multiple records): -

Insert inserts multiple records from internal table to data base table if there is no match found in the data base for all the records of internal table based on the key field. If at least one record is matched then it simply ignores the all records of internal table as well as terminates the entire transaction.

Syntax: -

Insert <data base table> from table <internal table>.

```

Data: WA_T001 LIKE T001,
      IT_T001 LIKE TABLE OF WA_T001.
WA_T001-BUKRS = '0888'.
WA_T001-BUTXT = 'SATISH TECH'.
WA_T001-ORT01 = 'HYD'.
Append WA_T001 to IT_T001.
Clear WA_T001.
WA_T001-BUKRS = '0999'.
WA_T001-BUTXT = 'DHAWAN TECH'.
WA_T001-ORT01 = 'CHE'.
Append WA_T001 to IT_T001.
Clear WA_T001.
WA_T001-BUKRS = '0777'.
WA_T001-BUTXT = 'DHAWAN INFO'.
WA_T001-ORT01 = 'BAN'.
Append WA_T001 to IT_T001.
Clear WA_T001.
Insert T001 from table IT_T001.

```

Here '0777' company already exists in the data base. So it ignores all other records in internal table as well as it terminates the entire transaction.

If you want avoid the termination of the program then you must place accepting duplicate keys in the syntax of inserting.

Syntax: -

Insert <data base table> from table <internal table> accepting duplicate keys.

The above syntax avoids the termination of the program as well as inserts the non duplicate records & ignores the duplicate records.

Note: - SY-DBCNT is the system variable which contains the number of records as successfully processed into the data base.

Ex: -

Insert T001 from table IT_T001 accepting duplicate keys.

Write SY-DBCNT.

Here 0888 & 0999 companies are inserted & 0777 is ignored.

Update (single record) / over write: -

Update updates a record into the data base table if there is a match found into the data base base on the key field. Otherwise it ignores the record.

Syntax: -

Update <data base table> from <work area>.

Note: - when ever we are working with update then we must maintain change field information & also non change field information. Other wise non change field information may be lost.

Ex: -

```
Data WA_T001 like T001.  
WA_T001-BUKRS = '0777'.  
WA_T001-BUTXT = 'SATISH INFO'.  
Update T001 from WA_T001.  
If SY-SUBRC = 0.  
Write 'UPDATED'.  
Else.  
Write 'NOT UPDATED'.  
Endif.
```

Update (Multiple records): -

This functionality is similar as update single record functionality.

Syntax: -

Update <data base table> from table <internal table>.

Update particular record: -

Syntax: -

Update <data base table> set <field 1> = <value 1> <field 2> = <value 2> where <condition>

Ex: -

```
Update T001 set ORT01 = 'MUM' LAND1 = 'IN' where BUKRS = '0777'.  
If SY-SUBRC = 0.  
Write 'updated'.  
Else.  
Write 'not updated'.  
Endif.
```

Note: - Modify acts like update if there is a match found in data base based on the key field otherwise it acts like insert. Modify never failed.

Syntax: -

Modify <data base table> from <work area>.

Modify <data base table> from table <internal table>.

```
Data: WA like T001,  
      IT like table of WA.  
WA-BUKRS = '0786'.  
WA-BUTXT = 'SPRAO TECH'.  
WA-ORT01 = 'CHE'.  
Append WA to IT.
```

```
Clear WA.  
WA-BUKRS = '0787'.  
WA-BUTXT = 'SPRAO INFO'.  
WA-ORT01 = 'BAN'.  
Append WA to IT.  
Clear WA.  
Modify T001 from table IT.
```

In this example '0786' company already exist in the data base. So it acts like update or over write & '0787' company details aren't available in data base. So it acts as insert.

Delete: -

Delete deletes the data from data base based on condition.

Syntax: -

Delete from <data base table> where <condition>.

Ex: -

```
Delete from T001 where BUKRS = '0787'.  
If SY-SUBRC = 0.  
Write 'deleted'.  
Else.  
Write 'not deleted'.  
Endif.
```

Commit work: -

This command is used to commit the data base changes.

Ex: -

Delete from T001 where BUKRS = '0786'.

Commit work.

Rollback work: -

This command is used to reverse the data base changes.

Ex: -

Delete from T001 where BUKRS = '0787'.

Rollback work.

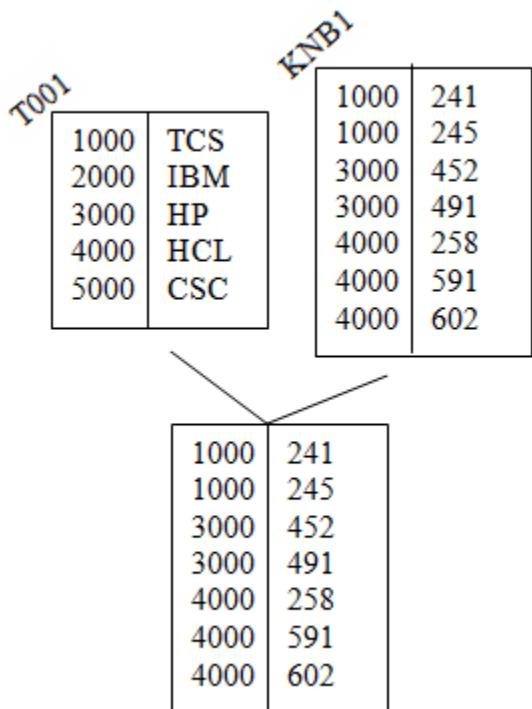
Joins

Joins are used to fetch the data from more than one table. There are two types of joins.

1. Inner join
2. Left outer join

Inner join: -

Inner join pick the data from both the tables if & only if there is one or more than one entry is available in the right hand side table with corresponding left hand side table.



Syntax: -

```
Select <data base table 1> ~ <field 1> <data base table 1> ~ <field 2> -----
      <data base table 2> ~ <field 1> <data base table 2> ~ <field 2> -----
      into table <internal table > from <database table1> inner join <database table 2 >
.....
```

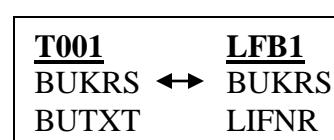
Where <condition>.

Note: - The link field must be primary fields in at least one data base table.

→ Display the company codes, company names & vendor numbers of the company details by using inner join.

```
TYPES: Begin of TY_FINAL,
  BUKRS Type T001-BUKRS,
  BUTXT Type T001-BUTXT,
  LIFNR Type LFB1-LIFNR,
End of TY_FINAL.
```

```
DATA: WA_FINAL TYPE TY_FINAL,
  IT_FINAL TYPE TABLE OF TY_FINAL.
Select T001~BUKRS T001~BUTXT LFB1~LIFNR
into table IT_FINAL
from T001 inner join LFB1
on T001~BUKRS = LFB1~BUKRS.
```



```

Sort IT_FINAL by BUKRS.
Loop at IT_FINAL into WA_FINAL.
  Write:/ WA_FINAL-BUKRS, WA_FINAL-BUTXT, WA_FINAL-LIFNR.
ENDLOOP.

```

→ Based on the given purchasing document numbers display the purchasing document numbers, document dates, vendor numbers, item numbers, quantity, unit of measurements & net price.

```

Data V1 type EKKO-EBELN.
Select-options S_ebeln for V1.
Types: Begin of ty_final,
  EBELN type EKKO-EBELN,
  BEDAT type EKKO-BEDAT,
  LIFNR type EKKO-LIFNR,
  EBELP type EKPO-EBELP,
  MENGE type EKPO-MENGE,
  MEINS type EKPO-MEINS,
  NETPR type EKPO-NETPR,
End of ty_final.

```

```

Data: wa_final type ty_final,
      it_final type table of ty_final.
Select EKKO~EBELN EKKO~BEDAT EKKO~LIFNR EKPO~EBELP EKPO~MENGE
EKPO~MEINS EKPO~NETPR into table it_final from EKKO inner join EKPO on
EKKO~EBELN = EKPO~EBELN where EKKO~EBELN in S_ebeln.
Loop at it_final into wa_final.
  Write:/ wa_final-ebeln, wa_final-bedat, wa_final-lifnr, wa_final-
ebelp, wa_final-menge, wa_final-meins, wa_final-netpr.
Endloop.

```

→ Based on the given material numbers display the material numbers, material types, plant numbers, plant names by using inner join.

```

Data V1 type MARA-MATNR.
Select-options s_matnr for V1.
Types: begin of ty_final,
  MATNR type MARA-MATNR,
  MTART type MARA-MTART,
  WERKS type MARC-WERKS,
  NAME1 type T001W-NAME1,
End of ty_final.

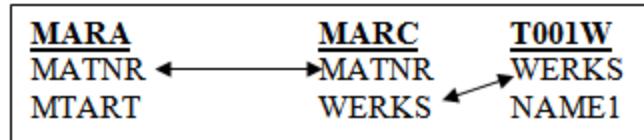
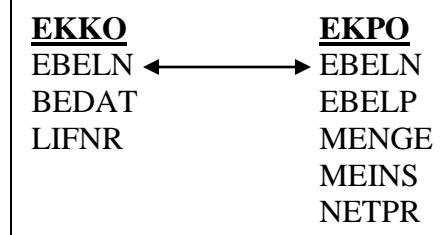
```

```

Data: wa_final type ty_final,
      it_final type table of ty_final.
Select MARA~MATNR MARA~MTART MARC~WERKS T001W~NAME1 into table it_final
from MARA inner join MARC on MARA~MATNR = MARC~MATNR inner join T001W
on MARC~WERKS = T001W~WERKS where MARA~MATNR in S_matnr.
Loop at it_final into wa_final.
  Write:/ wa_final-MATNR, wa_final-MTART, wa_final-WERKS, wa_final-
NAME1.
Endloop.

```

→ Based on the given customer numbers display the customer numbers, customer names, sales document numbers, document date, item number, material number, material description, quantity, unit of measurement, net price by using inner join.

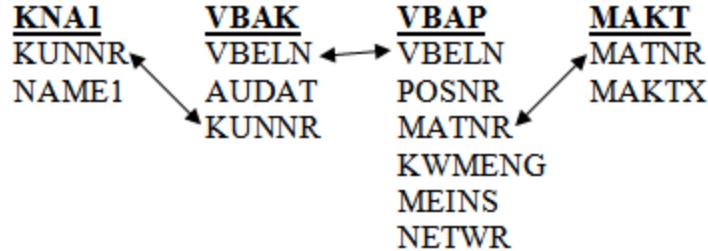


```

Data V1 type KNA1-kunnr.
Select-options s_kunrn for V1.
Types: begin of ty_final,
        KUNNR type KNA1-KUNNR,
        NAME1 type KNA1-NAME1,
        VBELN type VBAK-VBELN,
        AUDAT type VBAK-AUDAT,
        POSNR type VBAP-POSNR,
        MATNR type VBAP-MATNR,
        MAKTX type MAKT-MAKTX,
        KWMENG type VBAP-KWMENG,
        MEINS type VBAP-MEINS,
        NETWR TYPE VBAP-NETWR,
      End of ty_final.

```

KUNNR, NAME1, VBELN, AUDAT, POSNR, MATNR,
MAKTX, KWMENG, MEINS, NETWR



```

Data: wa_final type ty_final,
      it_final type table of ty_final.

```

```

Select KNA1~KUNNR KNA1~NAME1 VBAK~VBELN VBAK~AUDAT VBAP~POSNR
VBAP~MATNR MAKT~MAKTX VBAP~KWMENG VBAP~MEINS VBAP~NETWR into table
it_final from KNA1 inner join VBAK on KNA1~KUNNR = VBAK~KUNNR inner
join VBAP on VBAK~VBELN = VBAP~VBELN inner join MAKT on VBAP~MATNR =
MAKT~MATNR where KNA1~KUNNR in s_kunrn.

```

Loop at it_final into wa_final.

Write:/ wa_final-KUNNR, wa_final-NAME1, wa_final-VBELN, wa_final-
AUDAT, wa_final-POSNR, wa_final-MATNR, wa_final-MAKTX, wa_final-KWMENG,
wa_final-MEINS, wa_final-NETWR.

Endloop.

Left outer join: -

Left outer join pick the data from left hand side table even though there is no match found in right hand side table. It's possible for only two data base tables.

T001		KNB1	
1000	TCS	1000	241
2000	IBM	1000	245
3000	HP	3000	452
4000	HCL	3000	491
5000	CSC	4000	258
		4000	591
		4000	602

1000	241
1000	245
2000	-----
3000	452
3000	491
4000	258
4000	591
4000	602
5000	-----

In the inner join syntax instead of inner join we paste the left outer join.

→ Based on the given company codes display the company codes, company names & customer number based on left outer join.

```

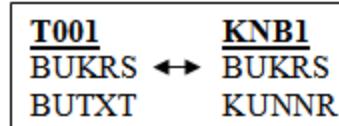
TYPES : Begin of TY_FINAL,
        BUKRS Type T001-BUKRS,
        BUTXT Type T001-BUTXT,
        KUNNR Type KNB1-KUNNR,
      End of TY_FINAL.

```

```

DATA: WA_FINAL TYPE TY_FINAL,
      IT_FINAL TYPE TABLE OF TY_FINAL.
Select T001~BUKRS T001~BUTXT KNB1~KUNNR
into table IT_FINAL
from T001 left outer join KNB1
on T001~BUKRS = KNB1~BUKRS.
Sort IT_FINAL by BUKRS.

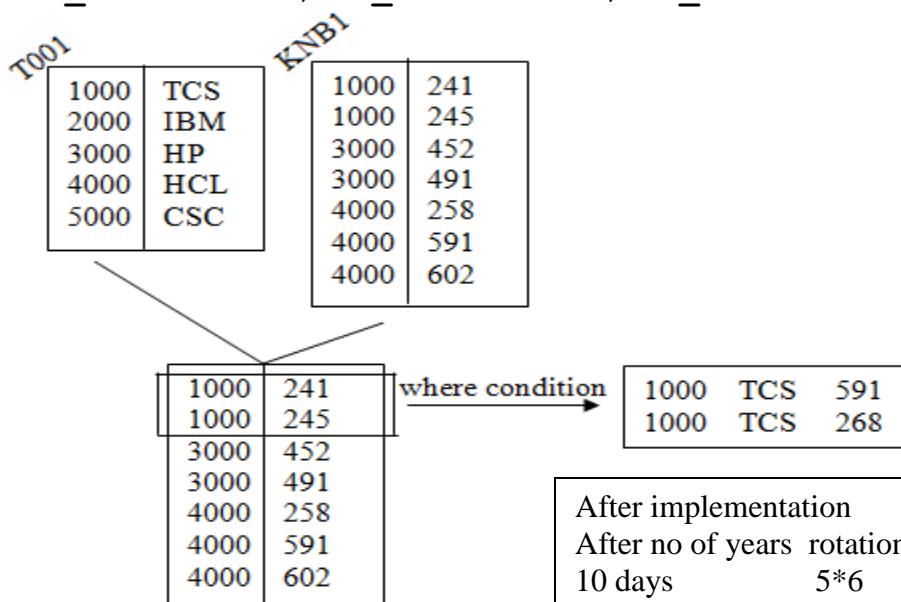
```



Loop at IT_FINAL into WA_FINAL.

Write:/ WA_FINAL-BUKRS, WA_FINAL-BUTXT, WA_FINAL-KUNNR.

Endloop.



After implementation			
After no of years	rotation	time	
10 days	5*6	20ms	
1 year	10*200	2min	
2 years	20*5000	4min	
4 years	50*200000	6min	
6 years	70*800000	11min	

In the real time the maximum program execution time in four grounds [when you press F8 it's called four ground] 600 seconds are max time. In the program execution time exceeds 600 seconds then it goes to dump [time up]. Some times more than two tables join leads to time out. So we go for 'for all entries'.

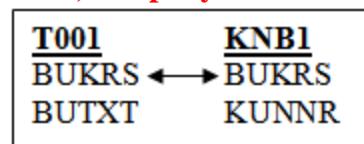
'For all entries' pick the data based on the where condition first, next it based on on-condition.

At the time of implementing the SAP performance of the inner join & 'For all entries' are same. Day by day, day by day the data base sizes are increased then the performance of the inner join is decreased the 'For all entries' is same. So we go for 'For all entries'.

Note: - Inner join isn't possible for pooled & clustered tables. Only possible for transparent tables.

→ Based on the given company codes display the company codes, company names & customers under the company based on for all entries.

```
Data V1 type T001-BUKRS.  
Select-options s_bukrs for V1.  
Types : begin of ty_final,  
        BUKRS type T001-BUKRS,  
        BUTXT type T001-BUTXT,  
        KUNNR type KNB1-KUNNR,  
        End of ty_final.
```



```
Data: wa_final type ty_final,  
      it_final type table of ty_final.  
Types: begin of ty_t001,  
       BUKRS type T001-BUKRS,  
       BUTXT type T001-BUTXT,  
       End of ty_t001.  
Data : wa_t001 type ty_t001,  
      it_t001 type table of ty_t001.
```

```

Types: begin of ty_knb1,
       BUKRS type KNB1-BUKRS,
       KUNNR type KNB1-KUNNR,
       End of ty_knb1.
Data: wa_knb1 type ty_knb1,
      it_knb1 type table of ty_knb1.

Select BUKRS BUTXT from T001 into table it_t001 where BUKRS in s_bukrs.
If not it_t001 is initial.
   Select BUKRS KUNNR from KNB1 into table it_knb1 for all entries in
it_t001 where BUKRS = it_t001-BUKRS.
Endif.

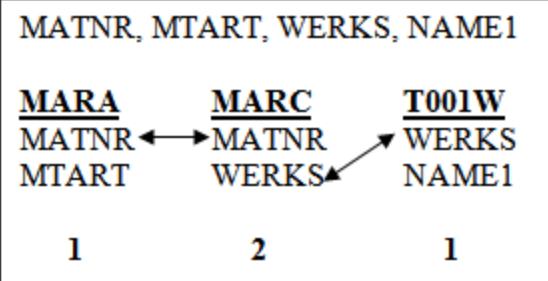
Loop at it_knb1 into wa_knb1.
   wa_final-BUKRS = wa_knb1-BUKRS.
   wa_final-KUNNR = wa_knb1-KUNNR.
   Read table it_t001 into wa_t001 with key BUKRS = wa_knb1-BUKRS.
   wa_final-BUTXT = wa_t001-BUTXT.
   Append wa_final to it_final.
   Clear: wa_final, wa_t001, wa_knb1.
Endloop.

Sort it_final by BUKRS.
Loop at it_final into wa_final.
   Write:/ wa_final-BUKRS, wa_final-BUTXT, wa_final-KUNNR.
Endloop.

→ Based on the given material numbers display the material numbers, material types, plant
numbers, and plant names by using for all entries.

Data V1 type MARA-MATNR.
Select-options S_MATNR for V1.
types: begin of ty_mara,
       matnr type mara-matnr,
       mtart type mara-mtart,
       end of ty_mara.
data: wa_mara type ty_mara,
      it_mara type table of ty_mara.
types: begin of ty_marc,
       matnr type marc-matnr,
       werks type marc-werks,
       end of ty_marc.
data: wa_marc type ty_marc,
      it_marc type table of ty_marc.
types: begin of ty_t001w,
       werks type t001w-werks,
       name1 type t001w-name1,
       end of ty_t001w.
data: wa_t001w type ty_t001w,
      it_t001w type table of ty_t001w.
types: begin of ty_final,
       matnr type mara-matnr,
       mtart type mara-mtart,

```



```

werks type marc-werks,
name1 type t001w-name1,
end of ty_final.

data: wa_final type ty_final,
      it_final type table of ty_final.

Select MATNR MTART from MARA into table IT_MARA where MATNR in S_MATNR.

If not IT_MARA is initial.
  Select MATNR WERKS from MARC into table IT_MARC for all entries in
  IT_MARA where MATNR = IT_MARA-MATNR.
Endif.

If not IT_MARC is initial.
  Select WERKS NAME1 from T001W into table IT_T001W for all entries in
  IT_MARC where WERKS = IT_MARC-WERKS.
Endif.

Loop at IT_MARC into WA_MARC.
  WA_FINAL-MATNR = WA_MARC-MATNR.
  WA_FINAL-WERKS = WA_MARC-WERKS.

  Read table IT_MARA into WA_MARA with key MATNR = WA_MARC-MATNR.
  WA_FINAL-MTART = WA_MARA-MTART.

  Read table IT_T001W INTO WA_T001W with key WERKS = WA_MARC-WERKS.
  WA_FINAL-NAME1 = WA_T001W-NAME1.

Append WA_FINAL to IT_FINAL.
Clear: WA_FINAL, WA_MARA, WA_MARC, WA_T001W.

Endloop.
Loop at IT_FINAL into WA_FINAL.
  Write: / WA_FINAL-MATNR, WA_FINAL-MTART, WA_FINAL-WERKS, WA_FINAL-
NAME1.
Endloop.

```

Steps to work for all entries:-

1. Declare one final data internal table which data we want to display & also declare one work area & internal table for each participated data base table.
2. Based on the given input we will fetch the data from data base & filled into data base internal table.
3. Based on the data base internal table data we fill the final internal table data.

Procedure to fill the final internal table: -

First we identify the number of primary keys in each participated data base table. If the number of primary keys are '1' that is read. If the number of primary keys is more than '1' that is loop. Loop the many primary keys data base internal table & read the single primary key internal table & populate the final internal table.

Note: - when ever we are working with for all entries then you must consider higher level internal table having the data. Suppose if you're not consider & higher level internal table having no data. Then it'll pick the entire data from next level.

* if not IT_T001 is initial.

Select BUKRS KUNNR from KNB1 into table IT_KNB1 for all entries in IT_T001 where BUKRS = IT_T001-BUKRS.

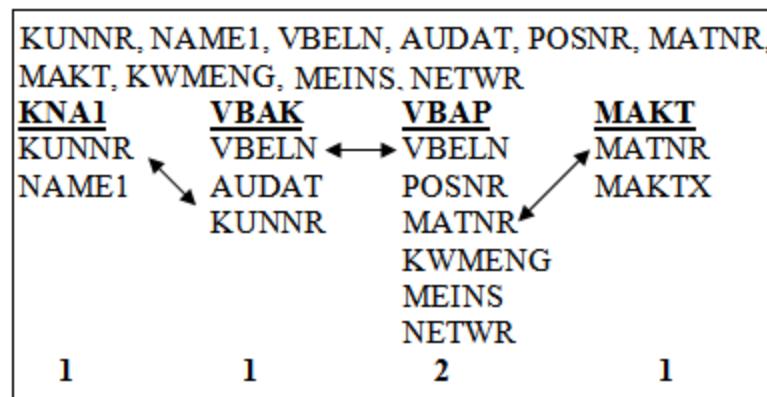
* endif.

Suppose IT_T001 internal table having no data then it'll fetch entire data from KNB1 data base table & placed into IT_KNB1.

→ Based on the given vendor numbers display the vendor numbers vendor names, purchasing document numbers, document date, item number, quantity, unit of measurement & net price by using for all entries.

If not VBAP is initial.

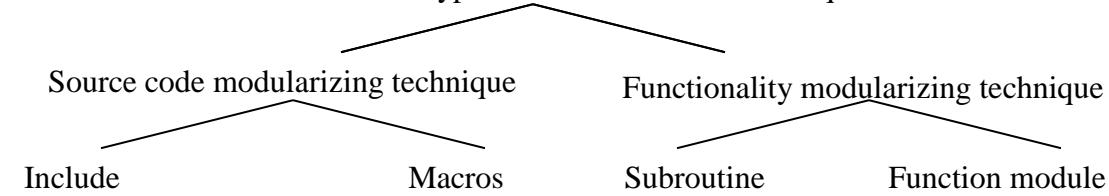
Select MATNR MAKTX from MAKT into table IT_MAKT for all entries in IT_VBAP where MATNR = IT_VBAP-MATNR and SPRAS = SY-LANGU.



Modularization techniques:

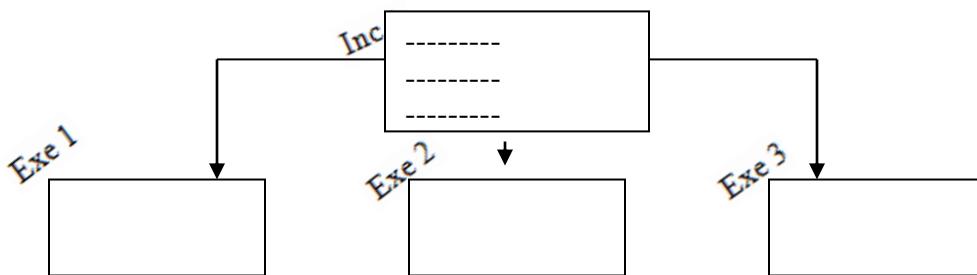
Modularization techniques are used to divide the business processing logic into reusable block of statements. This is two steps procedure. 1. Define the reusable block, 2. Calling the reusable block.

2 types of modularization techniques



Include: -

We can't execute an include independently where as the same include program can be included to any number of executable programs. Include programs are used to improve the readability of the program. In the real time include programs are used to maintain the all declarations of the program.



Steps to create include: -

Execute SE38. Provide the include program name. Click on create. Provide title. Select the type is "Include program". Click on save, local object.

Ex: -

```
Types: begin of ty_t001,  
        Bukrs type t001-bukrs,  
        Butxt type t001-butxt,  
        Ort01 type t001-ort01,  
        End of ty_t001.  
Data: wa_t001 type ty_t001,  
      it_t001 type table of ty_t001.
```

Save, check, Activate it.

Syntax of calling the include program: -

Include <include program name>.

Ex: -

```
Include ZWASTE101.  
Select bukrs butxt ort01 from t001 into table it_t001.  
Loop at it_t001 into wa_t001.  
  Write: wa_t001-bukrs, wa_t001-ort01, wa_t001-butxt.  
Endloop.
```

Macros: -

Macros are used to perform the arithmetical operations. Macros can take up to 9 place holders. (&1, &2, -- &9). If you want to maintain the same set of statements more than one location of the same program instead of this we maintain those statements in macro definition later we call the same macro definition from different locations of the same program.

Syntax of calling the macro: -

<macro name> <place holder1 value> <place holder 2 value>.

Note: - In macros definition should be the first and calling should be the next.

→ Perform the addition of two numbers by using macros.

```

Data R type I.
Define add.
R = &1 + &2.
End-of-definition.
Add 20 10.
Write R.

```

```

Data result type I.
Define cal.
Result = &1 &2 &3.
End-of-definition.
Cal 10 * 2.
Write result.
Cal 25 - 10.
Write result.

```

→ Manually filling the internal table by using macros.

```

Types: begin of ty_t001,
        Bukrs type t001-bukrs,
        Butxt type t001-butxt,
        Ort01 type t001-ort01,
        End of ty_t001.

Data: wa_t001 type ty_t001,
      it_t001 type table of ty_t001.

Define fill_tab.
  wa_t001-bukrs = &1.
  wa_t001-butxt = &2.
  wa_t001-ort01 = &3.
  Append wa_t001 to it_t001.
  Clear wa_t001.

End-of-definition.

Fill_tab '1000' 'TCS' 'HYD'.
Fill_tab '2000' 'IBM' 'CHE'.
Loop at it_t001 into wa_t001.
  Write: / wa_t001-bukrs, wa_t001-butxt, wa_t001-ort01.
Endloop.

```

Define xyz.
 Define abc.

 End-of-definition.

 End-of-definition.

Note: - We can't next the definition of macro. ←

Subroutines: -

Subroutines are procedures. That we can define in any ABAP program & calling from the same or some other ABAP program. Procedure is the collection of statements.

Syntax of defining the subroutine: -

Form <form name / subroutine name> using <IV 1> type <DT> <IV 2> type <DT> --- changing <OV 1> type <DT> <OV 2> type <DT> -----

----- } logic
 ----- }

Endform.

Syntax of calling the subroutine: -

Perform <form name> using <IP 1> <IP 2> ---- calling <OP 1> <OP 2>-----

Note: - In subroutine calling is the first & definition is the next. In subroutines all the using parameters are called input parameters. All the changing parameters are called as output parameters.

We can't place the any executable statement after the definition of the subroutine.

→ Perform the addition of two numbers by using subroutines.

```
Data R type I.  
Parameter: P_input1 type I, P_input2 type I.  
Perform add1 using P_input1 P_input2 changing R.  
Write R.  
Form add1 using A type I B type I changing C type I.  
C = A + B.  
Endform.
```

There are two types of subroutines.

1. Internal subroutines.
2. External subroutines.

Internal subroutines: -

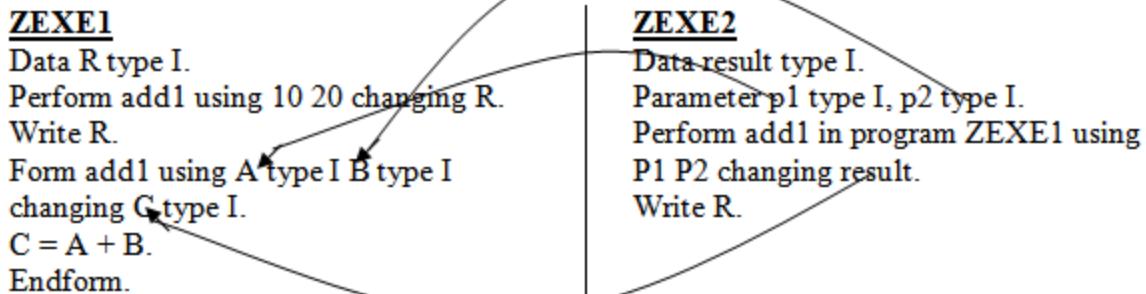
It's nothing but the definition of the subroutine as well as calling of the subroutine must be in the same program.

External subroutine: -

It's nothing but the definition of the subroutines taken from one program & the calling of the subroutine is taken from some other ABAP program.

Syntax of calling the external subroutine: -

Perform <form name> in program <program name> using <IP 1> <IP 2> ---- changing <OP 1> <OP2> ---



Differences between Macros & subroutines: -

Macros

1. In macros definition & calling in the same program
2. In macros definition should be the first & calling should be next.
3. Macros contain up to 9 inputs.
4. After the definition of macro we can place any executable statement.
5. Macros are used in HR-ABAP.

Subroutines

1. In subroutines definition & calling may / mayn't in the same program.
2. In subroutines calling should be first & definition should be next.
3. Subroutine contain any number of inputs.
4. After the definition of subroutine we can't place any executable statement.
5. Subroutines are used in both HR-ABAP & ABAP.

Termination of subroutine: -

Subroutines are normally ends with endform. If you want to terminate the subroutine so earlier then we use exit or check command. Exit command is used to terminate the subroutine unconditionally. Check command is used to terminate the subroutine conditionally.

Perform spexit.

Form spexit.

```
Write 'SPRAO Technologies'.
Write / 'SR Nagar'.
Exit.
Write / 'HYD'.
Endform.
```

OP: - SPRAO Technologies
SR Nagar

Parameter P_BSART type EKKO-BSART.

Perform spcheck using P_BSART.

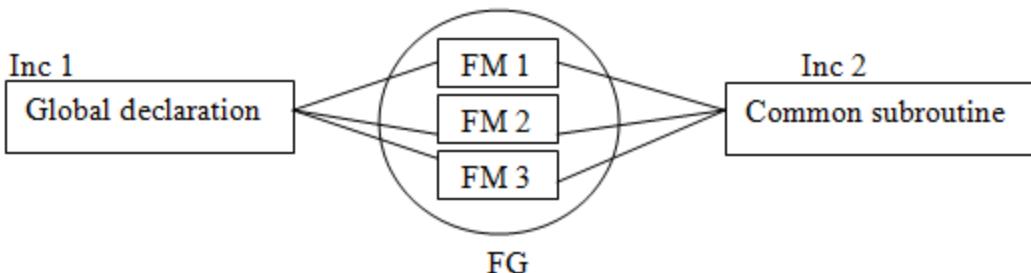
Form spcheck using A type EKKO-BSART.

Check A = 'DOM'.

Endform.

Function module: -

Functional modules are reusable components that are defined in functional library.



Each function module must be attached to one function group. Each contains two include programs by default. One is for global declaration another one is for common subroutines. All the function modules can access the both the include programs.

When ever we are calling any one of the function module then all other function modules will be loaded into the memory of calling program. So it's better to group related function module into one function group.

Note: - ‘SE37’ is the transaction code for function builder.

Steps to create function group: -

Execute SE37. In the menu bar click on GO TO → Function groups → Create group. Provide the function group name, short description. Save. Click on local object.

Steps to activate function group: -

In the menu bar click on environment → inactive objects. Expand the function group under local objects. Select the function group. Right click on it. Click active. Enter.

Components of function module: -

Working with central data:-

Data A type i.

A = 10.

Perform hai.

Write / A.

Form hai.

A = 20.

Write / A. 20

Endform.

Data A type i.

A = 10.

Perform hello.

Write A.

Form hello.

Local A.

A = 20.

Write A.

Endform.

1. Attributes
2. Import
3. Export
4. Changing
5. Tables
6. Exceptions
7. Source code

Attributes: -

Attributes specify the type of function module whether it's a **normal** or **remote enable**. If the function module type is normal then we can access the function module within the server only. If the function module type is remote enable then we can access the function module within the server as well as outside the server also.

Import: -

Import acts like input parameters [using in the server].

Export: -

Export acts like output parameters [changing in the server].

Changing: -

Changing acts like both import & export.

Tables: -

Tables acts like both import & export only for internal tables.

Exceptions: -

These are used to handle the errors in function module.

Source code: -

It contains the logic related function module.

→ Develop a function module to display all the purchasing order header details based on the given purchasing document number.

Steps to create function module: -

Execute SE37. Provide the function module name. Click on create. Provide the function group name. Provide the short note. Click on save. Enter. Click on import. Provide parameter name, type, associated type. Click on export. Provide parameter name, type, associated type. Click on source code. Write source code.

Ex: -

Select single * from EKKO into E_WA where EBELN = I_EBELN.

Endfunction.

Save, check, activate the function.

Note: - Function module writes single value & multiple values. So we need to maintain any display statement (write) in the function module definition.

Note: - We can test the function module independently without calling the function module.

Function module definition

Import -----
Export -----
Changing -----
Tables -----

Function module calling

Export
Import
Changing
Tables

Steps to call the function module:

Place the cursor where you want to call the function module. Click on pattern in the application tool bar. Provide the function module name.

```
Parameter p_ebeln type ekko-ebeln.  
Data wa_ekko like ekko.  
Call function 'ZSPT_930_fun'  
Exporting  
i_ebeln = p_ebeln.  
Importing ←  
e_wa = wa_ekko.  
Write: / wa_ekko-ebeln, wa_ekko-bedat,  
wa_ekko-lifnr.
```

Function module definition
ZSP_930_fun
→ Import
i_ebeln type ekko-ebeln.
Export
e_wa like ekko.
Source code
Select single * from ekko into e_wa
where ebeln = i_ebeln.

Difference between subroutines & function module:

Subroutine

1. Subroutines are local that means we can access the subroutine within the server only.
2. We can't test the subroutine independently without calling the subroutine.
3. We can't handle the errors in subroutine.
4. Subroutines are defined in ABAP-Editor.

Function module

1. Function modules are global. That means we can access the function module with in the server or as well as outside the server also.
2. We can test the function module independently without calling.
3. We can handle the errors in function module through exceptions.
4. Function modules are defined in function builder SE37.

➔ Develop a function module to display the company codes company name & city based on the given company.

If you want to declare the work area with some of the fields in function module then we must create one structure with those fields in the data dictionary & later we refer the structure in the function module [export tab].

In this object we must create the structure with bukrs, butxt, ort01.

Steps to create structure:

Execute SE11. Select the radio button data type. Provide the structure name. Click on create. Select the radio button structure. Enter. Provide the short description. Provide component, component type.

Bukrs bukrs
Butxt butxt
Ort01 ort01

Save, check, activate.

Function module ZSPT_930_FM1.

Import

<u>Parameter name</u>	<u>type</u>	<u>associated type</u>
i_bukrs	type	t001-bukrs

Export

<u>parameter name</u>	<u>type</u>	<u>associated type</u>
e_wa	like	ZSPT_930_FS1.

Source code

Select single bukrs butxt ort01 from t001 into e_wa where bukrs = i_bukrs.

Endfunction.

```
Parameter p_bukrs type t001-bukrs.  
Data wa_t001 like ZSPT_930_FS1.  
Call function 'ZSPT_930_FS2'.  
Exporting  
i_bukrs = p_bukrs.  
Write: / wa_t001-bukrs, wa_t001-butxt,  
wa_t001-ort01.
```

Function module definition

ZSPT_930_FM2.

Import

i_bukrs type t001-bukrs.

Export

E_wa like ZSPT_930_FS1.

Source code

Select single bukrs butxt ort01 from t001
into e_wa where bukrs = i_bukrs.

→ Based on the given vendor number display the vendor number, purchasing document numbers, document types by using function module.

If you want to declare the internal table with some of the fields in the function module then we must create one structure with those fields & later we refer the structure in the tables tab of function module.

In this object we must create one structure with lifnr, ebeln, bsart after we refer the structure in the tables tab of function module.

Structure – ZSPT_930_FS2

<u>Component</u>	<u>Component type</u>
Lifnr	elifnr
Ebeln	ebeln
Bsart	esart

Save, check, activate.

Go to SE37 function module

Import

<u>Parameter name</u>	<u>type</u>	<u>associated type</u>
i_lifnr	type	ekko-lifnr

Tables

<u>Parameter name</u>	<u>type</u>	<u>associated type</u>
IT	like	ZSPT_930_FS2

Exception

<u>Exception</u>	<u>Short note</u>
NODATA	invalid input

Source code

Select lifnr ebeln bsart from ekko into table IT where lifnr = i_lifnr.

```

Raise NODATA.
Endif.

Execute SE38.
Parameter p_lifnr type ekko-lifnr.
Data IT_ekko type ZSPT_930_FS2.
Data wa_ekko like line of it_ekko.
Call function 'ZSPT_930_FM3'.
Exporting.
i_lifnr = p_lifnr.
Tables
IT = IT_ekko.
Exporting
NODATA = 1
OTHERS = 2.
If SY-SUBRC = 0.
Write: 'INVALID INPUT'.
Else.
Loop at IT_ekko into wa_ekko.
Write: / wa_ekko-lifnr, wa_ekko-ebeln, wa_ekko-bsart.
Endloop.
Endif.

```

Note: - In the function module all parameters are either pass by value or pass by reference. By default all parameters are pass by reference. Pass by reference means from calling to definition & definition to calling all parameter values are passing along with the memory. Pass by value means from calling to definition & definition to calling only parameters values are passed.

Note: - In the remote enable function module all parameters are pass by value only.

Select-options: -

The name of the select options acts like an internal table with header line that means the name of the work area as well as the name of the internal table is the similar name of the select options.

Syntax: -

Select-options <select-options name> for <variable>.

Ex: -

Data v1 type t001-bukrs.

Select-options s_bukrs for v1.

Note: - If you want to declare the work area with the some of the fields in the function module then we must create one structure with those fields in the data dictionary & later we refer the structure in the import, export, changing tab.

Note: - If you want to declare the internal table with some of the fields in the function module then we must create one structure with those fields & later we refer the structure in the tables tab (or) Create one table type with those fields in the data dictionary later we refer the table type in the import, export or changing tab.

Note: - If you want to declare the select-options in the function module then we must create one structure with the following fields later we refer the structure in the tables tab of function module.

Components of select-options: -

1. Sign → Include (I) / Exclude (E).
2. Option → between (BE) / Not Between (NB) / Equals (EQ)
3. Low → The low value of the select-options.
4. High → the high value of the select-options.

s_bukrs

Sign	Options	Low	High

Sign = I
Option = BT
X 1000 **✓** 4000 **X**

s_bukrs

Sign	Options	Low	High

Sign = I
Options = NB.

✓ 1000 **X** 4000 **✓**

Sign = E
Option = BE

X 1000 **✓** 4000 **X**

Sign = E
Option = NB

✓ **X** 1000 **X** 4000 **✓**

→ Based on the given company code, display the company codes, names, cities by using function module.

If you want to declare the select-option the function module then we must create one structure with the following fields in the data dictionary & later we refer the structure in the tables tab.

Sign → (C,1)

Option → (C,2)

Low } Depends of fields
High }

In this object we must create two structures one is for input parameter (sign option low, high). One is for output (bukrs, butxt, ort01) both structures are referred in tables tab only.

Steps to create structure select-options: -

Execute SE11. Select the radio button data type. Provide the structure name, click on create. Select the radio button structure. Enter. Provide short description. Click on pre defined type.

<u>Component</u>	<u>data type</u>	<u>length</u>
SIGN	CHAR	1
OPTION	CHAR	2
LOW	CHAR	4
HIGH	CHAR	4

Save, check, activate the structure.

Function module: ZSPT_930_fm4.

Tables

<u>Parameter name</u>	<u>type</u>	<u>associated type</u>
i_bukrs	like	zspt_930_fs_so
e_it	like	zspt_930_fs1

source code

select bukrs butxt ort01 from t001 into table e_it where bukrs in i_bukrs.

Endfunction.

Data v1 type t001-bukrs.

Select-options s_bukrs for v1.

Data it_t001 like table of zspt_930_fs1.

Data wa_t001 like line of it_t001.

Call function ‘zspt_930_fm4’.

Tables

i_bukrs = s_bukrs

Loop at it_t001 into wa_t001.

Write: / wa_t001-bukrs, wa_t001-butxt, wa_t001-ort01.

Endloop.

→ Based on the given vendor numbers display the vendor numbers, vendor names, purchasing document numbers by using function module.

Structure ystr5

Lifnr	lifnr	char	10
Name1	name1	char	30
Ebeln	ebeln	char	10

Structure ystr6

Sign	char	1
Option	char	2
Low	char	10
High	char	10

Function module yfm5

Tables

<u>Parameter name</u>	<u>kind</u>	<u>associated type</u>
i_lifnr	like	ystr6
e_it	like	ystr5

Source code

Select LFA1~LIFNR LFA1~NAME1 LFA1~EBELN into table e_it from LFA1 inner join EKKO on LFA1~LIFNR = EKKO~LIFNR where LFA1~LIFNR in i_lifnr.

Endfunction.

Report yprogram2

Data v1 type LFA1-LIFNR.

Select-options s_lifnr for v1.

Data it_final like table of ystr5.

Data wa_final like line of it_final.

Call function 'yfm5'

Tables

i_lifnr = s_lifnr

e_it = it_final.

Loop at it_final into wa_final.

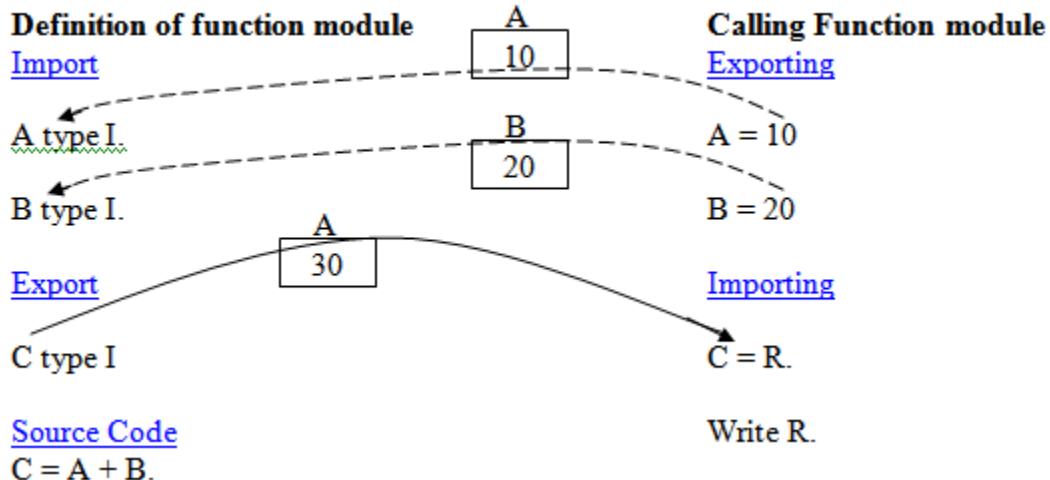
Write: / wa_final-lifnr, wa_final-name1, wa_final-ebeln.

Endloop.

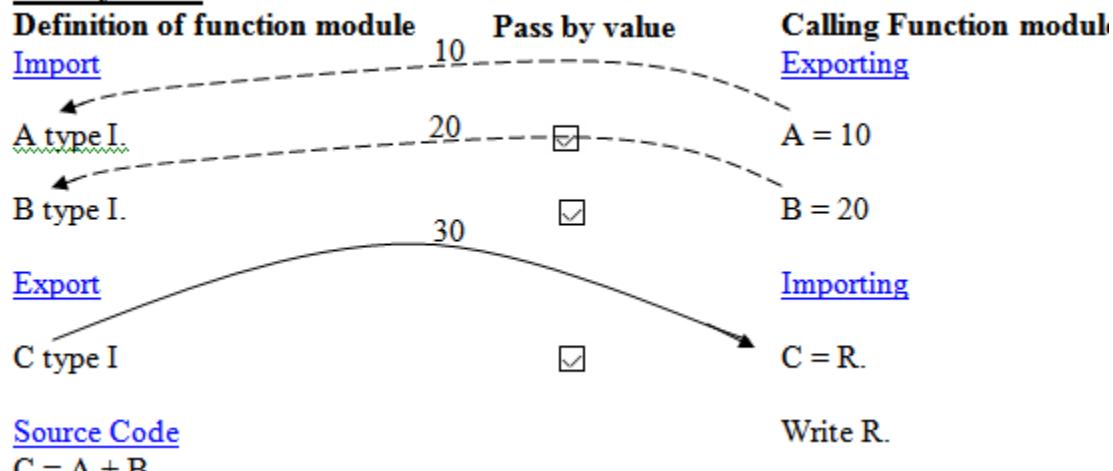
Note: - When ever we are working with remote enable function module then we must select the all parameters are pass by value.

Note: - In the function module all parameters are either pass by reference or pass by value. By default all parameters are pass by reference. Pass by reference means from calling to definition & definition to calling all parameter values along with the memory is transferring. Pass by value means from calling to definition & definition to calling parameter values only passing.

Pass by reference



Pass by Value

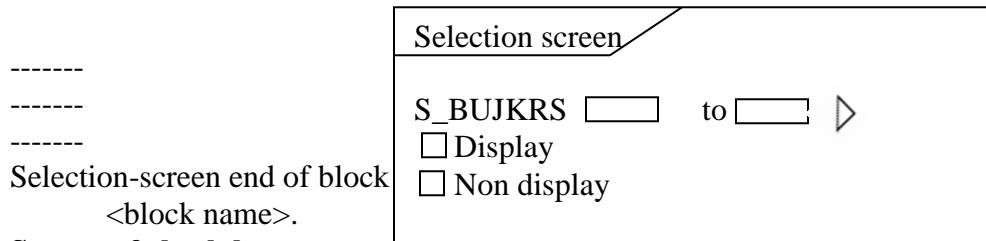


REPORTS

Report is the combination of given inputs to the selection-screen retrieving the data from data base based on the given input & display the output in a predefined format.

Syntax of selection-screen: -

Selection-screen begin of block <block name> with frame title text-<no>.
Optional Optional



Selection-screen end of block
 <block name>.

Syntax of check box: -

Parameter <name of the check box> as check box.

Ex: -

Parameter P DIS as checkbox.

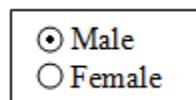


Syntax of radio button: -

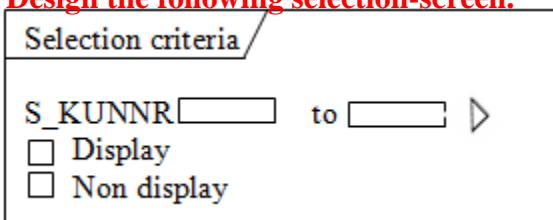
Parameter <name of the radio button> radiobutton group <group name>.

Ex:-

Parameter: Male radiobutton group g,
Female radiobutton group g.



→ Design the following selection-screen.



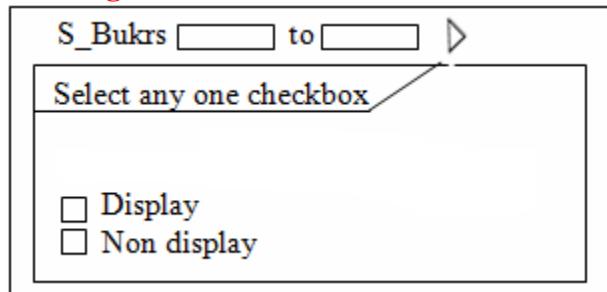
```
data v1 type knal-kunnr.  
selection-screen begin of block a with frame title text-001.  
select-options s_kunr for v1.  
parameter p_dis as checkbox.  
parameter p_nondis as checkbox.  
selection-screen end of block a.
```

If you want to provide the meaningful descriptions to the input variables then in the menu bar click on go to → text elements → selection texts. It displays the all available inputs. If the field is coming from dictionary then select the dictionary check box otherwise we manually provide the text.

P_DIS	Display	
P_Non display	Non display	
P_KUNNR		✓

Save, activate, back.

→ Design the selection-screen as shown in the figure.



```
data v1 type t001-bukrs.  
selection-screen begin of block a with frame.  
select-options s_BUKRS for v1.  
selection-screen begin of block b with frame title text-001.  
parameter p_dis as checkbox.  
parameter p_nondis as checkbox.  
selection-screen end of block b.  
selection-screen end of block a.
```

When ever we are working with begin of line & end of line then the name of the parameter is disable. So we must provide comment before, after block of a checkbox or radiobutton.

Syntax: -

Selection-screen comment x(y) text-<no> → 3 digit number
Starting position

→ Design the selection-screen as shown in the figure.

```
data v1 type kna1-kunnr.  
selection-screen begin of block a  
with frame.  
select-options s_kunnr for v1.  
selection-screen begin of line.  
parameter p_dis as checkbox.  
selection-screen comment 2(10)  
text-002.  
parameter p_nondis as checkbox.  
selection-screen comment 14(11)  
text-003.  
selection-screen: end of line,  
end of block a.
```

S_KUNNR [] to [] ▶

Display Non display

DISPLAY ____ || NONDISPLAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

→ Design the selection-screen as shown in the figure.

Skip is the keyword to provide the space in between any two input variables in the selections name. By default skip is one line. Maximum we can skip up to 9 lines at a line.

```
DATA V1 TYPE T001-BUKRS.  
SELECTION-SCREEN BEGIN OF BLOCK A  
WITH FRAME.  
SELECT-OPTIONS S_BUKRS FOR V1.
```

S_BUKRS [] to [] ▶

Display
Non-display

```

SELECTION-SCREEN BEGIN OF LINE.
SELECTION-SCREEN COMMENT 1(12) TEXT-001.
PARAMETER P_DIS RADIobutton GROUP B.
SELECTION-SCREEN END OF LINE.
SELECTION-SCREEN BEGIN OF LINE.
SELECTION-SCREEN COMMENT 1(12) TEXT-002.
PARAMETER P_NONDIS RADIobutton GROUP B.
SELECTION-SCREEN: END OF LINE,
END OF BLOCK A.

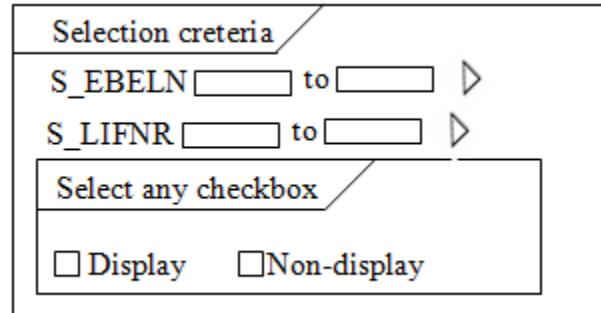
```

→ Design the selection-screen as shown in the figure

```

DATA V1 TYPE EKKO-EBELN.
DATA V2 TYPE EKKO-LIFNR.
SELECTION-SCREEN BEGIN OF BLOCK
A WITH FRAME TITLE TEXT-003.
SELECT-OPTIONS S_EBELN FOR V1.
SELECT-OPTIONS S_LIFNR FOR V2.
SELECTION-SCREEN BEGIN OF BLOCK
B WITH FRAME TITLE TEXT-004.
PARAMETER P_DIS AS CHECKBOX.
PARAMETER P_NONDIS AS CHECKBOX.
SELECTION-SCREEN: END OF BLOCK B,
END OF BLOCK A.

```



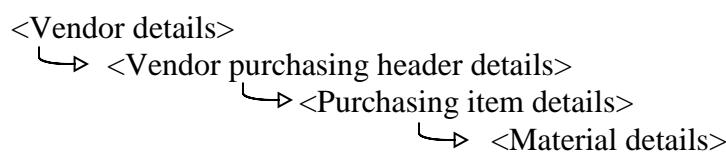
Types of reports as per ABAPer requirement: -

Types of Reports:-

1. Classical Reports
2. Interactive Reports
3. ALV Reports

Classical Reports: - It's nothing but to display the entire information in a single list

Ex: -



Events in classical reports :-

1. Initialization
2. At selection-screen
3. At selection-screen on
4. Start-of-selection
5. End-of-selection
6. Top-of-page
7. End-of-page

Initialization: -

It's an event which is triggered before displaying the selection-screen.

ADV: - it's used to provide the default values to the selection-screen.

At selection-screen: -

It's an event which is triggered after provide the input to the screen & before leaving the selection-screen.

ADV: - This is used to validate the given input.

At selection-screen on: -

It's an event which is triggered at the selection-screen based on particular input field.

ADV: - This is used to validate the particular input field.

Start-of-selection: -

It's an event which is triggered after leaving the selection-screen & before display the output.

ADV: - This is used to fetch the data from data base & place into internal table.

End-of-selection: -

It's an event which is triggered after completion of the logic.

ADV: - This is used to display the output.

Top-of-page: -

It's an event which is triggered of the top of the each page.

ADV: - It's used to display the header information.

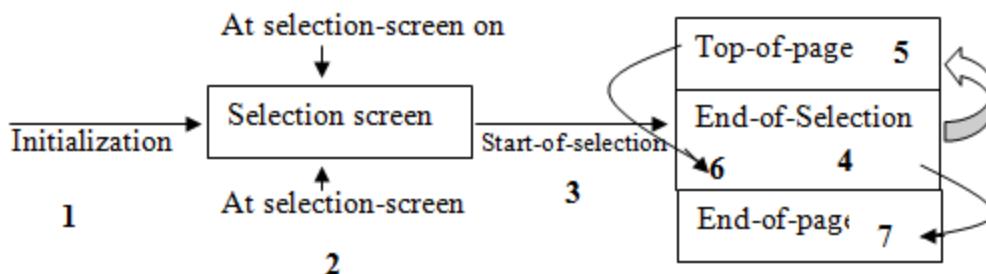
End-of-page: -

It's an event which is triggered of the end of each page.

ADV: - It's used to display the footer information.

Note: - Start-of-selection is the default event in the classical report

Process flow of events: -



Some more events in classical report: -

1. At selection-screen output
2. At selection-screen on value-request
3. At selection-screen on help-request

At selection-screen output: -

It's an event which is triggered at the selection-screen based on the user action.

ADV: - This is used to modify the selection-screen.

At selection-screen on value-request: -

It's an event which is triggered at the time of click on F4 button.

ADV: - This is used to provide the list of possible values to the input variables.

At selection-screen on help-request: -

It's an event which is triggered at the time of click on F1 button.

ADV:- This is used to provide the help document to the input variable

At selection-screen output is the first triggering event in the selection-screen.

Note: – When ever the program is loaded into the ABAP editor then automatically load of event program will be triggered. We never write any code on load of program event.

→ Design as well as provide the default values in the selection-screen as shown in the figure.

Data v1 type vbak-vbeln.

Selection-screen begin of block A with frame.

Select-options s_vbeln for v1.

Parameter p_dis as checkbox.

Parameter p_nondis as checkbox.

Selection-screen end of block A.

Initialization.

s_vbeln-sign = 'I'.

s_vbeln-option = 'BT'.

s_vbeln-low = '4969'.

s_vbeln-high = '4975'.

Append s_vbeln.

Clear s_vbeln.

s_vbeln-sign = 'I'.

s_vbeln-option = 'BT'.

s_vbeln-low = '4980'.

s_vbeln-high = '4988'.

Append s_vbeln.

Clear s_vbeln.

s_vbeln-sign = 'I'.

s_vbeln-option = 'EQ'.

s_vbeln-low = '4990'.

Append s_vbeln.

Clear s_vbeln.

p_dis = 'X'.

→ Design as well as assigned the default values to the selection screen as shown in the figure.

Data v1 type ekko-bukrs.

Data v2 type ekko-ebeln.

Selection-screen begin of block A with Frame title text-001.

Select-options s_bukrs for v1.

Select-options s_ebeln for v2.

Selection-screen begin of line.

Parameter p_dis as checkbox.

Selection-screen comment 2(11) text-002.

Parameter p_nondis as checkbox.

Selection-screen comment 15(11) text-003.

S_VBELN	4969	to	4975	▷
	4980		4985	
	4990			
<input checked="" type="checkbox"/>	Display			
<input type="checkbox"/>	Non-display			

Selection criteria				
S_BUKRS	1000	to	3000	▷
	5000		7000	
S_EBELN	300000004	to	3000000010	▷
	3000000010			
<input checked="" type="checkbox"/>	Display	<input type="checkbox"/>	Non-display	

```
Selection-screen end of line.  
Selection-screen end of block A.
```

Initialization.

```
s_bukrs-sign = 'I'.  
s_bukrs-option = 'BT'.  
s_bukrs-low = '1000'.  
s_bukrs-high = '3000'.  
Append s_bukrs.  
Clear s_bukrs.  
s_bukrs-sign = 'I'.  
s_bukrs-option = 'BT'.  
s_bukrs-low = '5000'.  
s_bukrs-high = '7000'.  
Append s_bukrs.  
Clear s_bukrs.  
s_ebeln-sign = 'I'.  
s_ebeln-option = 'BT'.  
s_ebeln-low = '3000000004'.  
s_ebeln-high = '3000000008'.  
Append s_ebeln.  
Clear s_ebeln.  
s_ebeln-sign = 'I'.  
s_ebeln-option = 'EQ'.  
s_ebeln-low = '3000000010'.  
Append s_ebeln.  
Clear s_ebeln.  
p_dis = 'X'.
```

Differences between select single, select up to 1 rows

Select single

1. It fetch the only one record.
2. Here we must pass entire primary key combination in where condition.
3. It hits the data base only once.
4. This is used to fetch the exact record.

Syntax: -

```
Select single <field1> <filed2> ... from  
<data base> table into <work area>  
where condition.
```

Select up to 1 rows

1. It also fetch only one record.
2. Enough to pass part of key combination in the where condition it always pick the first record among the method once.
3. It hit the data base twice.
4. This is used for validation.

Syntax: -

```
Select <field1> <filed2> ... from <data  
base table> into <work area> up to 1  
rows where <condition>.   
Endselect.
```

```
Types: begin of ty_knb1,  
       bukrs type knb1-bukrs,  
       kunnr type knb1-kunnr,  
       akont type knb1-akont,  
       end of ty_knb1.
```

```

Data wa_knb1 type ty_knb1.
Select single bukrs kunnr akont from knb1 into wa_knb1 where kunnr
= '000000224' and
bukrs = '5000'.
Write: / wa_knb1-kunnr, wa_knb1-bukrs, wa_knb1-akont.
* select bukrs kunnr akont from knb1 into wa_knb1 up to 1 rows
where kunnr = '000000224'.
* endselect.
* write: / wa_knb1-kunnr, wa_knb1-bukrs, wa_knb1-akont.

```

Note: - We always choose the select single if you know the entire primary key combination otherwise we choose the select up to 1 rows.

Message: -

We've 4 different types messages.

1. Abend message (A) →  **Enter** Terminates the entire transaction

2. Warning message (W) → Status bar **Enter**
 - i. Error message (E) If you are in the basic list then it goes to program.
 - ii. If you are in the secondary list then it goes to previous list.

3. Information message (I) →  **Enter** Goes to selection-screen.

4. Success message (S) → Status bar **Enter** Nothing happened

Syntax: -

Message <message type><message number> (<message class>).

↳ 3 digit number

Note: - The transaction code for message class creation is 'SE91'

Steps to create the message class: -

Execute SE91. Provide the message class name. Click on create. Provide short description. Click on save. Click on messages tab. Provide messages against the messages.

000 Less than 10

001 Grater than 10

002 Equal to 10

Click on save.

Ex: -

Parameter P type I.

If P < 10.

Message I000(zmessage1).

Elseif p > 10.

Message I001(zmessage1).

Else

Message I002(zmessage1).

Endif.

Note: - In the real time we always use only one message class only one message number against that number we maintain the place holders.

Syntax: -

Message <message type><message number> (<message class>) with '<message>'.

Zmessage2

000		&	&	&	&
-----	--	---	---	---	---

Parameter p type I.

If p < 10.

Message I000(zmessage2) with 'less than 10'.

Elseif p > 10.

Message I000(zmessage2) with 'grater than 10'.

Else

Message I000(zmessage2) with 'equal to 10'.

Endif.

Note: - When ever the system execute any message then the further statements are not executed.
(Execution is stopped.)

Field validation table

BUKRS	→ T001
KUNNR	→ KNA1
LIFNR	→ LFA1
EBELN	→ EKKO
VBELN	→ VBAK
MATNR	→ MARA
WERKS	→ T001W
LGORT	→ T001L

```
tables kna1.
select-options s_kunnr for kna1-kunnr.
data v type kna1-kunnr.
At selection-screen.
  Select kunnr from kna1 into v up to 1 rows where kunnr in s_kunnr.
Endselect.
If sy-subrc <> 0.
  Message E000(zmessage2) with 'Invalid customer'.
Endif.
```

Note: - All inputs are wrong then only SY-SUBRC value is not equal to zero.

Note: - Now-a-days in the real time we always use select single to validate the input. Because select single is faster than up to 1 rows (select single hit the data once. Up to 1 rows hit the data twice.)

```
tables: ekko, lfa1.
```

```
data: v type ekko-ebeln, v1 type lfa1-lifnr.  
select-options: s_ebeln for ekko-ebeln, s_lifnr for lfa1-lifnr.
```

At selection-screen.

```
Select single ebeln from ekko into V where ebeln in s_ebeln.  
If sy-subrc <> 0.  
  Message E000(zmessage3) with 'Invalid number'.  
Endif.
```

At selection-screen on s_lifnr.

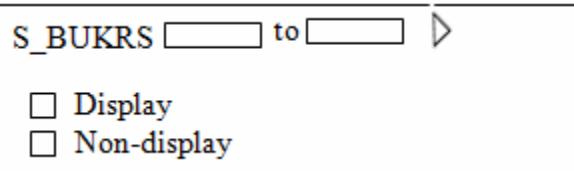
```
Select single lifnr from lfa1 into V1 where lifnr in s_lifnr.  
If sy-subrc <> 0.  
  Message E000(zmessage3) with 'Invalid vendor'.  
Endif.
```

Note: - If you want to validate the entire selection-screen then we use at selection-screen event. If you want to validate a particular field then we go for 'at selection-screen on'. In this case also at selection-screen work but performance wise poor compare to 'at selection-screen on'.

```
tables t001.  
selection-screen begin of block a with frame.  
select-options s_bukrs for t001-bukrs.  
parameter p_dis as checkbox.  
parameter p_nondis as checkbox.  
selection-screen end of block a.  
types: begin of ty_t001,  
  bukrs type t001-bukrs,  
  butxt type t001-butxt,  
  ort01 type t001-ort01,  
  end of ty_t001.  
data: wa_t001 type ty_t001,  
  it_t001 type table of ty_t001.  
Start-of-selection.  
  Select bukrs butxt ort01 from t001 into table it_t001 where bukrs  
  in s_bukrs.  
  
End-of-selection.  
  If p_dis = 'X'.  
    Loop at it_t001 into wa_t001.  
      Write: / wa_t001-bukrs, wa_t001-butxt, wa_t001-ort01.  
    Endloop.  
  Else.  
    message I000(zmessage1) with 'select the display checkbox'.  
  endif.  
Top-of-page.  
  Write: 'SATISH TECHNOLOGIES'.  
End-of-page.  
  Write '301, Tirumalagiri complex, SR Nagar'.
```

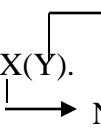
Note: - One event is always ends with another event.

Note: - When ever we are working with events then we no need to follow the order of the events.



Note: - When ever we are working with end-of-page then we must provide the LINE-COUNT in the name of the report. Other wise the footer information is not printed.

Syntax: - Report <report name> line-count X(Y).



Note: - If you want to avoid the title in the output then we must provide NO STANDARD PAGE HEADING in the name of the report.

→ Based on the given purchasing document numbers display the purchasing document numbers, document dates & vendor numbers by using classical event reports & also display the top-of-page as 'DHAWAN TECHNOLOGIES' & end of page as 'SR Nagar'

```
REPORT ZWASTE102 line-count 10(1).
```

```
Data v1 type ekko-ebeln.
```

```
Selection-screen begin of block A with frame.
```

```
Select-options s_ebeln for v1.
```

```
Selection-screen end of block A.
```

```
Types: Begin of ty_ekko,  
       Ebeln type ekko-ebeln,  
       Bedat type ekko-bedat,  
       Lifnr type ekko-lifnr,  
       End of ty_ekko.
```

```
Data: wa_ekko type ty_ekko,  
      it_ekko type table of ty_ekko.
```

```
Data V type ekko-ebeln.
```

```
At selection-screen.
```

```
  Select single ebeln from ekko into V where ebeln in s_ebeln.
```

```
  If sy-subrc <> 0.
```

```
    Message E000(zmessage3) with 'Invalid purchasing document'.
```

```
  Endif.
```

```
start-of-selection.
```

```
  Select ebeln bedat lifnr from ekko into table it_ekko where ebeln in  
  s_ebeln.
```

```
End-of-selection.
```

```
  Loop at it_ekko into wa_ekko.
```

```
    Write: / wa_ekko-ebeln, wa_ekko-lifnr, wa_ekko-bedat.
```

```
  Endloop.
```

```
Top-of-page.
```

```
  Write 'DHAWAN TECHNOLOGIES'.
```

```
End-of-page.
```

```
  Write 'SR NAGAR'.
```

→ Based on the given customer numbers display the customer numbers, customer names & cities by using classical report events & also provide top of page as THESE ARE CUSTOMER DETAILS' & end of page as 'SATISH TECHNOLOGIES'.

```
Data v1 type knal-kunnr.
```

```
Selection-screen begin of block A with frame.
```

```
Select-options s_kunrn for v1.
```

```
Selection-screen end of block A.
```

```

Types: begin of ty_knal,
      Kunnr type knal-kunnr,
      Name1 type knal-name1,
      Ort01 type knal-ort01,
      End of ty_knal.
Data: wa type ty_knal,
      it type table of ty_knal.

At selection-screen.
Data v type knal-kunnr.
Select single kunnr from knal into v where kunnr in s_kunnr.
If sy-subrc <> 0.
  Message E000(zmessage3) with 'Invalid customer number'.
ENDIF.

Start-of-selection.
Select kunnr name1 ort01 from knal into table it where kunnr in s_kunnr.

End-of-selection.
Loop at it into wa.
  Write: / wa-kunnr, wa-name1, wa-ort01.
Endloop.

Top-of-page.
Write / 'THESE ARE CUSTOMER DETAILS'.

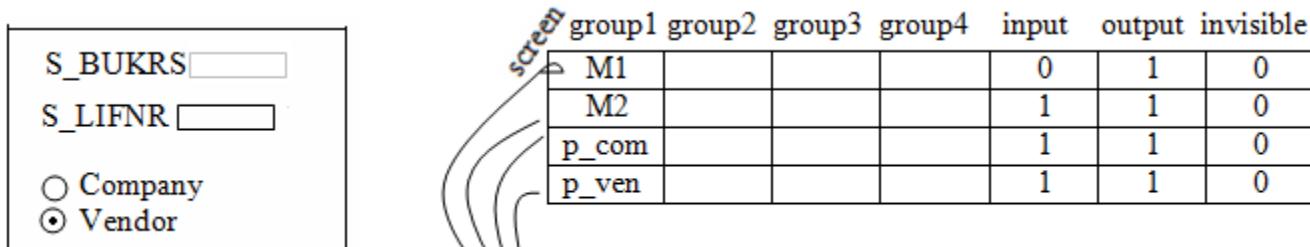
End-of-page.
Write / 'SATISH TECHNOLOGIES'.

```

When ever we are working with at selection-screen output event then we must provide <MODIF> <ID NAME> for each modified field & also provide user-command based on which field you want to modify.

→ Design the selection-screen as shown in the figure.

If the user selects the company radio button then company field is enabled and vendor field is disable. If the user select vendor radio button then company field is disable.



Selection-screen begin of block A with frame.

Parameter P_BUKRS type lfb1-bukrs MODIF ID M1.

```

Parameter P_LIFNR type lfb1-lifnr MODIF ID M2.
Parameter p_com radiobutton group B USER-COMMAND UC.
Parameter p_ven radiobutton group B default 'X'.
Selection-screen end of block A.
At selection-screen output.
If p_com = 'X'.
Loop at screen.
If screen-group1 = 'M1'.
Screen-input = 1.
Modify screen.
Elseif screen-group1 = 'M2'.
Screen-input = 0.
Modify screen.
Endif.
Endloop.
Elseif p_ven = 'X'.
Loop at screen.
If screen-group1 = 'M1'.
Screen-input = 0.
Modify screen.
Elseif screen-group1 = 'M2'.
Screen-input = 1.
Modify screen.
Endif.
Endloop.
Endif.

```

→ Design the selection-screen as shown in the figure.

If the user select the sales radio button then sales field enabled & rest of the fields are disabled. If the user select S_BUKRS then company field enabled & rest of the fields are disabled.

```

Data V1 type VBAK-VBELN.
Data V2 type KNA1-KUNNR.
Selection-screen begin of block A with frame.
Select-options S_VBELN for V1 MODIF ID M1.
Parameter S_BUKRS type T001-BUKRS MODIF ID M2.
Select-options S_KUNNR for V2 MODIF ID M3.
Parameter p_sal radiobutton group B USER-COMMAND UC.
Parameter p_com radiobutton group B.
Parameter p_cus radiobutton group B default 'X'.
Selection-screen end of block A.
At selection-screen output.
If p_sal = 'X'.
Loop at screen.
If screen-group1 = 'M1'.
Screen-input = 1.
Modify screen.
Elseif screen-group1 = 'M2'.
Screen-input = 0.
Modify screen.
Elseif screen-group1 = 'M3'.
Screen-input = 0.

```

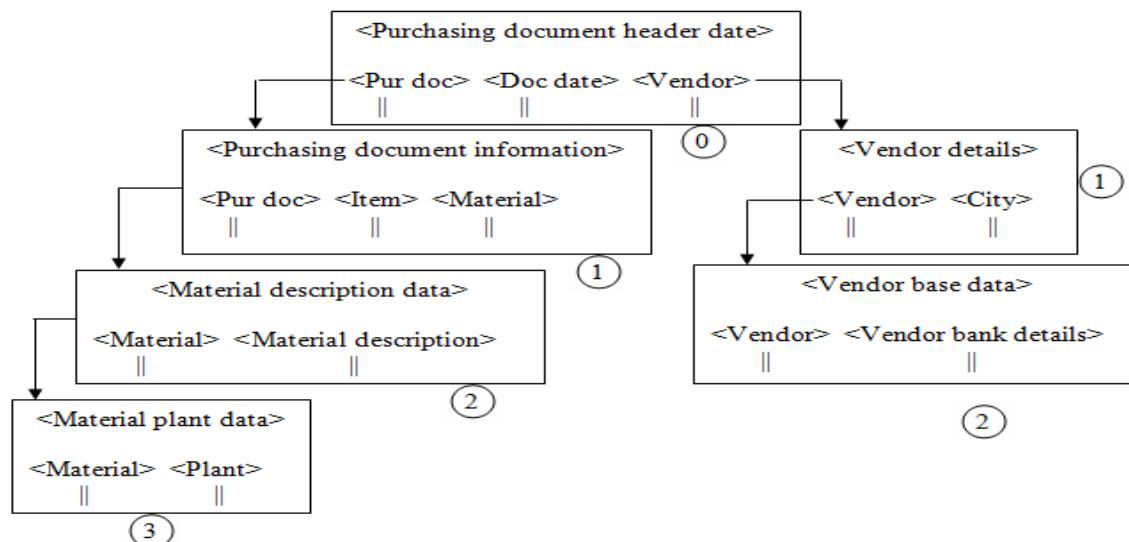
```

        Modify screen.
    Endif.
Endloop.
Elseif p_com = 'X'.
Loop at screen.
If screen-group1 = 'M1'.
    Screen-input = 0.
    Modify screen.
Elseif screen-group1 = 'M2'.
    Screen-input = 1.
    Modify screen.
Elseif screen-group1 = 'M3'.
    Screen-input = 0.
    Modify screen.
Endif.
Endloop.
Elseif p_cus = 'X'.
Loop at screen.
If screen-group1 = 'M1'.
    Screen-input = 0.
    Modify screen.
Elseif screen-group1 = 'M2'.
    Screen-input = 0.
    Modify screen.
Elseif screen-group1 = 'M3'.
    Screen-input = 1.
    Modify screen.
Endif.
Endloop.
endif.

```

Interactive report: -

It's nothing but to display the summarized information in the basic list & detailed information in the secondary list.



Note: - We can have only one basic list & up to 20 secondary lists (1-20).

Events in Interactive report: -

1. At line selection
2. At user-command.
3. Top-of-page during line-selection.
4. At PF(N)
5. Set PF-status.

At line selection: -

It's an event which is triggered at the time of user clicks on any record of any list.

At user-command: -

It's an event which is triggered at the time of user clicks on any menu item.

Top-of-page during line-selection: -

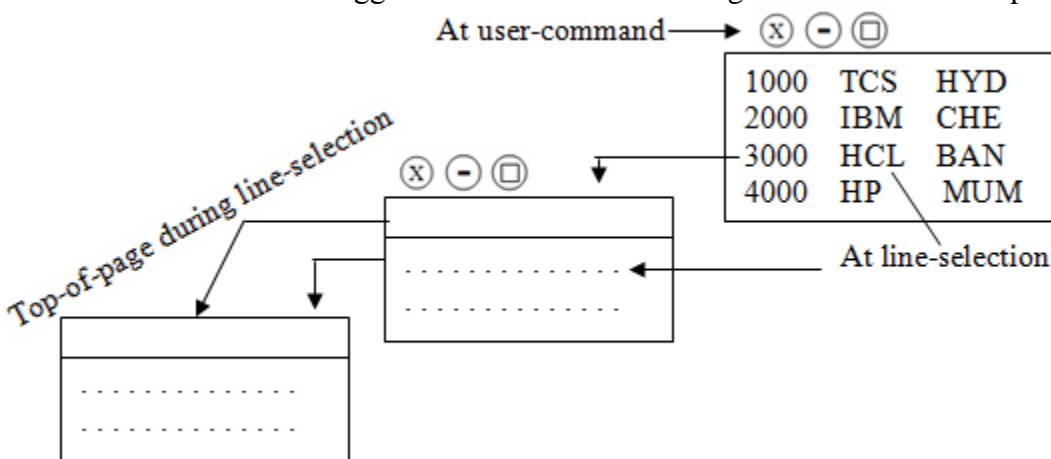
It's an event which is triggered at the top of each secondary list.

At PF (N): -

It's an event which is triggered at the time of user clicks on F1 to F12 function keys.

Set PF-status: -

It's an event which is triggered at the time of attaching our own GUI to the program.



Note: - Classical events are also triggered for basic list.

Some of the system variables related to interactive report: -

1. SY-LSIND
2. SY-LISEL
3. SY-LILLI
4. SY-UCOMM
5. SY-LINNO

SY-LSIND: -

It's the system variable which contains the current list index number.

SY-LISEL: -

It's the system variable which contains the contents of the selected record.

SY-LILLI: -

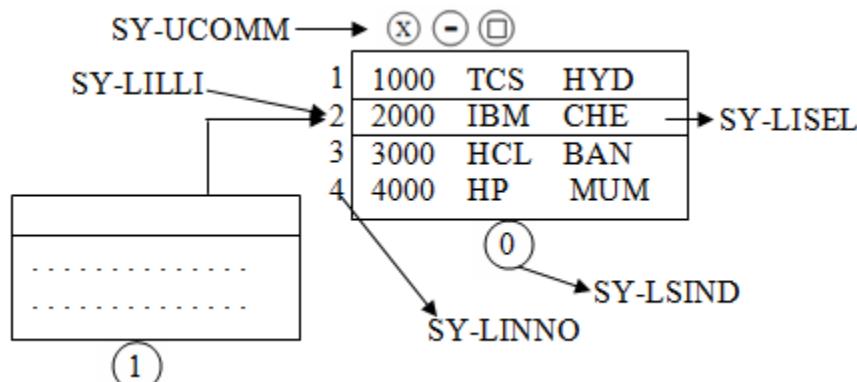
It's the system variable which contains the exact line number of the selected record.

SY-UCOMM: -

It's the system variable which contains the function code of the selected menu item.

SY-LINNO: -

It's the system variable which contains the line number of the last record display.



Note: - Interactive reports support the user interaction is always through double click. When ever the user double clicks on any record at any list then at line selection event will be triggered & list index is incremented by 1. If you want to retrieve the data for current list then we should know the record which is clicked by the user in the previous list.

The following techniques are used to identify the records which are clicked by the user in the previous list.

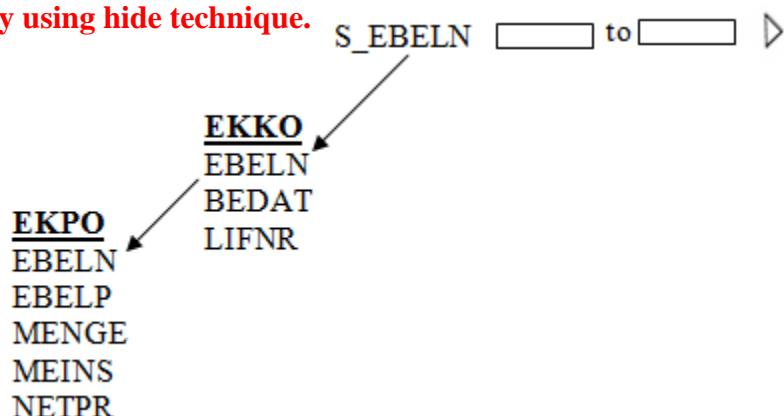
1. Hide technique.
2. SY-LISEL technique.
3. Get cursor technique.

Hide technique: -

Hide maintain the copy of the previous list with output line numbers & their contents. When ever the user clicks on any record of any list then at line-selection event will be triggered & list index is increased by '1' & that particular record will move from hide area to work area. Based on the work area we fetch the data for current list.

Note: - Hide is always maintain after write statement.

→ Based on the given purchasing document numbers display the purchasing document number, document dates & vendor umbers. In the basic list. If the user clicks on any record then we display the purchasing document item details (EBELN, EHELP, MENGE, MEINS, NETPR) in the first secondary list by using hide technique.



```
Data V1 type EKKO-EBELN.  
Select-options S_EBELN for V1.
```

Types: Begin of ty_ekko,

```

EBELN type EKKO-EBELN,
BEDAT type EKKO-BEDAT,
LIFNR type EKKO-LIFNR,
End of ty_ekko.

```

```

Data: wa_ekko type ty_ekko,
      it_ekko type table of ty_ekko.

```

```

Types: Begin of ty_ekpo,
       EBELN type EKPO-EBELN,
       EBELP type EKPO-EBELP,
       MENGE type EKPO-MENGE,
       MEINS type EKPO-MEINS,
       NETPR type EKPO-NETPR,
       End of ty_ekpo.

```

```

Data: wa_ekpo type ty_ekpo,
      it_ekpo type table of ty_ekpo.

```

```

Select EBELN BEDAT LIFNR from EKKO into table it_ekko where EBELN in
S_EBELN.

```

```

Loop at it_ekko into wa_ekko.
```

```
Write: / wa_ekko-EBELN, wa_ekko-BEDAT, wa_ekko-LIFNR.
```

```
Hide : wa_ekko-EBELN, wa_ekko-BEDAT, wa_ekko-LIFNR.
```

```
Endloop.
```

```
At line-selection.
```

```
If SY-LSIND = '1'.
```

```
Select EBELN EBELP MENGE MEINS NETPR from EKPO into table it_ekpo
where EBELN = wa_ekko-EBELN.
```

```
Loop at it_ekpo into wa_ekpo.
```

```
Write: / wa_ekpo-EBELN, wa_ekpo-EBELP, wa_ekpo-MENGE, wa_ekpo-
MEINS, wa_ekpo-NETPR.
```

```
Endloop.
```

```
ENDIF.
```

wa_ekpo				
ebeln	ebelp	menge	meins	netpr
1 30004	1.5.03	1910		
2 30005	2.6.04	2606		
3 30006	3.6.07	2787		

Hide

it_ekko		
Eblen	bedat	lifnr
30005	2.6.04	2606
30004	1.5.03	1910
30005	2.6.04	2606
30006	3.6.07	2787

OP

```

30004 1.5.03 1910
30005 2.6.04 2606
30006 3.6.07 2787

```

(0)

```

30005 01 10 KG 250.00
30005 02 2 NO 120.00

```

(1)

→ Based on the given company codes display the company codes, company name & cities in the basic list. If the user clicks on any record then we display the customers under company details (BUKRS, KUNNR, AKONT) in the first secondary list. If the user clicks on any record then we display the customers details (KUNNR, NAME1, ORT01) in the second secondary list by using hide technique.

S_BUKRS [] to [] ▶

```

T001
BUKRS
BUTXT
ORT01
(0)

KNB1
BUKRS
KUNNR
AKONT
(1)

KNA1
KUNNR
NAME1
ORT01
(2)

```

Data V1 type T001-BUKRS. (2)

Select-options S_BUKRS for V1.

TYPES: BEGIN OF TY_T001,
 BUKRS TYPE T001-BUKRS,
 BUTXT TYPE T001-BUTXT,
 ORT01 TYPE T001-ORT01,
 END OF TY_T001.

DATA: WA_T001 TYPE TY_T001,
 IT_T001 TYPE TABLE OF TY_T001.

TYPES: BEGIN OF TY_KNB1,
 BUKRS TYPE KNB1-BUKRS,
 KUNNR TYPE KNB1-KUNNR,
 AKONT TYPE KNB1-AKONT,
 END OF TY_KNB1.

DATA: WA_KNB1 TYPE TY_KNB1,
 IT_KNB1 TYPE TABLE OF TY_KNB1.

TYPES: BEGIN OF TY_KNA1,
 KUNNR TYPE KNA1-KUNNR,
 NAME1 TYPE KNA1-NAME1,
 ORT01 TYPE KNA1-ORT01,
 END OF TY_KNA1.

DATA: WA_KNA1 TYPE TY_KNA1,
 IT_KNA1 TYPE TABLE OF TY_KNA1.

Select BUKRS BUTXT ORT01 from T001 into table it_t001 where BUKRS in S_BUKRS.

Loop at it_t001 into wa_t001.
 Write: / wa_t001-BUKRS, wa_t001-BUTXT, wa_t001-ORT01.
 Hide: wa_t001-BUKRS, wa_t001-BUTXT, wa_t001-ORT01.

Endloop.

At line-selection.

If SY-LSIND = '1'.

 Select BUKRS KUNNR AKONT from KNB1 into table it_knb1 WHERE BUKRS = wa_t001-BUKRS.

 Loop at it_knb1 into wa_knb1.
 Write: / wa_knb1-BUKRS, wa_knb1-KUNNR, wa_knb1-AKONT.
 Hide: wa_knb1-BUKRS, wa_knb1-KUNNR, wa_knb1-AKONT.

```

Endloop.
Elseif SY-LSIND = '2'.
  Select KUNNR NAME1 ORT01 from KNA1 into table it_kna1 where KUNNR =
wa_knb1-KUNNR.
  Loop at it_kna1 into wa_kna1.
    Write: / wa_kna1-KUNNR, wa_kna1-NAME1, wa_kna1-ORT01.
  Endloop.
ENDIF.

```

Syntax of accessing the part of data from any variable: -

<variable name>+X(Y). → Number of characters
 ↓ → Starting position

Ex: -

Data A(10) type C value 'SPRAO TECHNOLOGIES'.

WRITE A.

Write A+0(5). → SPRAO TECHNOLOGIES

0 1 2 3 4 5 6 7 8 9 10

↓
SPRAO

Note: - whenever we use any one of the classical report event then we must use the start of selection event.

Note: - CONVERSION_EXIT_ALPHA_INPUT is the function module which is used to add the leading zeros to the input variable based on the length of the input variable.

Ex: -

Data A(5) type C.

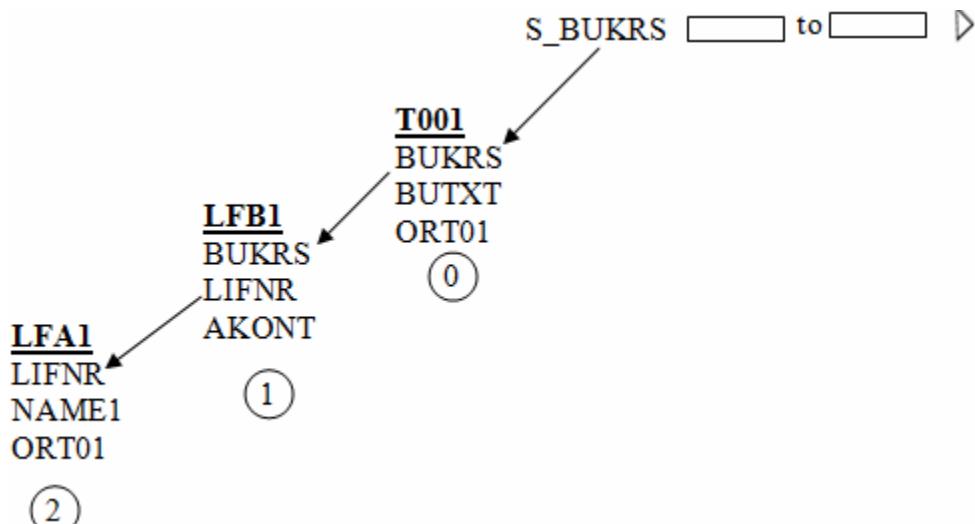
A = 415.

Call function CONVERSION-EXIT-ALPHA-INPUT.

Write C.

OP: - 00415.

→ Based on the given company codes display the company codes company names & cities in the basic list. If the user clicks on any record then display the vendors under company details (BUKRS, LIFNR, AKONT) in the first secondary list. If the user clicks on any record then display the vendor details (LIFNR, NAME1, ORT01) in the second secondary list by using SY-LISEL technique & also validate the given company code.



```

DATA V1 TYPE T001-BUKRS.
SELECT-OPTIONS S_BUFRS FOR V1.
TYPES: BEGIN OF TY_T001,
        BUKRS TYPE T001-BUKRS,
        BUTXT TYPE T001-BUTXT,

```

```

ORT01 TYPE T001-ORT01,
END OF TY_T001.
DATA WA_T001 TYPE TY_T001.
DATA IT_T001 TYPE TABLE OF TY_T001.
TYPES: BEGIN OF TY_LFB1,
        BUKRS TYPE LFB1-BUKRS,
        LIFNR TYPE LFB1-LIFNR,
        AKONT TYPE LFB1-AKONT,
        END OF TY_LFB1.
DATA WA_LFB1 TYPE TY_LFB1.
DATA IT_LFB1 TYPE TABLE OF TY_LFB1.
TYPES: BEGIN OF TY_LFA1,
        LIFNR TYPE LFA1-LIFNR,
        NAME1 TYPE LFA1-NAME1,
        ORT01 TYPE LFA1-ORT01,
        END OF TY_LFA1.
DATA WA_LFA1 TYPE TY_LFA1.
DATA IT_LFA1 TYPE TABLE OF TY_LFA1.
DATA V TYPE T001-BUKRS.

AT SELECTION-SCREEN.
SELECT SINGLE BUKRS FROM T001 INTO V WHERE BUKRS IN S_BUKRS.
IF SY-SUBRC <> 0.
  MESSAGE E000(ZMESSAGE1) WITH 'INVALID NUMBER'.
ENDIF.

START-OF-SELECTION.
SELECT BUKRS BUTXT ORT01 FROM T001 INTO TABLE IT_T001 WHERE BUKRS IN
S_BUKRS.
LOOP AT IT_T001 INTO WA_T001.
  WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
ENDLOOP.

AT LINE-SELECTION.
IF SY-LSIND = '1'.
  SELECT BUKRS LIFNR AKONT FROM LFB1 INTO TABLE IT_LFB1 WHERE BUKRS =
SY-LISEL+0(4).
  LOOP AT IT_LFB1 INTO WA_LFB1.
    WRITE:/ WA_LFB1-BUKRS, WA_LFB1-LIFNR, WA_LFB1-AKONT.
  ENDLOOP.
ELSEIF SY-LSIND = '2'.
  CALL FUNCTION 'CONVERSION_EXIT_ALPHA_INPUT'
    EXPORTING
      INPUT = SY-LISEL+5(10)
    IMPORTING
      OUTPUT = SY-LISEL+5(10).
  SELECT LIFNR NAME1 ORT01 FROM LFA1 INTO TABLE IT_LFA1 WHERE LIFNR =
SY-LISEL+5(10).
  LOOP AT IT_LFA1 INTO WA_LFA1.
    WRITE:/ WA_LFA1-LIFNR, WA_LFA1-NAME1, WA_LFA1-ORT01.
  ENDLOOP.

```

```
ENDIF.
```

```
TOP-OF-PAGE DURING LINE-SELECTION.
```

```
IF SY-LSIND = '1'.
```

```
    WRITE: 'THESE ARE VENDORS UNDER COMPANY:', SY-LISEL+0(4).
```

```
ELSEIF SY-LSIND = '2'.
```

```
    WRITE: 'THESE ARE VENDOR DETAILS OF :', SY-LISEL+5(10).
```

```
ENDIF.
```

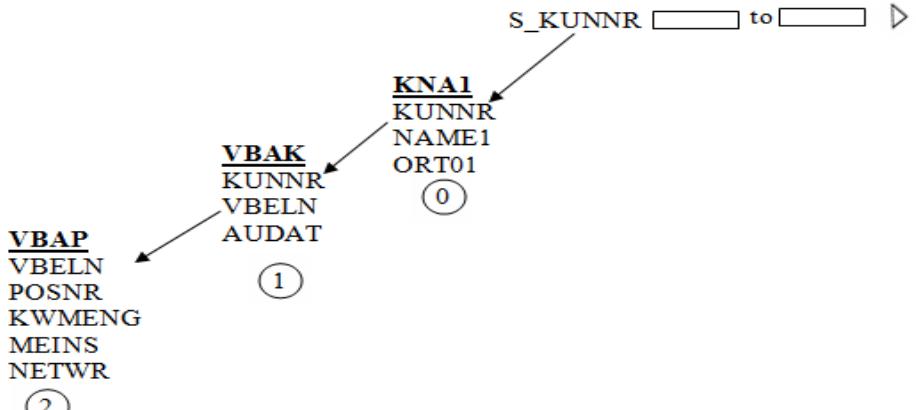
→ Based on the given customer numbers display the customer numbers, customer names, customer cities in the basic list. If the user clicks on any record then display the sales document header details of customer (VBELN AUDAT KUNNR) in the first secondary list. If the user clicks on any record then we display the sales document item details (VBELN POSNR KWMENG MEINS NETWR) in the second secondary list by using HIDE technique & also validate the customer number.

```
DATA V1 TYPE KNA1-KUNNR.
```

```
SELECTION-SCREEN BEGIN OF BLOCK A WITH FRAME.
```

```
SELECT-OPTIONS S_KUNNR FOR V1.
```

```
SELECTION-SCREEN END OF BLOCK A.
```



```
TYPES: BEGIN OF TY_KNA1,  
        KUNNR TYPE KNA1-KUNNR,  
        NAME1 TYPE KNA1-NAME1,  
        ORT01 TYPE KNA1-ORT01,  
        END OF TY_KNA1.
```

```
DATA WA_KNA1 TYPE TY_KNA1.  
DATA IT_KNA1 TYPE TABLE OF TY_KNA1.
```

```
TYPES: BEGIN OF TY_VBAK,  
        VBELN TYPE VBAK-VBELN,  
        AUDAT TYPE VBAK-AUDAT,  
        KUNNR TYPE VBAK-KUNNR,  
        END OF TY_VBAK.
```

```
DATA WA_VBAK TYPE TY_VBAK.  
DATA IT_VBAK TYPE TABLE OF TY_VBAK.
```

```
TYPES: BEGIN OF TY_VBAP,  
        VBELN TYPE VBAP-VBELN,  
        POSNR TYPE VBAP-POSNR,  
        KWMENG TYPE VBAP-KWMENG,  
        MEINS TYPE VBAP-MEINS,  
        NETWR TYPE VBAP-NETWR,  
        END OF TY_VBAP.
```

```

DATA WA_VBAP TYPE TY_VBAP.
DATA IT_VBAP TYPE TABLE OF TY_VBAP.

DATA V TYPE KNA1-KUNNR.

AT SELECTION-SCREEN.
  SELECT SINGLE KUNNR FROM KNA1 INTO V WHERE KUNNR IN S_KUNNR.
  IF SY-SUBRC <> 0.
    MESSAGE E000(ZMESSAGE1) WITH 'INVALID CUSTOMER NUMBER'.
  ENDIF.

START-OF-SELECTION.
  SELECT KUNNR NAME1 ORT01 FROM KNA1 INTO TABLE IT_KNA1 WHERE KUNNR IN S_KUNNR.

END-OF-SELECTION.
  LOOP AT IT_KNA1 INTO WA_KNA1.
    WRITE:/ WA_KNA1-KUNNR, WA_KNA1-NAME1, WA_KNA1-ORT01.
    HIDE: WA_KNA1-KUNNR, WA_KNA1-NAME1, WA_KNA1-ORT01.
  ENDLOOP.

AT LINE-SELECTION.
  IF SY-LSIND = '1'.
    SELECT VBELN AUDAT KUNNR FROM VBAK INTO TABLE IT_VBAK WHERE KUNNR = WA_KNA1-KUNNR.
    LOOP AT IT_VBAK INTO WA_VBAK.
      WRITE:/ WA_VBAK-VBELN, WA_VBAK-AUDAT, WA_VBAK-KUNNR.
      HIDE: WA_VBAK-VBELN, WA_VBAK-AUDAT, WA_VBAK-KUNNR.
    ENDLOOP.

    ELSEIF SY-LSIND = '2'.
      SELECT VBELN POSNR KWMENG MEINS NETWR FROM VBAP INTO TABLE IT_VBAP
      WHERE VBELN = WA_VBAK-VBELN.
      LOOP AT IT_VBAP INTO WA_VBAP.
        WRITE: / WA_VBAP-VBELN, WA_VBAP-POSNR, WA_VBAP-KWMENG, WA_VBAP-
        MEINS, WA_VBAP-NETWR.
      ENDLOOP.
    ENDIF.
  
```

Note: - Hide & SY-LISEL techniques generates the next list based on the line-selection. If you want to generate the next list based on the field selection then we go for get-cursor technique.

Get-cursor technique: - Get-cursor technique writes the field name as well as field value which is clicked by the user.

Syntax: - 
Get-cursor field1 <variable1> value <variable2>

➔ Based on the given sales document numbers display the sales document numbers, document dates & customer numbers in the basic list. If the user clicks on the any sales document number

only then we display the sales document item details [VBELN POSNR KWMENG MEINS NETWR] in the first secondary list if the user clicks on any customer number only then we display the customer details [KUNNR NAME1 ORT01] in the first secondary list by using get-cursor technique.

```

data v3(10) type c.
data v1 type vbak-vbeln.
select-options s_vbeln for v1.
DATA V2(15) TYPE C.
types: begin of ty_vbak,
    vbeln type vbak-vbeln,
    audat type vbak-audat,
    kunnr type vbak-kunnr,
    end of ty_vbak.
data: wa_vbak type ty_vbak,
    it_vbak type table of ty_vbak.

```

```

types: begin of ty_vbap,
    vbeln type vbap-vbeln,
    posnr type vbap-posnr,
    kwmeng type vbap-kwmeng,
    meins type vbap-meins,
    netwr type vbap-netwr,
    end of ty_vbap.

```

```

data: wa_vbap type ty_vbap,
    it_vbap type table of ty_vbap.

```

```

types: begin of ty_knal,
    kunnr type knal-kunnr,
    name1 type knal-name1,
    ort01 type knal-ort01,
    end of ty_knal.

```

```

data: wa_knal type ty_knal,
    it_knal type table of ty_knal.

```

```

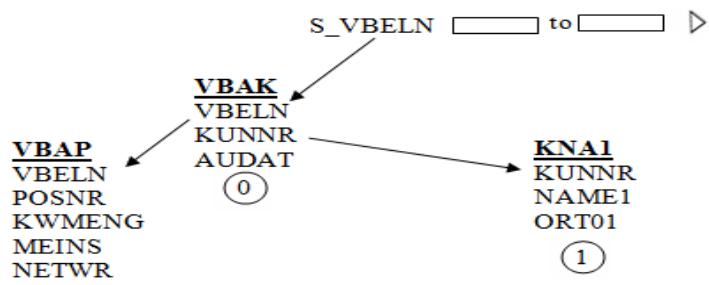
select vbeln audat kunnr from vbak into table it_vbak where vbeln in
s_vbeln.
loop at it_vbak into wa_vbak.
  write:/ wa_vbak-vbeln, wa_vbak-audat, wa_vbak-kunnr.
endloop.

```

```

at line-selection.
if sy-lsind = '1'.
  get cursor field v2 value v3.
  IF V2 = 'WA_VBAK-VBELN'.
    CALL FUNCTION 'CONVERSION_EXIT_ALPHA_INPUT'
      EXPORTING
        INPUT    = V3

```



```

IMPORTING
    OUTPUT = V3.

SELECT VBELN POSNR KWMENG MEINS NETWR FROM VBAP INTO TABLE
IT_VBAP WHERE VBELN = V3.
LOOP AT IT_VBAP INTO WA_VBAP.
    WRITE:/ WA_VBAP-VBELN, WA_VBAP-POSNR, WA_VBAP-MEINS, WA_VBAP-
KWMENG, WA_VBAP-NETWR.
ENDLOOP.
ELSEIF V2 = 'WA_VBAK-KUNNR'.
CALL FUNCTION 'CONVERSION_EXIT_ALPHA_INPUT'
    EXPORTING
        INPUT = V3
    IMPORTING
        OUTPUT = V3.
SELECT KUNNR NAME1 ORT01 FROM KNA1 INTO TABLE IT_KNA1 WHERE KUNNR
= V3.
LOOP AT IT_KNA1 INTO WA_KNA1.
    WRITE:/ WA_KNA1-KUNNR, WA_KNA1-NAME1, WA_KNA1-ORT01.
ENDLOOP.
ENDIF.
ENDIF.

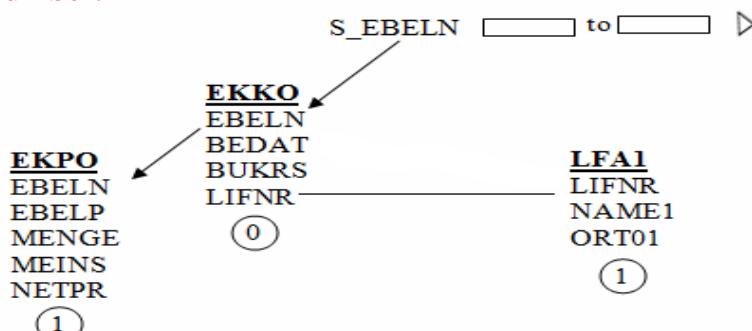
```

Note: - If you click on most of the records, if the output isn't coming then we open the table in SE11 & pass the values. If the data is available then you must check the any conversion routine is available or not.

Steps to identify the conversion routine: -

Double click on data element of the field. Double click on domain if any conversion routines are available, double click on it & identify the input routine & apply the input routine before select query.

→ Based on the given purchasing document numbers display the purchasing document numbers, document dates, company codes & vendor numbers if the user clicks on any purchasing document number only then we display the purchasing document item details. [EBELN, EBELP, MENGE, MEINS, NETPR] in the first secondary list if the user click on any vendor number then display the vendor details [LIFNR, NAME1, ORT01] in the first secondary list & also validate the given purchasing document number.



```

DATA V1 TYPE EKKO-EBELN.
DATA V2(15) TYPE C.
DATA V3(10) TYPE C.
SELECT-OPTIONS S_EBELN FOR V1.
TYPES: BEGIN OF TY_EKKO,

```

```

EBELN TYPE EKKO-EBELN,
BEDAT TYPE EKKO-BEDAT,
BUKRS TYPE EKKO-BUKRS,
LIFNR TYPE EKKO-LIFNR,
END OF TY_EKKO.

DATA: WA_EKKO TYPE TY_EKKO,
IT_EKKO TYPE TABLE OF TY_EKKO.

TYPES: BEGIN OF TY_EKPO,
EBELN TYPE EKPO-EBELN,
EBELP TYPE EKPO-EBELP,
MENGE TYPE EKPO-MENGE,
MEINS TYPE EKPO-MEINS,
NETPR TYPE EKPO-NETPR,
END OF TY_EKPO.

DATA: WA_EKPO TYPE TY_EKPO,
IT_EKPO TYPE TABLE OF TY_EKPO.

TYPES: BEGIN OF TY_LFA1,
LIFNR TYPE LFA1-LIFNR,
NAME1 TYPE LFA1-NAME1,
ORT01 TYPE LFA1-ORT01,
END OF TY_LFA1.

DATA: WA_LFA1 TYPE TY_LFA1,
IT_LFA1 TYPE TABLE OF TY_LFA1.

DATA X TYPE EKKO-EBELN.

AT SELECTION-SCREEN.
  SELECT SINGLE EBELN FROM EKKO INTO X WHERE EBELN IN S_EBELN.
  IF SY-SUBRC <> 0.
    MESSAGE E000(ZMESSAGE1) WITH 'INVALID NUMBER'.
  ENDIF.

START-OF-SELECTION.
  select EBELN BEDAT BUKRS LIFNR from EKKO into table IT_EKKO where
EBELN IN S_EBELN.

  LOOP AT IT_EKKO INTO WA_EKKO.
    WRITE: WA_EKKO-EBELN, WA_EKKO-BEDAT, WA_EKKO-BUKRS, WA_EKKO-
LIFNR.
  ENDLOOP.

AT LINE-SELECTION.
  IF SY-LSIND = '1'.
    GET CURSOR FIELD V2 VALUE V3.
    IF V2 = 'WA_EKKO-EBELN'.
      CALL FUNCTION 'CONVERSION_EXIT_ALPHA_INPUT'
        EXPORTING
          INPUT = V3
        IMPORTING
          OUTPUT = V3.

      SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE
IT_EKPO WHERE EBELN = V3.
      LOOP AT IT_EKPO INTO WA_EKPO.
        WRITE:/ WA_EKPO-EBELN, WA_EKPO-EBELP, WA_EKPO-MENGE,
WA_EKPO-MEINS, WA_EKPO-NETPR.
    ENDIF.
  ENDIF.

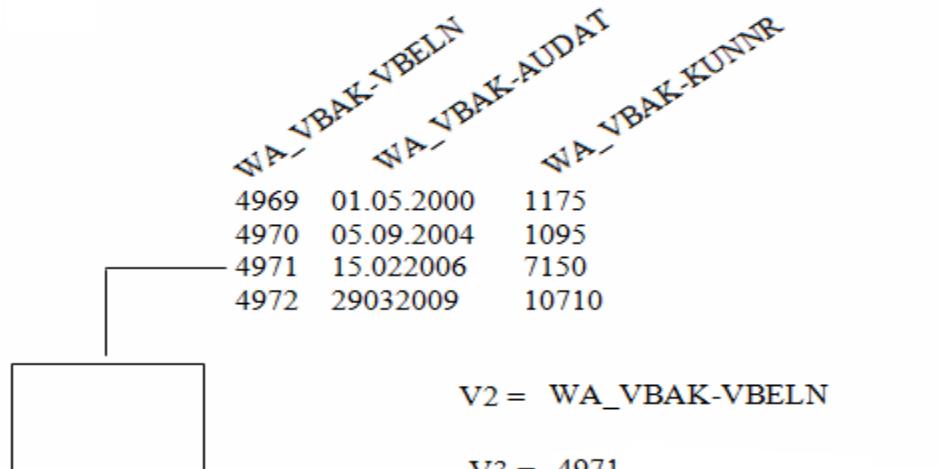
```

```

ENDLOOP.

ELSEIF V2 = 'WA_EKKO-LIFNR'.
  CALL FUNCTION 'CONVERSION_EXIT_ALPHA_INPUT'
    EXPORTING
      INPUT    = V3
    IMPORTING
      OUTPUT   = V3.
  SELECT LIFNR NAME1 ORT01 FROM LFA1 INTO TABLE IT_LFA1 WHERE
LIFNR = V3.
  LOOP AT IT_LFA1 INTO WA_LFA1.
    WRITE:/ WA_LFA1-LIFNR, WA_LFA1-ORT01, WA_LFA1-NAME1.
  ENDLOOP.
ENDIF.
ENDIF.

```

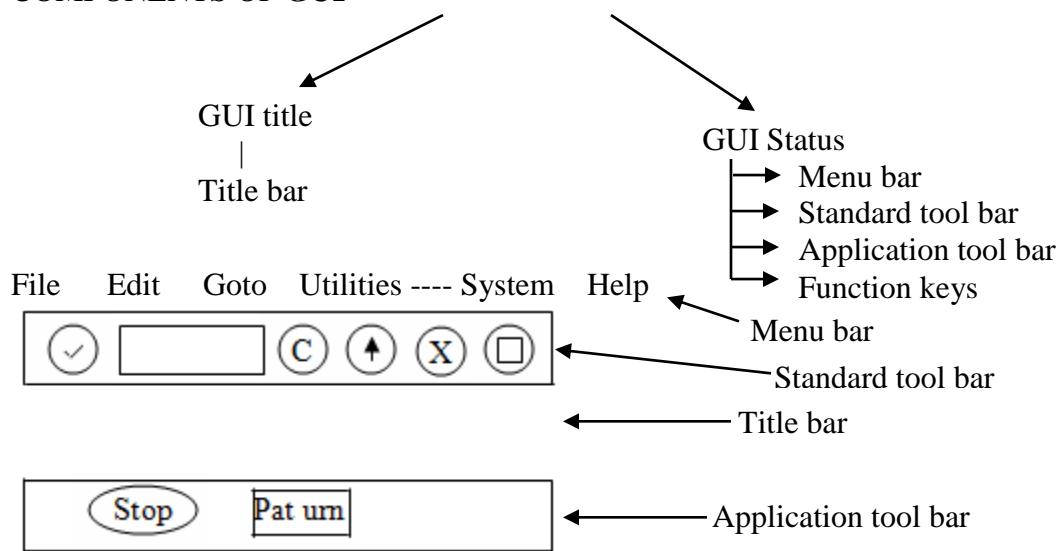


Working with menu painter: -

Menu painter is a tool to design the user interface to the program. The transaction code for menu painter is 'SE41'.

GUI Components: -

COMPONENTS OF GUI



Note: - In the menu bar system & help are default menu items & we can create up to 6 menu items [total 8 items].

Note: - We can design up to 35 buttons in the application tool bar.

→ Based on the given purchasing document numbers display the purchasing document numbers document dates & vendor numbers as shown in the below & also design one download button in the application tool bar. If the user clicks on download button then we download the display records into presentation server.

xyz	
Download	
30004 01.05.2002	3910
30005 05.09.2005	5550
30006 19.02.2010	1910

Steps to create the GUI to the program: -

Execute ‘SE41’. Provide the program name. Provide the status (any name). Click on create. Provide the short description. Enter.

Expand the function key and enabling the back button by providing ‘BACK’.

Expand the application tool bar. Provide the function code name. Double click on it. Enter. Provide function text [Download]. Enter. Select the shortcut key. Enter. Repeat the same steps for all other buttons. Save, check, activate.

Syntax of attaching our own GUI to the program: -

SET PF-STATUS ‘<status name>’.

Ex: - set pf-status ‘STAT’.

Note: - Download is the function module which is used to browse the file as well as download the data from internal table to file. The input for the above function module is

1. File type → ‘DAT’.
2. Data internal table.

Data V1 type EKKO-EBELN.

Select-options S_EBELN for V1.

Types: Begin of TY_EKKO,

```
    EBELN type EKKO-EBELN,
    BEDAT type EKKO-BEDAT,
    LIFNR type EKKO-LIFNR,
  End of TY_EKKO.
```

Data WA_EKKO type TY_EKKO.

Data IT_EKKO type table of TY_EKKO.

Select EBELN BEDAT LIFNR from EKKO INTO TABLE IT_EKKO where EBELN in S_EBELN.

Loop at IT_EKKO into WA_EKKO.

Write: / WA_EKKO-EBELN, WA_EKKO-BEDAT, WA_EKKO-LIFNR.

Endloop.

Set PF-STATUS ‘STAT’.

At user-command.

If SY-UCOMM = ‘DOWN’ .

CALL FUNCTION ‘DOWNLOAD’

```

EXPORTING
  FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_EKKO.
Endif.

```

Syntax of reading the displayed records:-

Read line <line number> field value <Displayed field name1> into <variable1>
 <displayed field name2> into <variable2> ----.

Ex: -

Read line 3 field value WA_EKKO-EBELN into V1
 WA_EKKO-BEDAT into V2
 WA_EKKO-LIFNR into V3.

→ Based on the given sales document numbers display the sales document number, document dates & customer numbers as shown in below.

If the user click on download button then we download the selected records into presentation server. If the user click on display button then we display the sales order details through VA03 transaction. If the user click on 'Sel all' then select the all check boxes.

Some of the standard transaction codes: -

1. XK03 → Display vendor
2. XD03 → Display customer
3. MM03 → Display material
4. ME53N → Display purchase order
5. VA03 → Display sales order
6. FB03 → Display accounting document.

	xyz	DIS	SA
Download	Display	Selt all	
<input type="checkbox"/>	4969	05.02.2009	1175
<input checked="" type="checkbox"/>	4970	15.02.2010	1015
<input type="checkbox"/>	4971	31.03.2013	1510
<input checked="" type="checkbox"/>	4972	02.09.2013	1170

Note: - 1 → Create 2 → Change 3 → Display

Syntax of call transaction: -

Call transaction '<Tcode>'.

Ex: -

Call transaction 'VA03'.

Before call the transaction we must set the value set parameter ID '<ID name>' field '<value>'.

Steps to identify the parameter ID:-

Execute the transaction code place the cursor on input field. Click on F1. click on technical information identify the parameter id.

Set parameter ID '<ID Name>' field '<value>'.

Ex: -

Parameter P_VBELN type VBAK-VBELN.
 Set parameter 'ID' 'AUN' field P_VBELN.
 CALL TRANSACTION 'VA03'.

Note: - If you want to get the current document value which is opened.

Syntax: -

Get parameter ID ‘<ID Name>’ field <Variable>.

Ex: -

Data v1 type vbak-vbeln.

Get parameter ID ‘AUN’ field v1.

Write v1.

Note: - Set & get are called SAP memory & import, export, changing --- are called ABAP memory.

Note: - SY-INDEX is the system variable which contains the current loop pass.

Note: - SY-TABIX is the system variable which contains the exact line number of the record which is moving from internal table to work area.

```

data: a, b.
DATA: V1 TYPE VBAK-VBELN, V2 TYPE VBAK-AUDAT.
DATA V TYPE SYLINNO.
tables vbak.
select-options s_vbeln for vbak-vbeln.
types: begin of ty_vbak,
        vbeln type vbak-vbeln,
        audat type vbak-audat,
        kunnr type vbak-kunrn,
        a type c,
        end of ty_vbak.
data: wa_vbak type ty_vbak,
      it_vbak type table of ty_vbak.
DATA: WA LIKE WA_VBAK,
      IT LIKE TABLE OF WA.
select vbeln audat kunnr from vbak into table it_vbak where vbeln in
s_vbeln.
loop at it_vbak into wa_vbak.
  write:/ a as checkbox, wa_vbak-vbeln, wa_vbak-audat input, wa_vbak-
kunrn.
endloop.
V = SY-LINNO.
set pf-status 'STAT'.
AT USER-COMMAND.
IF SY-UCOMM = 'DOWN'.
  DO V TIMES.
    READ LINE SY-INDEX FIELD VALUE A INTO B
      WA_VBAK-VBELN INTO WA-VBELN
      WA_VBAK-AUDAT INTO WA-AUDAT
      WA_VBAK-KUNNR INTO WA-KUNNR.
    IF B = 'X'.
      APPEND WA TO IT.
      CLEAR WA.
    ENDIF.
  ENDDO.
CALL FUNCTION 'DOWNLOAD'
```

```

EXPORTING
  FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT.
  REFRESH IT.
ELSEIF SY-UCOMM = 'SA'.
  A = 'X'.
  LOOP AT IT_VBAK INTO WA_VBAK.
    WRITE:/ A AS CHECKBOX, WA_VBAK-VBELN, WA_VBAK-AUDAT, WA_VBAK-
KUNNR.
  ENDLOOP.
ELSEIF SY-UCOMM = 'UPD'.
  DO V TIMES.
    READ LINE SY-INDEX FIELD VALUE A INTO B
      WA_VBAK-VBELN INTO V1
      WA_VBAK-AUDAT INTO V2.
    IF B = 'X'.
      UPDATE VBAK SET AUDAT = V2 WHERE VBELN = V1.
    ENDIF.
  ENDDO.
  IF SY-SUBRC = 0.
    MESSAGE S000(ZMESSAGE1) WITH 'UPDATED SUCCESSFULLY'.
  ELSE.
    MESSAGE E000(ZMESSAGE1) WITH 'NOT UPDATED'.
  ENDIF.
ELSEIF SY-UCOMM = 'DIS'.
  DO V TIMES.
    READ LINE SY-INDEX FIELD VALUE A INTO B
      WA_VBAK-VBELN INTO V1.
    IF B = 'X'.
      SET PARAMETER ID 'AUN' FIELD V1.
      CALL TRANSACTION 'VA03' AND SKIP FIRST SCREEN.
    ENDIF.
  ENDDO.
ENDIF.

```

ALV (ABAP LIST VIEWERS): -

ALV is used to display the output with predefined functionalities. Like

1. Sort the list in ascending order
2. Sort the list in descending order
3. Tables
4. Filtering
5. Down the list
6. Send an attachment
7. Word processing
8. Excel sheet
9. Change the layout
10. Graphics
11. Print previews

AVL is introduced from 4.6C version onwards. ALV is used to display the data from internal table only.

Steps to work with ALV: -

1. Declare the final data internal table (which data we want to display) and implement the retrieving logic.
2. Prepare the field catalog (about the display field) i.e.
 1. Filed name
 2. Column position
 3. Column Heading
 4. Co lour
 5. Hotspot
3. Call the 'REUSE_GRID_DISPLAY' function module.
(OR)
CALL THE 'RESUE_ALV_LIST_DISPLAY' function module.

Note: - REUSE_GIRD_DISPLAY is the function module which is used to display the output in a grid format.

REUSE_ALV_LIST_DISPLAY is the function module which is used to display the output in a list format.

The input for the above two functions modules are two internal tables.

1. Data internal table
2. Field Catalog internal table

→ Display the all sales documents details by using ALV.

```
Data IT_VBAP like table of VBAP.  
Select * from VBAP into table IT_VBAP.  
CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'  
  EXPORTING  
    I_STRUCTURE_NAME = 'VBAP'  
  TABLES  
    T_OUTTAB      = IT_VBAP.
```

When ever we are working with all the fields from any one of the database table on structure, then we no need to prepare field catalog internal table. We simply pass i_structure_name as data base table name structure.

Note: - Here the function module picks the column headings from the data element of each field and also display the fields in the similar order of the fields in the table.

FILLING THE FIELD CATALOG

If we are working with all the fields from any data base table / structure then we no need to prepare the field catalog. We simply pass the database name/ structure name as `i_structure_name`.

Manually filling the field catalog.

`REUSE_ALV_FIELDCATALOG_MERGE` function.

Some of the field catalog internal table: -

1. Field name → Name of the field
2. Col_Pos → Column position
3. Seltext_S }
Seltext_M } Column heading
Seltext_L }
4. Emphasize → Colour
5. Output length → Length of the output field
6. Hotspot → Hand Symbol
7. Edit → Change mode
8. No-zero → Remove the leading zeros
9. No-sign → Remove the leading sign
10. No-out → Hide the display field
11. Do-sum → Calculate the total
12. Checkbox → Checkbox

Activate = 'X'
Inactivate = ''

Note: - In `slis` we have one type i.e. `SLIS_T_FIELDCAT_ALV` which contains all the fields related to field catalog internal table. So we simply declare our internal table by referring this.

`Slis` is the type group which contains all the types related to ALV.

Note: - When ever we are referring any type under any type group then we must include the type group name by using “type-pools” keyword.

Steps to create type-pools: -

Execute **SE11** & select the radio button type group. Provide the type group name (ZTG) & click on create. Provide short description (Type group) & press enter. Select local object.

Note: - All the names under the group must be starts with type group name_ (underscore).

Type-pools ZTG.

```
Types: begin of ZTG_T001,
      Bukrs type t001-bukrs,
      Butxt type t001-butxt,
      Ort01 type t001-ort01,
      End of ZTG_T001.
```

```
Types ZTG_T_T001 type table of ZTG_T001. ◀ (WA)
```

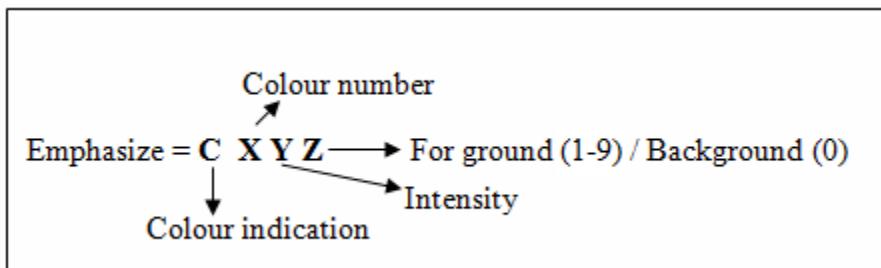
(IT)

→ Display the company codes, company names and cities.

Type-pools ZTG.

```
Data: it_t001 type ZTG_T_T001,  
      Wa_t001 like line of it_t001.  
Select bukrs butxt ort01 from t001 into table it_t001.  
Loop at it_t001 into wa_t001.  
  Write:/ wa_t001-bukrs, wa_t001-butxt, wa_t001-ort01.  
Endloop.
```

→ Based on the given purchasing document number display the purchasing document numbers, document dates and vendor numbers by using ALV and also display the purchasing document number with yellow colour, document date with edit and the vendor is hotspot.



Type-pools slis.

TABLES EKKO.

SELECT-OPTIONS S_EBELN FOR EKKO-EBELN.

* Declare the data internal table.

```
Types: Begin of ty_ekko,  
       Ebeln type ekko-ebeln,  
       Bedat type ekko-bedat,  
       Lifnr type ekko-lifnr,  
     End of ty_ekko.
```

Data it_ekko type table of ty_ekko.

* Filling the data internal table.

Select ebeln Bedat lifnr from ekko into table it_ekko where ebeln in s_ebeln.

* Declaring the field catalog.

```
Data: it_fcat type SLIS_T_FIELDCAT_ALV,  
      Wa_fcat like line of it_fcat.
```

* Filling the field catalog

```
WA_FCAT-FIELDNAME = 'EBELN'.  
WA_FCAT-COL_POS = '1'.
```

```
WA_FCAT-SELTEXT_M = 'PUR.DOC'.
```

```
WA_FCAT-EMPHASIZE = 'C310'.
```

```
APPEND WA_FCAT TO IT_FCAT.
```

```
CLEAR WA_FCAT.
```

```
WA_FCAT-FIELDNAME = 'BEDAT'.
```

```
WA_FCAT-COL_POS = '2'.
```

```
WA_FCAT-SELTEXT_M = 'DOC.DT'.
```

```
WA_FCAT-EDIT = 'X'.
```

```
APPEND WA_FCAT TO IT_FCAT.
```

```
CLEAR WA_FCAT.
```

```
WA_FCAT-FIELDNAME = 'LIFNR'.
```

```
WA_FCAT-COL_POS = '3'.
```

IT_EKKO	S_EBELN	[] to []
	EBELN	
	30004	01.05.2002
	30005	15.02.2007
	30006	19.05.2010
	LIFNR	
	3910	
	1510	
	5550	

```

WA_FCAT-SELTEXT_M = 'VENDOR'.
WA_FCAT-HOTSPOT = 'X'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
* Display the output
CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
  EXPORTING
    IT_fieldcat = it_fcat
  TABLES
    T_outtab      = it_ekko.

```

Field name	Col_pos	Seltext_m	Hotspot	Emphasize	Edit	Key	-----
EBELN	1	PUR.DOC		C310			
BEDAT	2	DOC DATE			X		
LIFNR	3	VENDOR	X				

Field name	Col_pos	Seltext_m	Hotspot	Emphasize	Edit	Key	-----

Pur.doc	Doc.date	Vendor
Ebeln	01.05.2002	3910
Bedat	15.02.2007	1510
Lifnr	19.05.2010	5550

'REUSE_ALV_FIELDCATALOG MERGE' is the function module which is used to fill the field catalog internal table.

The input for the above function module is

- Data work area.
- Program name in where data work area is declared.
- Field catalog internal table.
- Program name, in where field catalog internal table is declared.

Note: - 'SY-CPROG' is the system variable which contains current program name.

Note: - When ever we are working with merge function module then we must consider the following things.

- We never declare the data internal table by using 'TYPES' keyword.
- We never refer the data internal table fields by using type. Instead of type we use like.
- We must maintain the code up to 72 columns.

→ Based on the given purchasing document number display the purchasing document numbers, document dates and vendor numbers by using ALV and also display the purchasing document number with yellow color, document date with edit and the vendor is hotspot by using hotspot module.

After the merge function module the field catalog as shown in the below.

Field name	col_doc	seltext_m	Emphasize	Hotspot	Edit	key
EBELN	1	PUR.DOC			X	
BEDAT	2	DOC DATE				
LIFNR	3	VENDOR				

After merge function module we modify the field catalog based on the client requirement.

Note: - We can't modify the key fields directly first we remove the key then we modify it.

```
TYPE-POOLS SLIS.  
TABLES EKKO.  
SELECT-OPTIONS S_EBELN FOR EKKO-EBELN.  
DATA: BEGIN OF WA_EKKO,  
      EBELN LIKE EKKO-EBELN,  
      BEDAT LIKE EKKO-BEDAT,  
      LIFNR LIKE EKKO-LIFNR,  
      END OF WA_EKKO.  
DATA IT_EKKO LIKE TABLE OF WA_EKKO.  
SELECT EBELN BEDAT LIFNR FROM EKKO INTO TABLE IT_EKKO WHERE EBELN  
IN S_EBELN.  
DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,  
      WA_FCAT LIKE LINE OF IT_FCAT.
```

```
CALL FUNCTION 'REUSE_ALV_FIELDCATALOG_MERGE'  
  EXPORTING
```

```
    I_PROGRAM_NAME          = SY-CPROG  
    I_INTERNAL_TABNAME     = 'WA_EKKO'  
    I_INCLNAME              = SY-CPROG  
  CHANGING
```

```
    CT_FIELDCAT             = IT_FCAT.
```

* Modify the field catalog based on requirement

```
WA_FCAT-KEY = 'X'.
```

```
WA_FCAT-EMPHASIZE = 'C510'.
```

```
MODIFY IT_FCAT FROM WA_FCAT TRANSPORTING KEY EMPHASIZE WHERE  
FIELDNAME = 'EBELN'.
```

```
WA_FCAT-HOTSPOT = 'X'.
```

```
MODIFY IT_FCAT FROM WA_FCAT TRANSPORTING HOTSPOT WHERE  
FIELDNAME = 'LIFNR'.
```

```
CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
```

```
  EXPORTING
```

```
    IT_FIELDCAT = IT_FCAT
```

```
  TABLES
```

```
    T_OUTTAB = IT_EKKO.
```

→ Based on the given purchasing document numbers and dates to display the purchasing document numbers, document dates, vendor numbers, item numbers and price by using ALV.

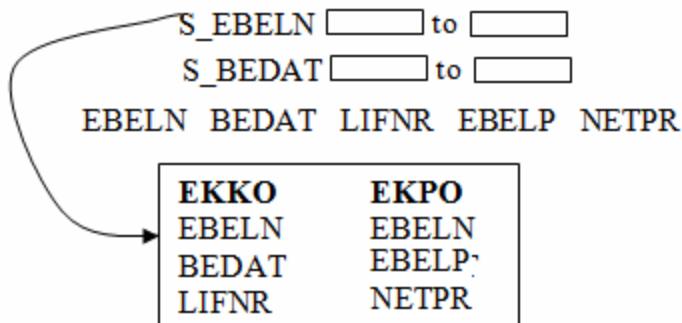
```
TYPE-POOLS SLIS.
```

```
Tables EKKO.
```

```
Select-options s_ebeln for  
ekko-ebeln.
```

* Declare the data IT.

```
Types: Begin of ty_final,  
      Ebeln type ekko-ebeln,  
      Bedat type ekko-bedat,
```



```

Lifnr type ekko-lifnr,
Ebelp type ekpo-ebelp,
Netpr type ekpo-netpr,
End of ty_final.

Data it_final type table of ty_final.
Select ekko~ebeln ekko~bedat ekko~lifnr ekpo~ebelp ekpo~netpr into
table it_final from ekko inner join ekpo on ekko~ebeln = ekpo~ebeln
where ekko~ebeln in s_ebeln.

* Declare the field catalog.
Data: it_fcat type slis_t_fieldcat_alv,
      Wa_fcat like line of it_fcat.

* Filling the field catalog.
Wa_fcat-fieldname = 'EBELN'.
Wa_fcat-col_pos = '1'.
Wa_fcat-selttext_m = 'pur.doc'.
Append wa_fcat to it_fcat.
Clear wa_fcat.

Wa_fcat-fieldname = 'BEDAT'.
Wa_fcat-col_pos = '2'.
Wa_fcat-selttext_m = 'DOC DATE'.
Append wa_fcat to it_fcat.
Clear wa_fcat.

Wa_fcat-fieldname = 'LIFNR'.
Wa_fcat-col_pos = '3'.
Wa_fcat-selttext_m = 'VENDOR'.
Append wa_fcat to it_fcat.
Clear wa_fcat.

Wa_fcat-fieldname = 'EBELP'.
Wa_fcat-col_pos = '4'.
Wa_fcat-selttext_m = 'ITEM'.
Append wa_fcat to it_fcat.
Clear wa_fcat.

Wa_fcat-fieldname = 'NETPR'.
Wa_fcat-col_pos = '5'.
Wa_fcat-selttext_m = 'NETVALUE'.
Append wa_fcat to it_fcat.
Clear wa_fcat.

* Display output
CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'
  EXPORTING
    IT_FIELDCAT = IT_FCAT
  TABLES
    T_OUTTAB    = IT_FINAL.

```

EVENTS IN ALV

In ALV, events are handle through ‘sub-routines’ (form, endform)

1. Top_of_page
2. Top_of_list
3. End_of_page
4. End_of_list
5. User_command
6. Pf_status_set

Top_of_page: -

It's an event which is triggered at the top of each page.

Top_of_list: -

It's an event which is triggered at the top of displayed output list.

End_of_page: -

It's an event which is triggered at the end of each page.

End_of_list: -

It's an event which is triggered at the end of displayed output list.

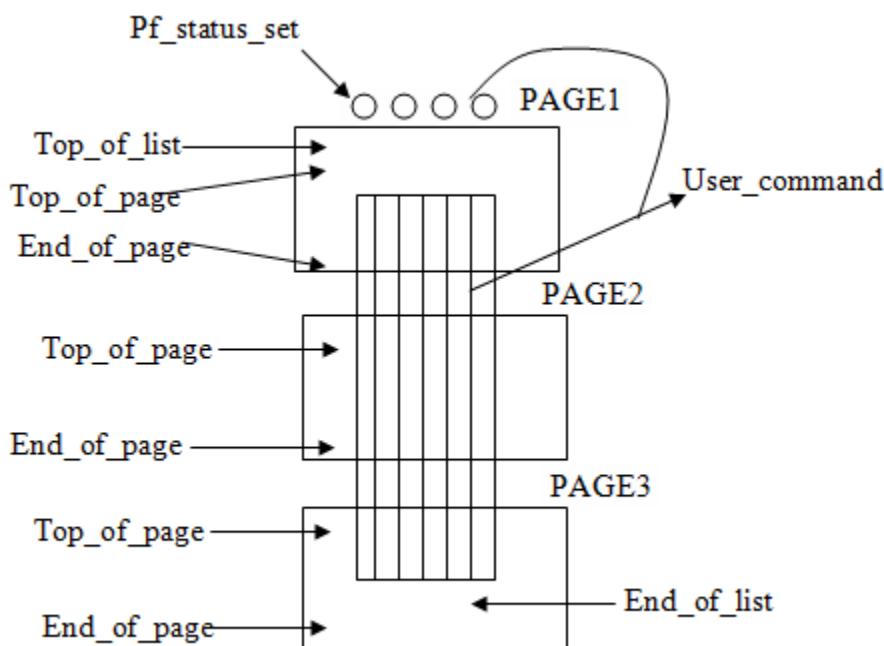
User_command: -

It's an event which is triggered at the time of user clicks on any record of any list as well as any menu item.

This event acts like both at line-selection & at user-command.

Pf_status_set: -

It's an event which is triggered at the time of attaching our GUI to the program.



When ever we are working with events then we must declare an event internal table which contains 2 fields.

Event

Event name

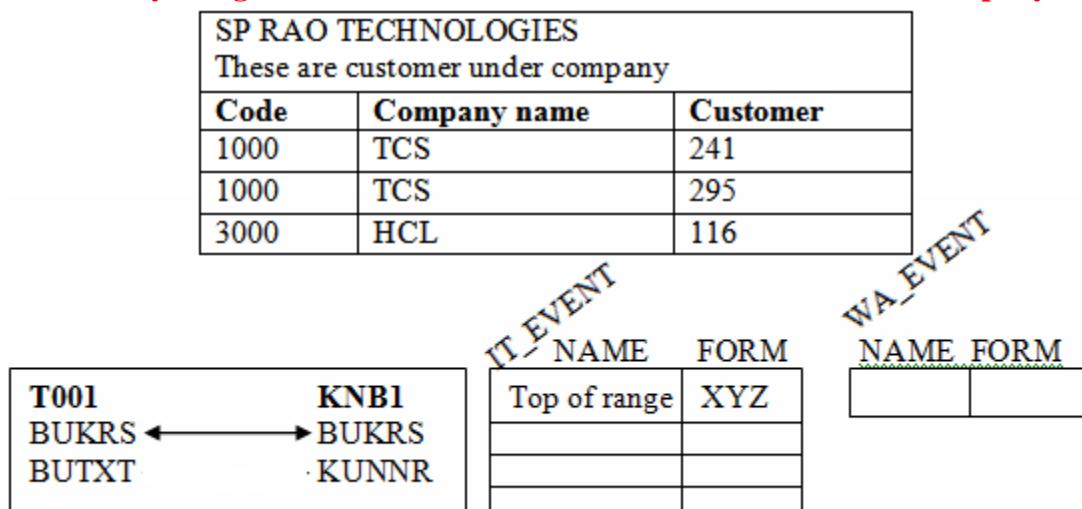
Which form handles the event

Name

Form

Note: - In slis we have one type i.e. `slis_t_event` which contains the above fields. So we simply declare the internal table by referring `slis_t_event`.

→ Based on the given company codes display the company codes, company names & customer numbers by using ALV as shown in the below and also validate the company code.



Note: - We can also print the data in start-of-selection event when ever we are fetching the data from (Data base). Then we must use end-of-selection to print the data.

Note: - When ever we are working with events then we must provide “I_callback_program” as current program name in the grid or list display.

TYPE-POOLS SLIS.

TABLES T001.

DATA V TYPE T001-BUKRS.

SELECT-OPTIONS S_BUKRS FOR T001-BUKRS.

* Declare the final data IT.

TYPES: BEGIN OF TY_FINAL,
 BUKRS TYPE T001-BUKRS,
 BUTXT TYPE T001-BUTXT,
 KUNNR TYPE KNB1-KUNNR,
 END OF TY_FINAL.

DATA: WA_FINAL TYPE TY_FINAL,
 IT_FINAL TYPE TABLE OF TY_FINAL.

* Declare the field catalog.

DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,
 WA_FCAT LIKE LINE OF IT_FCAT.

* Declare the event internal table.

DATA: IT_EVENT TYPE SLIS_T_EVENT,
 WA_EVENT LIKE LINE OF IT_EVENT.

AT SELECTION-SCREEN.

SELECT SINGLE BUKRS FROM T001 INTO V WHERE BUKRS IN S_BUKRS.

IF SY-SUBRC <> 0.

MESSAGE E000(ZMESSAGE1) WITH 'PLEASE SELECT VALID COMPANY CODE'.

ENDIF.

* Filling the data internal table

```

SELECT T001~BUKRS T001~BUTXT KNB1~KUNNR INTO TABLE IT_FINAL FROM T001
INNER JOIN KNB1 ON T001~BUKRS = KNB1~BUKRS WHERE T001~BUKRS IN S_BUKRS.
* Filling field catalog
WA_FCAT-FIELDNAME = 'BUKRS'.
WA_FCAT-COL_POS = '1'.
WA_FCAT-SELTEXT_M = 'COCD'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'BUTXT'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-SELTEXT_M = 'COMPANY NAME'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'KUNNR'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'CUSTOMER'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
* Filling event IT.
WA_EVENT-NAME = 'TOP_OF_PAGE'.
WA_EVENT-FORM = 'TOP'.
* Perform TOP
APPEND WA_EVENT TO IT_EVENT.
* Display output
CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'
  EXPORTING
    I_CALLBACK_PROGRAM = SY-CPROG
    IT_FIELDCAT        = IT_FCAT
    IT_EVENTS          = IT_EVENT
  TABLES
    T_OUTTAB          = IT_FINAL.

FORM TOP.
  WRITE:/ 'SP RAO TECHNOLOGIES'.
  WRITE:/ 'THESE ARE CUSTOMERS UNDER COMPANY'.
ENDFORM.

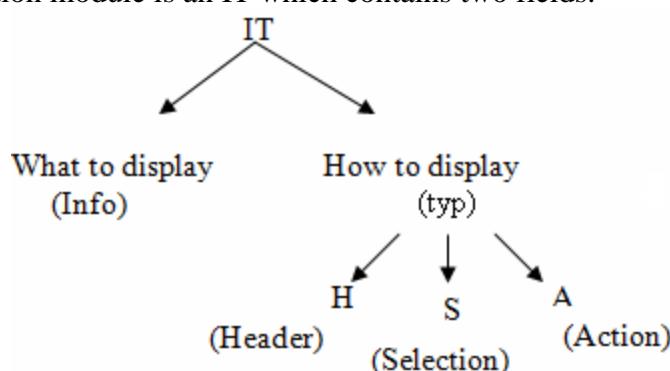
```

Note: - If you want to print the logo in the top of page then list display doesn't support. Only grid display supports the logo, but we can't print the text in the top or bottom events by using write statements in grid display.

REUSE_ALV_COMMENTARY_WRITE: -

It's the function module which is used to display the text top or bottom events.

The input for the above function module is an IT which contains two fields.



Note: - In slis we have one type i.e. **slis_t_listheader** which contains the above two fields. So we simply declare our internal table by referring **slis_t_listheader**.

→ Based on the given purchasing document numbers display the purchasing document number, document dates and vendor numbers by using ALV. As shown in the below.

These are PO details SP RAO TECHNOLOGIES		
Pur.doc no	Doc date	Vendor
300004	01.05.2000	5230
300005	05.05.2004	3910
300006	15.07.2010	1510
SR NAGAR, HYDERABAD		

Steps to upload the logo in ALV: -

Execute / OAER

Provide the class name is 'pictures'
Class type as 'OT'
Object by as 'Any name'

Execute (F8).

→ Expand standard document types in the bottom window. Double click on screen. Browse the logo. Enter.

Note: - If you want to print the logo then you must pass the object key name into commentary write function module.

IT_List2		IT_Event		IT_List	
Info	Name	Name	Form	Info	Name
SR Nagar	A	Top-of-page	XYZ	These are PO details	H
		End-of list	ABC	SP RAO Technologies	S

WA_Event		WA_List	
Name	Form	Name	Form
SR Nagar	A	End-of list	ABC

TYPE-POOLS SLIS.

TABLES EKKO.

SELECT-OPTIONS S_EBELN FOR EKKO-EBELN.

TYPES: BEGIN OF TY_EKKO,

EBELN TYPE EKKO-EBELN,

BEDAT TYPE EKKO-BEDAT,

KUNNR TYPE EKKO-KUNNR,

END OF TY_EKKO.

DATA: WA_EKKO TYPE TY_EKKO,

IT_EKKO TYPE TABLE OF TY_EKKO.

*** Declaring the field catalog.**

DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,

WA_FCAT LIKE LINE OF IT_FCAT.

*** Filling the data internal table.**

```

SELECT EBELN BEDAT KUNNR FROM EKKO INTO TABLE IT_EKKO WHERE EBELN IN
S_EBELN.
* Filling the field catalog
WA_FCAT-FIELDNAME = 'EBELN'.
WA_FCAT-COL_POS = '1'.
WA_FCAT-SELTEXT_M = 'PUR DOC'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'BEDAT'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-SELTEXT_M = 'DOC DATE'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'KUNNR'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'CUSTOMER'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

* Declare two event internal tables.
DATA: IT_EVENT TYPE SLIS_T_EVENT,
      WA_EVENT LIKE LINE OF IT_EVENT.
* Filling the event IT.
WA_EVENT-NAME = 'TOP_OF_PAGE'.
WA_EVENT-FORM = 'TOP'.
* Perform TOP.
APPEND WA_EVENT TO IT_EVENT.
WA_EVENT-NAME = 'END_OF_LIST'.
WA_EVENT-FORM = 'END'.
APPEND WA_EVENT TO IT_EVENT.

* Display output
CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
  EXPORTING
    I_CALLBACK_PROGRAM = SY-CPROG
    IT_FIELDCAT        = IT_FCAT
    IT_EVENTS          = IT_EVENT
  TABLES
    T_OUTTAB           = IT_EKKO.

FORM TOP.
  DATA: IT_LIST TYPE SLIS_T_LISTHEADER,
        WA_LIST LIKE LINE OF IT_LIST.
  WA_LIST-INFO = 'THESE ARE PO DETAILS'.
  WA_LIST-TYP = 'H'.
  APPEND WA_LIST TO IT_LIST.
  WA_LIST-INFO = 'SP RAO TECHNOLOGIES'.
  WA_LIST-TYP = 'S'.
  APPEND WA_LIST TO IT_LIST.
  CALL FUNCTION 'REUSE_ALV_COMMENTARY_WRITE'

```

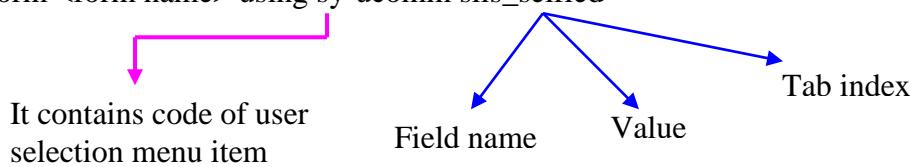
```

EXPORTING
  IT_LIST_COMMENTARY = IT_LIST
  I_LOGO             = 'SATISH'.
ENDFORM.
FORM END.
  DATA: IT_LIST1 TYPE SLIS_T_LISTHEADER,
        WA_LIST1 LIKE LINE OF IT_LIST1.
  WA_LIST1-INFO  = 'SR NAGAR'.
  WA_LIST1-TYP   = 'A'.
  APPEND WA_LIST1 TO IT_LIST1.
  CALL FUNCTION 'REUSE_ALV_COMMENTARY_WRITE'
    EXPORTING
      IT_LIST_COMMENTARY = IT_LIST1.
ENDFORM.

```

Syntax of calling subroutine for the event USER_COMMAND: -

Perform <form name> using sy-ucomm slis_selfied



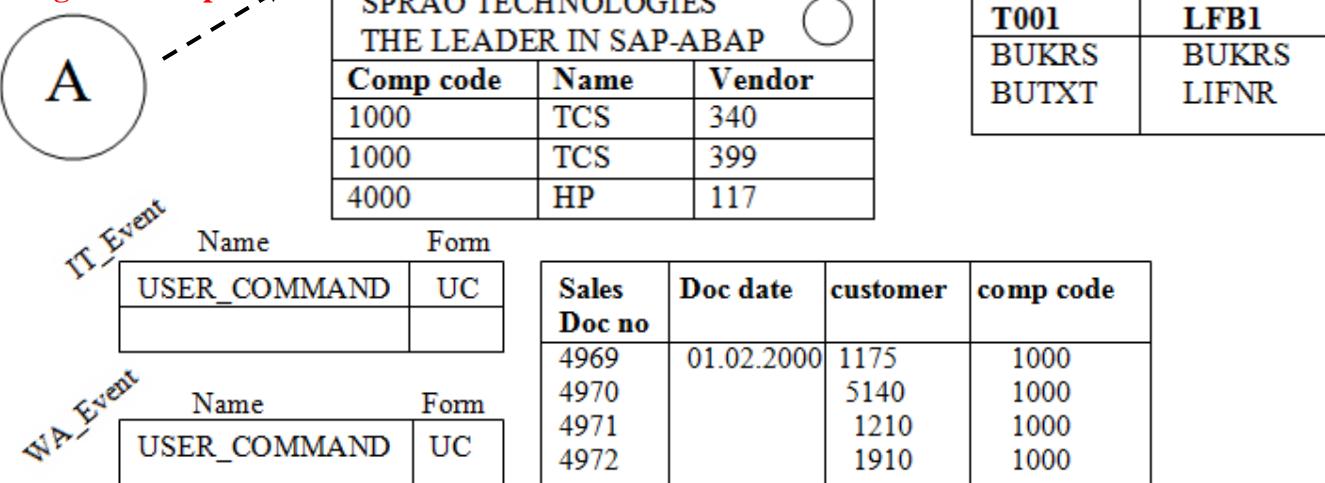
Syntax of definition: -

Form <form name> using <variable 1> like sy-ucomm <variable 2> type slis_selfied.

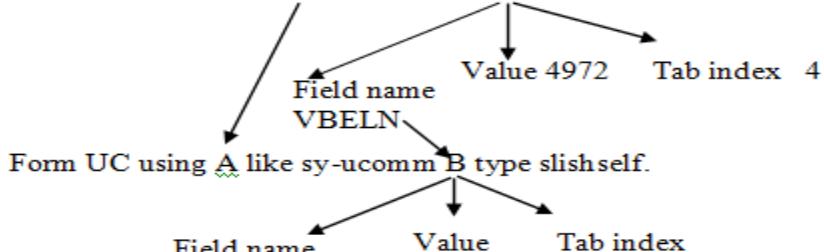


Endform

→ Based on the given company codes display the company codes, company names and vendors under company as shown in below by using ALV and also print the company code with green color along with hotspot.



* Perform UC using sy-ucomm slis_selfied.



```

Type-pools slis.
Tables vbak.
Select-options s_vbeln for vbak-vbeln.
Data v type vbap-vbeln.
TYPES: BEGIN OF TY_VBAK,
        VBELN TYPE VBAK-VBELN,
        AUDAT TYPE VBAK-AUDAT,
        KUNNR TYPE VBAK-KUNNR,
        BUKRS_VF TYPE VBAK-BUKRS_VF,
        END OF TY_VBAK.
DATA: WA_VBAK TYPE TY_VBAK,
      IT_VBAK TYPE TABLE OF TY_VBAK.
DATA: IT_VBAP TYPE TABLE OF VBAP,
      WA_VBAP LIKE LINE OF IT_VBAP.
* Filling the date internal table.
Select vbeln audat kunnr bukrs_vf from vbak into table it_vbak where
vbeln in s_vbeln.
* Declare the field catalog
Data: it_fcat type slis_t_fieldcat_alv,
      Wa_fcat like line of it_fcat.
* Filling the field catalog.
WA_FCAT-FIELDNAME = 'VBELN'.
WA_FCAT-COL_POS = '1'.
WA_FCAT-SELTEXT_M = 'SALES DOC'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'AUDAT'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-SELTEXT_M = 'DOC DATE'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'KUNNR'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'CUST NO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'BUKRS_VF'.
WA_FCAT-COL_POS = '4'.
WA_FCAT-SELTEXT_M = 'COCD'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
* Declare the event IT.
Data: it_event type slis_t_event,
      wa_event like line of it_event.
* Filling the event IT.
wa_event-name = 'USER_COMMAND'.
wa_event-form = 'UC'.
* Perform UC using sy-ucomm slis_selfield
Append wa_event to it_event.
* Display output
CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'

```

```

EXPORTING
  I_CALLBACK_PROGRAM = SY-CPROG
  IT_FIELDCAT        = IT_FCAT
  IT_EVENTS          = IT_EVENT
TABLES
  T_OUTTAB           = IT_VBAK.

Form UC using A like sy-ucomm B type slis_selfield.
If B-fieldname = 'VBELN'.
  V = B-VALUE.
  CALL FUNCTION 'CONVERSION_EXIT_ALPHA_INPUT'
    EXPORTING
      INPUT = V
    IMPORTING
      OUTPUT = V.
  SELECT * FROM VBAP INTO TABLE IT_VBAP WHERE VBELN = V.
  CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'
    EXPORTING
      I_STRUCTURE_NAME = 'VBAP'
    TABLES
      T_OUTTAB           = IT_VBAP.

*read table it_vbak into wa_vbak index b-tabindex.
*select * from vbap into table it_vbak where vbeln = wa_vbak-vbeln.
*  CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'
*
  EXPORTING
    I_STRUCTURE_NAME = 'VBAP'
*
  TABLES
*
    T_OUTTAB           = IT_VBAP.

Endif.
Endform.

```

Note: - If the user clicks on any record then we display the sales document item details.

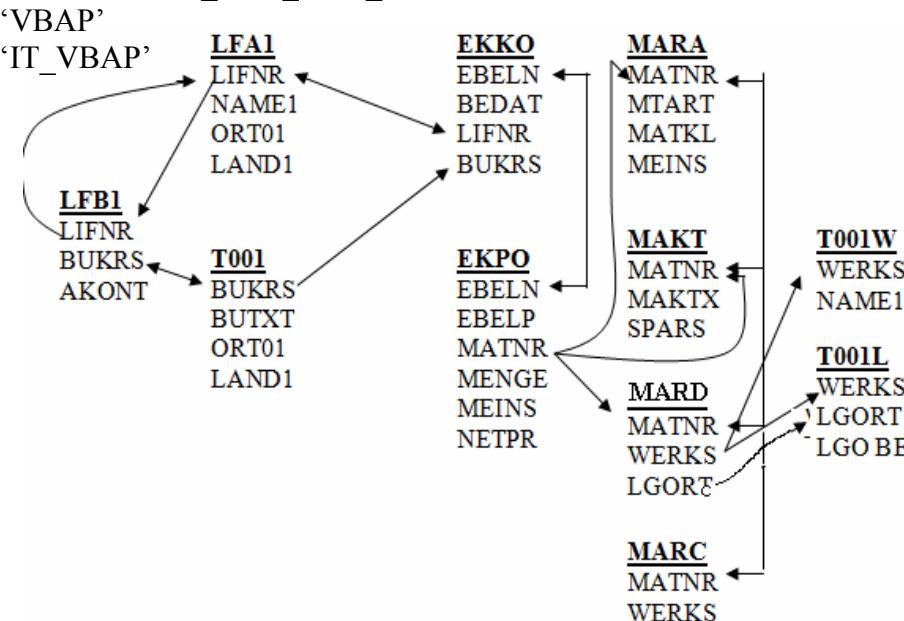
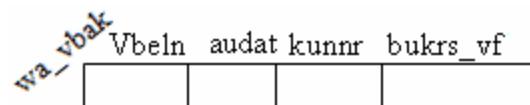
→ Form UC using A like sy-ucomm B type slis_selfield.

Read table it_vbak into wa_vbak index B-tabindex.

Select * from vbap into table it_vbak where vbeln = wa_vbak-vbeln.

CALL FUNCTION 'REUSER_ALV_LIST_DISPLAY'

→ Endform



→ Based on the given vendor numbers, display the purchase document numbers, document dates & vendor numbers by using ALV & also display the purchase document numbers with yellow color. If the user clicks on any purchasing document number only then we display the all the purchasing document item details by using ALV.

```
Type-pools SLIS.  
Tables EKKO.  
Select-options s_EBELN for ekko-EBELN.  
* Declare the data internal table  
Types: Begin of ty_ekko,  
        EBELN type EKKO-EBELN,  
        BEDAT type EKKO-BEDAT,  
        LIFNR type EKKO-LIFNR,  
        End of ty_ekko.  
Data it_ekko type table of ty_ekko.  
Data it_ekpo type table of ekpo.  
* filling the data internal table  
Select ebeln bedat lifnr from ekko into table it_ekko where ebeln in  
s_ebeln.  
* Declare the field catalog  
DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,  
      WA_FCAT LIKE LINE OF IT_FCAT.  
* Filling the field catalog  
Wa_fcat-fieldname = 'EBELN'.  
Wa_fcat-col_pos = '1'.  
Wa_fcat-seltext_m = 'PUR.DOC'.  
Wa_fcat-emphasize = 'C310'.  
Append wa_fcat to it_fcat.  
Clear wa_fcat.  
Wa_fcat-fieldname = 'BEDAT'.  
Wa_fcat-col_pos = '2'.  
Wa_fcat-seltext_m = 'DOC DATE'.  
Append wa_fcat to it_fcat.  
Clear wa_fcat.  
Wa_fcat-fieldname = 'LIFNR'.  
Wa_fcat-col_pos = '3'.  
Wa_fcat-seltext_m = 'VENDOR'.  
Append wa_fcat to it_fcat.  
Clear wa_fcat.  
* Declare the event internal table  
Data: it_event type slis_t_event,  
      wa_event like line of it_event.  
* Filling the event internal table  
Wa_event-name = 'USER_COMMAND'.  
WA_Event-form = 'UC'.  
* Perform UC using sy-ucomm slis_selfield  
Append wa_event to it_event.  
* Display the output  
CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'  
  EXPORTING  
    I_CALLBACK_PROGRAM = SY-CPROG  
    IT_FIELDCAT = IT_FCAT
```

```

IT_EVENTS          = IT_EVENT
TABLES
T_OUTTAB          = IT_EKKO.
FORM UC USING A LIKE SY-UCOMM B TYPE SLIS_SELFIELD.
IF B-fieldname = 'EBELN'.
  Select * from ekpo into table it_ekpo where ebeln = B-value.
  CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'
    EXPORTING
      I_STRUCTURE_NAME      =      'EKPO'
    TABLES
      T_OUTTAB   =     IT_EKPO.
ENDIF.
ENDFORM.

```

LOGIC: -

WA_EVENT-NAME = 'USER_COMMAND'.
 WA_EVENT-FORM = 'UC'.
 * PERFORM UC USING SY-UCOMM SLIS_SELFIELD
 Append wa_event to it_event.
 Call function 'REUSE_ALV_LIST_DISPLAY'.

```

FORM UC USING A LIKE SY-UCOMM B TYPE SLIS_SELFIELD.
IF B-FIELDNAME = 'EBELN'.
----- } LOGIC
----- } Field name (EBELN)
----- } Value (300012)
----- } Tabindex (4)
ENDIF.
ENDFORM.

```

Some of the standard transaction codes: -

1. XK03 → Display the vendor
2. XD03 → Display the customer
3. MM03 → Display the material
4. ME23N → Display purchasing order
5. VA03 → Display sales order
6. FB03 → Display the accounting document

Note: - 1 → create 2 → change 3 → display

Syntax of call the transaction: -

Call transaction '<transaction code>'.

If you want to skip the first screen: -

Call transaction '<transaction code>' and skip first screen.

Syntax of set the value before call the transaction: -

Set parameter id '<IDNAME>' field '<VALUE>'.

Steps to identify the parameter id at transaction: -

Execute the transaction code XK03. Place the customer on input field. Click on technical information. Identify the parameter id.

EX: -

Parameter p_lifnr type lfa1-lifnr.

Set parameter id 'LIF' field p_lifnr.

Call transaction 'XK03' and skip first screen.

→ Based on the given sales document numbers to display the sales doc numbers, document dates & customer numbers by using ALV & also display the sales document number with green color. If the user clicks on any sales document only then we display the sales order details through 'VA03' transaction. If the user clicks on any customer number only then we display the customer details through 'XD03' transaction.

* Declare select-options

* Declare data internal table, field catalog, event internal table

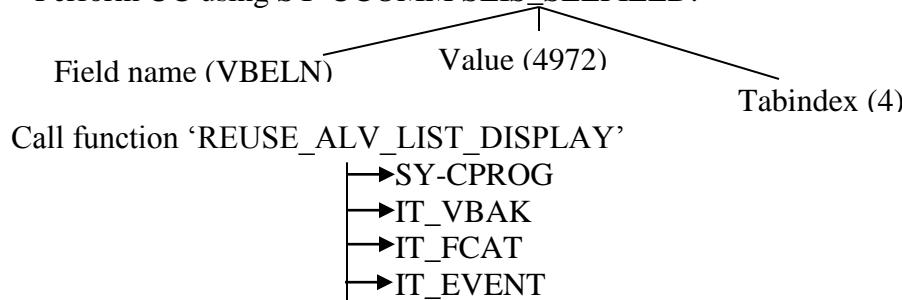
* Fill the data internal table

* Fill the field catalog

Wa_event-name = 'USER_COMMAND'.

Wa_event-form = 'UC'.

* Perform UC using SY-UCOMM SLIS_SELFIELD.



FORM ABC USING A LIKE SY-UCOMM B TYPE SLIS_SELFIELD.

IF B-FIELDNAME = 'VBELN'.

set parameter id 'AUN' field B-value.

call transaction 'VA03' and skip first screen.

Endif.

Sales doc	Doc date	Customer
4969	01.05.2000	1175
4970	02.05.2012	1010
4971	05.09.2014	3050

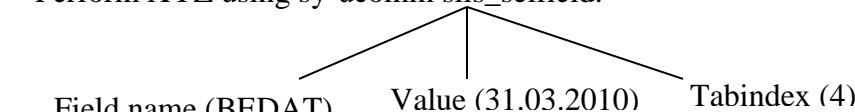
NAME	FORM
USER_COMMAND	UC

→ Based on the given purchasing document numbers, display the purchasing document numbers, document dates & vendor numbers by using ALV. If the user clicks on any record then we display the purchasing document details through 'ME23N' transaction.

Wa_event-name = 'USER_COMMAND'.

Wa_event-form = 'XYZ'.

* Perform XYZ using sy-ucomm slis_selfield.



Append wa_event to it_event.

Call function 'REUSE_ALV_LIST_DISPLAY'

IT_EKKO

IT_FCAT

IT_EVENT

Form XYZ using A like sy-ucomm B type slis_selfield.

Field name (BEDAT) Value (31.03.2010) Tabindex (4)

S_EBELN to

Read table it_ekko into wa_ekko index b-tabindex.

Set parameter id 'BES' field wa_ekko-ebeln.

Call transaction 'ME23N'.

Endform.

Syntax of calling subroutine for the pf status set event: -

Perform <form name> using slis_t_extab.

Syntax of definition: -

Form <form name> using <variable 1> type slis_t_extab.

----- } logic

Endform.

IT_EKKO

Pur.doc	Doc.dt	Vendor
30004	01.05.2002	3910
30005	15.02.2006	5550
30006	16.03.2008	5500
30007	31.03.2010	1512

Pur.doc	Doc.dt	Vendor
30007	31.03.2010	1512

IT_EVENT

Name	Form
USER_COMMAND	XYZ

WA_EVENT

Name	Form
USER_COMMAND	XYZ

Note: - When ever we are working

with ALV then we never create our own GUI to the program we always copy the existing GUI from SAPLKKBL standard program.

If you create our own GUI to the existing functionality will loss. (Sorted list in ascending, in descending ---).

→ Based on the given purchasing document number display the purchasing document number, document dates and vendor numbers as shown in the below by using ALV. Here also attach display button in the application tool bar.



	Pur.doc	Doc date	Vendor
<input type="checkbox"/>	30004	01.05.2000	3910
<input type="checkbox"/>	30005	15.02.2002	5370
<input checked="" type="checkbox"/>	30006	31.03.2010	1910
<input type="checkbox"/>	30007	02.09/2012	5330

If the user click on display button then we display the selected check box purchasing doc details through ME23N transaction.

Steps to copy the existing GUI: -

Execute SE41. Click on copy status in the application tool bar (copy status). Provide from program SAPLKKBL. Select the status 'STANDARD_FULLSCREEN'. Provide to program (ZREPO12), Status (STAT). Click on copy and enter. Open our status in change mode. Expand the application tool bar. Provide transaction code for additional button (DIS) where the place is available. Double click on it and press enter. Provide the function text (Display). Click on enter. Select the shortcut key. Enter. Save, check and activate GUI.

```

Type-pools slis.
Tables ekko.
Select-options s_ebeln for ekko-ebeln.
* Declare the data IT.
Data: begin of wa_ekko,
      Ebeln type ekko-ebeln,
      Bedat type ekko-bedat,
      Lifnr type ekko-lifnr,
      Chk,
      End of wa_ekko.
Data it_ekko like table of wa_ekko.
* Filling the data IT.
SELECT EBELN BEDAT LIFNR FROM EKKO INTO TABLE IT_EKKO WHERE EBELN
IN S_EBELN.
* Declare the field catalog.
DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,
      WA_FCAT LIKE LINE OF IT_FCAT.
* Filling field catalog.
Wa_fcat-fieldname = 'CHK'.
Wa_fcat-COL_POS = '1'.
Wa_fcat-selttext_m = ' '.
Wa_fcat-checkbox = 'X'.
Wa_fcat-edit = 'X'.
Wa_fcat-outputlen = '3'.
Append wa_fcat to it_fcat.
Clear wa_fcat.
Wa_fcat-fieldname = 'EBELN'.
Wa_fcat-col_pos = '2'.
Wa_fcat-selttext_m = 'PUR DOC'.
Append wa_fcat to it_fcat.
Clear wa_fcat.
Wa_fcat-fieldname = 'BEDAT'.
Wa_fcat-col_pos = '3'.
Wa_fcat-selttext_m = 'DOC DATE'.
Append wa_fcat to it_fcat.
Clear wa_fcat.
Wa_fcat-fieldname = 'LIFNR'.
Wa_fcat-col_pos = '4'.
Wa_fcat-selttext_m = 'VENDOR'.
Append wa_fcat to it_fcat.
Clear wa_fcat.
* Declare the event IT.
Data: it_event type slis_t_event,
      Wa_event like line of it_event.
wa_event-name = 'PF_STATUS_SET'.
wa_event-form = 'GUI'.
* Perform GUI using slis_t_extab
Append wa_event to it_event.
clear wa_event.
Wa_event-name = 'USER_COMMAND'.
Wa_event-form = 'UC'.

```

```

* Perform UC using sy-ucomm slis_selftext
Append wa_event to it_event.
* Display the output
CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
  EXPORTING
    I_callback_program = sy-cprog
    It_fieldcat        = it_fcat
    It_events          = it_event
  TABLES
    T_outtab           = it_ekko.

Form GUI using M type slis_t_extab.
  Set pf-status 'STAT'.
Endform.

Form UC using A like sy-ucomm B type slis_selfield.
  If A = 'DIS'.
    Read table it_ekko into wa_ekko index b-tabindex.
    Set parameter id 'RES' field wa_ekko-ebeln.
    CALL TRANSACTION 'ME23N' and skip first screen.
  ENDIF.
ENDFORM.

```

Table Maintenance Generator: -

This is used to create the user interface to the data base table to perform the ‘DML’ operations (Insert, Update, Modify) without any code.

Some of the fields in layout WA: -

Colwidth_optimize → Compress the displayed field

Zebra → Stripped pattern

Info_fieldname → colour field.

Note: – In slis we have one type I.e. slis_layout_alv which contains all the fields related to layout work area. So we simply declare our layout work area by referring above type.

I → Structure

IS → Work area

CT
IT } Internal table
T }

Blocked ALV

Blocked ALV: -

Blocked ALV is used to display the output in a block wise.

Steps to work with blocked ALV: -

1. Initialize the blocked ALV by using ‘REUSE_ALV_BLOCK_LIST_INIT’ function module. The input for the above function module is ‘current program name’.
2. Append the data IT to the blocked ALV by using ‘REUSE_ALV_BLOCK_LIST_APPEND’ function module. The input for the above function module is
 1. <Data IT>
 2. <Field catalog IT>
 3. <event IT> } Dummy also ok
 4. <Layout WA>
3. Display the data in blocked ALV by using ‘REUSE_ALV_BLOCK_LIST_DISPLAY’ function module.

→ Based on the given purchasing document numbers display the purchasing document header (EBELN, BEDAT, LIFNR) and item (EBELN EBELP MENGE MEINS NETPR) details by using blocked ALV as shown in the below.

Pur.doc	Item	Qty	Unit	Price
30004	01	10	kg	200
30004	02	02	pcs	100
30005	01	01	nos	990

Pur.doc	doc date	vendor
30004	01.05.2000	3910
30005	05.07.2005	5500

REPORT ZREPORT2007.

TYPE-POOLS SLIS.

TABLES EKKO.

SELECT-OPTIONS S_EBELN FOR EKKO-EBELN.

* Declare data IT (EKKO, EKPO)

TYPES: BEGIN OF TY_EKKO,
 EBELN TYPE EKKO-EBELN,
 BEDAT TYPE EKKO-BEDAT,
 LIFNR TYPE EKKO-LIFNR,
 END OF TY_EKKO.

DATA: WA_EKKO TYPE TY_EKKO,
 IT_EKKO TYPE TABLE OF TY_EKKO.

TYPES: BEGIN OF TY_EKPO,
 EBELN TYPE EKPO-EBELN,
 EBELP TYPE EKPO-EBELP,
 MENGE TYPE EKPO-MENGE,
 MEINS TYPE EKPO-MEINS,
 NETPR TYPE EKPO-NETPR,
 END OF TY_EKPO.

DATA: WA_EKPO TYPE TY_EKPO,
 IT_EKPO TYPE TABLE OF TY_EKPO.

* Filling the data IT.

SELECT EBELN BEDAT LIFNR FROM EKKO INTO TABLE IT_EKKO WHERE EBELN
IN S_EBELN.

IF IT_EKKO IS NOT INITIAL.

 SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO
FOR ALL ENTRIES IN IT_EKKO WHERE EBELN = IT_EKKO-EBELN.
ENDIF.

* Declare the field catalogs

DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,
 WA_FCAT LIKE LINE OF IT_FCAT.

DATA: IT_FCAT1 TYPE SLIS_T_FIELDCAT_ALV,
 WA_FCAT1 LIKE LINE OF IT_FCAT1.

* Filling the field catalog

WA_FCAT-FIELDNAME = 'EBELN'.
WA_FCAT-COL_POS = '1'.

```

WA_FCAT-SELTEXT_M = 'PUR DOC'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'BEDAT'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-SELTEXT_M = 'DOC DATE'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'LIFNR'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'VENDOR'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT1-FIELDNAME = 'EBELN'.
WA_FCAT1-COL_POS = '1'.
WA_FCAT1-SELTEXT_M = 'PUR DOC'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.
WA_FCAT1-FIELDNAME = 'EBELP'.
WA_FCAT1-COL_POS = '2'.
WA_FCAT1-SELTEXT_M = 'ITME'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.
WA_FCAT1-FIELDNAME = 'MENGE'.
WA_FCAT1-COL_POS = '3'.
WA_FCAT1-SELTEXT_M = 'QTY'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.
WA_FCAT1-FIELDNAME = 'MEINS'.
WA_FCAT1-COL_POS = '4'.
WA_FCAT1-SELTEXT_M = 'UOM'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.
WA_FCAT1-FIELDNAME = 'NETPR'.
WA_FCAT1-COL_POS = '5'.
WA_FCAT1-SELTEXT_M = 'NET PRICE'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.

* Declare the event IT
DATA: IT_EVENT TYPE SLIS_T_EVENT,
      WA_EVENT LIKE LINE OF IT_EVENT.
DATA: IT_EVENT1 TYPE SLIS_T_EVENT,
      WA_EVENT1 LIKE LINE OF IT_EVENT1.

* Declare the layout WA (2).
DATA WA_LAYOUT TYPE SLIS_LAYOUT_ALV.
DATA WA_LAYOUT1 TYPE SLIS_LAYOUT_ALV.

* Initialize the blocked ALV.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_INIT'

```

```

EXPORTING
  I_CALLBACK_PROGRAM = SY-CPROG.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_APPEND'
EXPORTING
  IS_LAYOUT      = WA_LAYOUT
  IT_FIELDCAT   = IT_FCAT
  I_TABNAME     = 'WA_EKKO'
  IT_EVENTS     = IT_EVENT
TABLES
  T_OUTTAB      = IT_EKKO.

CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_APPEND'
EXPORTING
  IS_LAYOUT      = WA_LAYOUT1
  IT_FIELDCAT   = IT_FCAT1
  I_TABNAME     = 'WA_EKPO'
  IT_EVENTS     = IT_EVENT1
TABLES
  T_OUTTAB      = IT_EKPO.
* Display output.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_DISPLAY'.

```

Steps to work with row colour:

1. Declare the one additional colour field in the data IT, which is char and length 4.
2. Fill the data IT based on given input.
3. Modify the colour field based on the requirement.
4. Pass the colour field name into layout WA (info_field name).
5. Fill the field catalog (not colour field)
6. Display output

→ Based on the given purchasing document no, display the purchase document numbers, item numbers, quantity, unit of measurement, net prize by using ALV & also display the line item details in red colour if the amt is more than 1000.

EBELN	EBELP	MENGE	MEINS	NETPR	XYZ
300004	01	10	KG	290.00	
300004	02	02	PCS	1050.00	C610
300005	01	02	PCS	200.00	
300005	02	03	BOX	2000.00	C610

EBELN	EBELP	MENGE	MEINS	NETPR	XYZ
300004	01	10	KG	290.00	

```

type-pools slis.
tables ekpo.
select-options s_ebeln for ekpo-ebeln.
types: begin of ty_ekpo,
        ebeln type ekpo-ebeln,
        ebelp type ekpo-ebelp,
        menge type ekpo-menge,
        meins type ekpo-meins,
        netpr type ekpo-netpr,
        xyz(4) type c,
        end of ty_ekpo.
data: wa_ekpo type ty_ekpo,

```

```

it_ekpo type table OF ty_ekpo.
data: it_fcat type slis_t_fieldcat_alv,
      wa_fcat like line of it_fcat.
* Delcare the layout
data wa_layout type slis_layout_alv.
* Fill the layout wa.
wa_layout-info_fieldname = 'XYZ'.

select ebeln ebelp menge meins netpr from ekpo into table it_ekpo where
ebeln in s_ebeln.
wa_fcat-fieldname = 'EBELN'.
wa_fcat-col_pos = '1'.
wa_fcat-seltext_m = 'PUR DOC'.
append wa_fcat to it_fcat.
clear wa_fcat.
wa_fcat-fieldname = 'EBELP'.
wa_fcat-col_pos = '2'.
wa_fcat-seltext_m = 'ITEM'.
append wa_fcat to it_fcat.
clear wa_fcat.
wa_fcat-fieldname = 'MENGE'.
wa_fcat-col_pos = '3'.
wa_fcat-seltext_m = 'QTY'.
append wa_fcat to it_fcat.
clear wa_fcat.
wa_fcat-fieldname = 'MEINS'.
wa_fcat-col_pos = '4'.
wa_fcat-seltext_m = 'UOM'.
append wa_fcat to it_fcat.
clear wa_fcat.
wa_fcat-fieldname = 'NETPR'.
wa_fcat-col_pos = '5'.
wa_fcat-seltext_m = 'NET PRICE'.
append wa_fcat to it_fcat.
clear wa_fcat.

* Modify the color field
wa_ekpo-xyz = 'C610'.
modify it_ekpo from wa_ekpo transporting XYZ where NETPR > 1000.

CALL FUNCTION 'REUSE_ALV_LIST_DISPLAY'
  EXPORTING
    IS_LAYOUT      = WA_LAYOUT
    IT_FIELDCAT   = IT_FCAT
  TABLES
    T_OUTTAB     = IT_EKPO.

```

HIERARCHICAL ALV

Hierarchical ALV is used to display the header and item details in a hierarchical manner.

Note: - ‘REUSE_ALV_HIERSEQ_LIST_DISPLAY’ is the function module which is used to display the header and item details in a hierarchical manner.

The input for the above function module is

- Two data IT (Header of item)
- Only one field catalog IT
- Key info WA

→ Link field between header and item table

Key info WA contains link fields between the header and item table.

EKKO
EKPO → EBELN key info wa

Fields in key info WA: -

Header 01

Item 01

Header 02

Item 02

Header 05

Item 05

Note: - In slis we have one type I.e. ‘SLIS_KEYINFO_ALV’ which contains above fields. So we simply declare our IT by referring SLIS_KEYINFO_ALV.

Ex: -

EKKO > EBELN

MARD > WERKS
T001L > LGORT

HEADER 01 = ‘EBELN’

HEADER 01 = ‘WERKS’

ITEM01 = ‘EBELN’

ITEM 01 = ‘WERKS’

HEADER 02 = ‘LGORT’

ITEM 02 = ‘LGORT’.

Note: - When ever we are working with hierarchical ALV then we must maintain link fields in between header and item internal table.

Note: - When ever we are working with hierarchical ALV then we must fill the field catalog IT.

1. REUSE_ALV_LIST_DISPLAY
2. REUSE_ALV_GRID_DISPLAY
3. REUSE_ALV_HIERSEQ_LIST_DISPLAY
4. REUSE_ALV_COMMENTARY_WRITE
5. REUSE_ALV_BLOCK_LIST_DISPLAY
6. REUSE_ALV_FIELD CATALOG MERGE

1. SLIS_T_FIELDCAT_ALV
2. SLIS_T_ALV
3. SLIS_T_LIST HEADER
4. SLIS_SELFIELD
5. SLIS_T_EXTAB
6. SLIS_LAYOUT_ALV
7. SLIS_KEYINFO_ALV

→ Based on the given purchasing document number display the purchasing document (EBELN, BEDAT, LIFNR) & purchasing document item details (EBELP, MENGE, MEINS, NETPR) in hierarchical manner as shown in the below by using ALV.

Type-pools slis.

Tables ekko.

```
Select-options s_ebeln for ekko-ebeln.  
* Declare the data IT (IT_EKKO, IT_EKPO)
```

```
TYPES: BEGIN OF TY_EKKO,  
        EBELN TYPE EKKO-EBELN,  
        BEDAT TYPE EKKO-BEDAT,  
        LIFNR TYPE EKKO-LIFNR,  
        END OF TY_EKKO.
```

```
DATA: WA_EKKO TYPE TY_EKKO,  
      IT_EKKO TYPE TABLE OF TY_EKKO.
```

```
TYPES: BEGIN OF TY_EKPO,  
        EBELN TYPE EKPO-EBELN,  
        EBELP TYPE EKPO-EBELP,  
        MENGE TYPE EKPO-MENGE,  
        MEINS TYPE EKPO-MEINS,  
        NETPR TYPE EKPO-NETPR,  
        END OF TY_EKPO.
```

```
DATA: WA_EKPO TYPE TY_EKPO,  
      IT_EKPO TYPE TABLE OF TY_EKPO.
```

```
SELECT EBELN BEDAT LIFNR FROM EKKO INTO TABLE IT_EKKO WHERE EBELN  
IN S_EBELN.
```

```
SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO  
WHERE EBELN IN S_EBELN.
```

* Declare the field catalogs

```
data: it_fcat type slis_t_fieldcat_alv,  
      wa_fcat like line of it_fcat.
```

```
WA_FCAT-FIELDNAME = 'EBELN'.  
WA_FCAT-COL_POS = '1'.  
WA_FCAT-SELTEXT_M = 'PUR DOC'.  
WA_FCAT-TABNAME = 'IT_EKKO'.  
APPEND WA_FCAT TO IT_FCAT.  
CLEAR WA_FCAT.  
WA_FCAT-FIELDNAME = 'BEDAT'.  
WA_FCAT-COL_POS = '2'.
```

PUR DOC	DOC DATE VENDOR			
PUR DOC	ITME	QTY	UOM	NETPRICE
3000000004 02112000 5550				
3000000004	1	1.000	PC	27.95
3000000004	2	1.000	PC	10.95
3000000005 02112000 5550				
3000000005	1	1.000	PC	27.95
3000000005	2	1.000	PC	10.95

```

WA_FCAT-SELTEXT_M = 'DOC DATE'.
WA_FCAT-TABNAME = 'IT_EKKO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'LIFNR'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'VENDOR'.
WA_FCAT-TABNAME = 'IT_EKKO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'EBELN'.
WA_FCAT-COL_POS = '1'.
WA_FCAT-SELTEXT_M = 'PUR DOC'.
WA_FCAT-TABNAME = 'IT_EKPO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'EBELP'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-SELTEXT_M = 'ITME'.
WA_FCAT-TABNAME = 'IT_EKPO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'MENGE'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'QTY'.
WA_FCAT-TABNAME = 'IT_EKPO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'MEINS'.
WA_FCAT-COL_POS = '4'.
WA_FCAT-SELTEXT_M = 'UOM'.
WA_FCAT-TABNAME = 'IT_EKPO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'NETPR'.
WA_FCAT-COL_POS = '5'.
WA_FCAT-SELTEXT_M = 'NETPRICE'.
WA_FCAT-TABNAME = 'IT_EKPO'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

* Declare the key info WA
Data wa_key type slis_keyinfo_alv.
* Filling the key info WA.
Wa_key-header01 = 'EBELN'.
Wa_key-item01 = 'EBELN'.
* Display output
CALL FUNCTION 'REUSE_ALV_HIERSEQ_LIST_DISPLAY'
  EXPORTING
    IT_FIELDCAT      = IT_FCAT

```

```

I_TABNAME_HEADER = 'IT_EKKO'
I_TABNAME_ITEM   = 'IT_EKPO'
IS_KEYINFO        = WA_KEY
TABLES
T_OUTTAB_HEADER  = IT_EKKO
T_OUTTAB_ITEM    = IT_EKPO.

```

Differences between GRID & LIST display: -

Grid display

1. Grid display supports OOP's ALV.
2. Grid display slower
3. Edit and logo is possible in grid display
4. Blocked and hierarchical ALV is not possible in grid display
5. In the output  symbol indicates F1 help.
6. By using 'commentary write' function module only we can print the text on top or bottom event.
7. This is used to display the output in grid format.

List display

1. List display does not supports OOP's ALV.
2. List display faster
3. These are not possible in list display.
4. These are possible in list display.
5. In list display  indicates number of records is displayed.
6. Either by using write or commentary writes function module we can print the text on top or bottom event.
7. This is used display the output in list format.

Note: - When ever we are working with ALV Reports in real time then we must pass layout WA.

Data wa_layout type slis_layout_alv.

Wa_layout-colwidth_optimize = 'X'.

Wa_layout-zebra = 'X'.

Steps to identify the fields in field catalog: -

Execute SE37. Open any one of the ALV function module. Example is REUSE_ALV_LIST_DISPLAY. Click on import tab against the field catalog, double click on associated type. Double click on their reference types. Double click on includes. Absorb the fields in field catalog.

Note: - When ever we are filling the field catalog manually, if you want to refer the database table, field description to print as a heading then we use following fields in field catalog.

Ref_fieldname

Ref_tabname.

EX: -

```

Wa_fcat-fieldname = 'VBELN'.
Wa_fcat-col_pos   = '1'.
Wa_fcat-ref_tabname = 'VBAK'.
Wa_fcat-ref_fieldname = 'VBELN'.

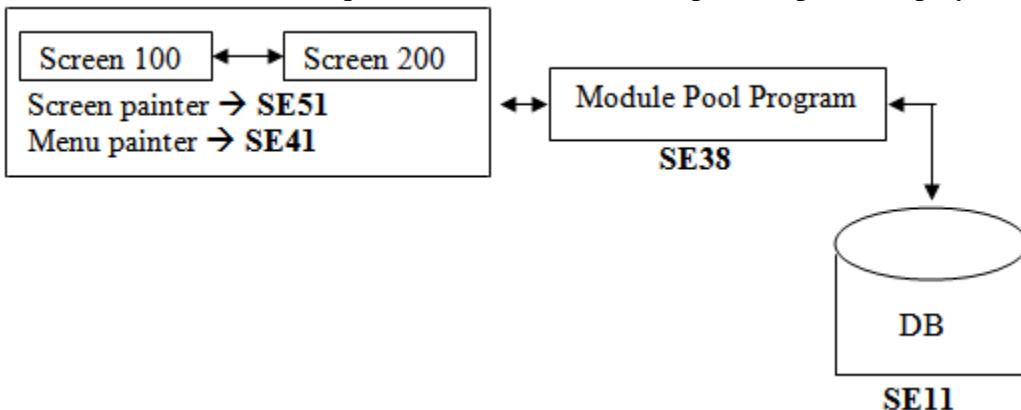
```

Append wa_fcat to it_fcat.

Clear wa_fcat.

Transaction / Dialog pool programming / Module Pool Programming: -

A transaction is the collection of sequential screens which accept the input & display the output.



It's also called as Dialog Pool Programming since we have interaction between screens. It's also called as Module Pool Programming because the flow logic of each screen acts as a module. So it's a pool of module.

Note: - A transaction code contains either executable program or module pool program.

Differences between executable program, module pool program: -

Executable program

1. We can execute the executable program either through transaction code or directly.
2. Type of the executable program is '1'.
3. All the standard reports are executable programs.

Ex: - ME2L, ME2K, ME2M

Module Pool Program

1. We execute the module pool program only through transaction.
2. Type of the module pool program is 'M'.
3. All the standard transactions are module pool programs.

Ex: - XK01, XD01

Steps to create transaction code for executable program: -

Execute 'SE93'. Provide the transaction code. Click on create. Provide short text. Select the radio button program and selection screen. Enter. Provide the program name. Select the GUI check boxes. Save. Check.

Note: - In the real time when ever we develop a new object other than enhancement then we must create transaction code.

Steps to work with module pool program: -

1. Create a module pool program (in SE38) & implement the logic.
2. Design the required screens (in SE51) & attached to the program.
3. Design the required menus (in SE41) & attached to screen.
4. Design the database tables (in SE11) & as per client requirement.
5. Create the transaction code (in SE93) & run the module pool program.

These 5 steps, we can work with single transaction. I.e. **SE80** (Object Navigator).

Steps to create the module pool program: -

Step 1: -

Execute **SE80**. Click on 'Edit object' in the application tool bar. Click on program tab. Provide program name. Click on create. Remove the check box TOP INCL. Click on enter. Select the type is module pool. Enter. Click on save, local object. Select the program name. Provide program name in left panel. Enter, save.

Step 2: -

Execute **SE38**. Provide the program name. Click on create. Provide title. Select the type is module pool. Click on save, local object. Click on display object list in the application tool bar.

Working with screen painter: -

Screen painter is a tool which contains both the graphical as well as alpha numeric mode. The transaction code for screen painter is **SE51**.

Components of screen painter: -

1. Attributes
2. Layout
3. Element list
4. Flow logic editor

Attributes: -

Attributes specify the type of the screen whether it's a normal sub screen or model dialog box.

Layout: -

Layout is the collection of screen elements. I.e. check box, radio button, input output field, push button, table control, tab strip, etc.

Element list: -

Element list contains the screen elements which are designed on the screen & their data types & lengths.

Flow logic editor: -

Flow logic editor contains the logic related to the screen.

Events in flow logic editor: -

1. PBO (Process Before Output)
2. PAI (Process After Input)
3. POV (Process On Value-request)
4. POH (Process On Help-request)

PBO: -

It's an event which is triggered before display the screen.

ADV: - This is used to provide the default values to the screen.

PAI: -

It's an event which is triggered after provide the input to the screen.

ADV: - This is used to implement the logic.

POV: -

It's an event which is triggered at the time of user clicks on F4 button.

ADV: - This is used to provide the list of possible values to the input variable.

POH: -

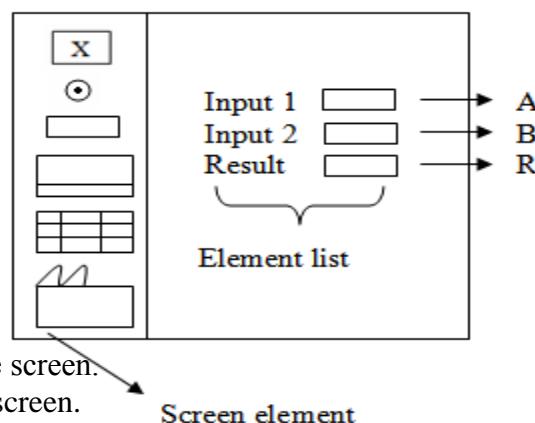
It's an event which is triggered at the time of user clicks on F1 button.

ADV: - This is used to provide the help document to the input variable.

Note: - The communication between flow logic editor to ABAP editor is always through screen elements. I.e. each element in the screen we must declare on equality declaration in ABAP editor.

Steps to work with module pool program as per ABAPer point of view: -

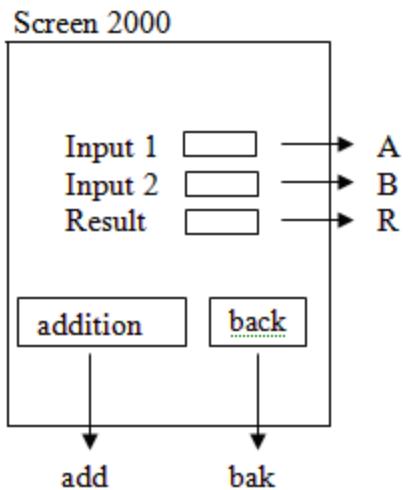
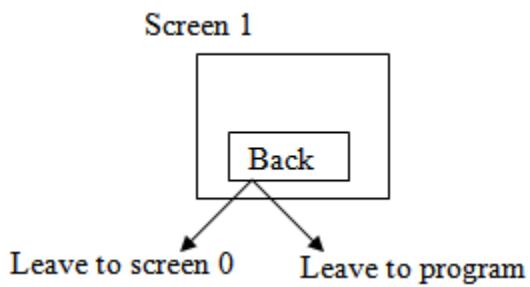
1. Create the module pool program
2. Design the required screens
3. Maintain the equality declaration in ABAP editor
4. Maintain or implement the PBO and PAI logics of each screen
5. Create the transaction code to run the program



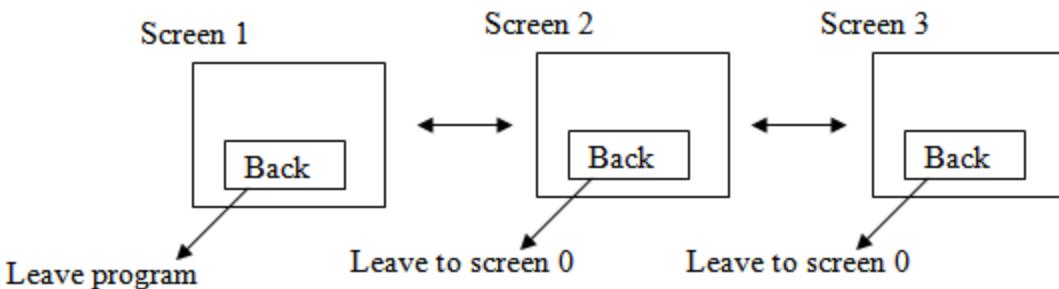
→ Design the screen as shown in the below.

After the user provide the input1 and input2 click on addition button then we display the output in the result field. If the user clicks on back button then we go to program.

Note: - If we are working with only one screen then the back button functionality of the screen is either leave to screen 0 or leave program.



If we are working with more than one screen then the back button functionality of the first screen is leave program, from second screen on wards leave to screen 0.



Design the screen: -

Select the program in left panel. Right click on it. Create → screen. Provide screen number (4 digit). Enter. Provide short description. Click on save. Click on layout in the application tool bar. Design the screen abaper client requirement.

Screen designing: -

Select the text field screen element. Draw it. Double click on it. Provide the name, text. Select the input output field screen element. Draw it. Double click on it. Provide the name. Identify the data type & length. Repeat the same steps for all other fields. Select the push button screen element. Draw it. Double click on it. Provide the name, text, function code. Repeat the same steps for back button. Select the box screen element. Draw it.

Steps to activate the program: -

Double click on program in the left panel. Right click → Activate. Enter.

Steps to create the transaction code: -

Select the program in the left panel. Right click, create → transaction. Provide the transaction code, short description. Enter. Provide the program name, screen number. Select the GUI checkbox. Save.

Steps to execute the program: -

Select the transaction code in the left panel. Right click → execute → direct processing.

Programming: -

```

DATA A(10) TYPE C.
DATA B(10) TYPE C.
DATA C(10) TYPE C.
  
```

```

MODULE USER_COMMAND_2000 INPUT.
IF SY-UCOMM = 'ADD'.
C = A + B.
WRITE C.
ELSEIF SY-UCOMM = 'BACK'.
LEAVE PROGRAM.
ENDIF.
ENDMODULE.

```

Flow logic of 2000 screen: -

PROCESS BEFORE OUTPUT.

* MODULE STATUS_2000.

PROCESS AFTER INPUT.

MODULE USER_COMMAND_2000.

→ Design the screen as shown in the below. After the user provide the company code, name & city, click on insert button then we insert company details into T001 data base table if the user clicks on back button then we come back to program.

Steps to design the screen: -

Click on layout in the application tool bar. If the fields are coming from any data base table or work area then click on dictionary / program field icon (F6) in the standard tool bar. Provide the table name. Enter. It displays the all fields. Select our required fields. Click on OK & place on the screen. & design the rest of the buttons.

Programming: -

```

MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'INS'.
    INSERT T001 FROM T001.
    IF SY-SUBRC = 0.
      MESSAGE S000(ZMESSAGE1)
      WITH 'INSERTED SUCCESSFULLY'.
    ELSE.
      MESSAGE E000(ZMESSAGE1) WITH 'NOT INSERTED'.
    ENDIF.
  ELSEIF SY-UCOMM = 'BACK'.
    LEAVE PROGRAM.
  ENDIF.
ENDMODULE.

```

→ Design the screen as shown in the below. After the user provide the company code & click on display button then we display the customers under company details (BUKRS, KUNNR, AKONT) like ordinary report.

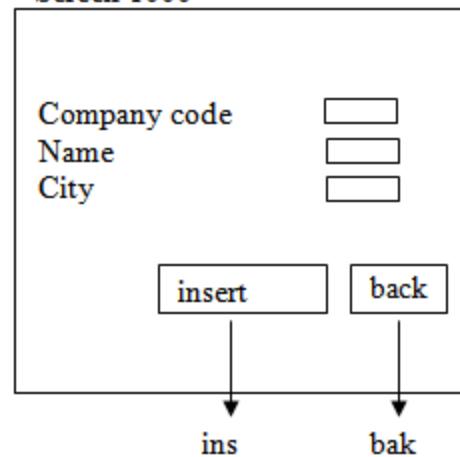
Note: - If you want to display the output like ordinary report then we must place leave to list processing before display the output.

DATA A TYPE KNB1-BUKRS.

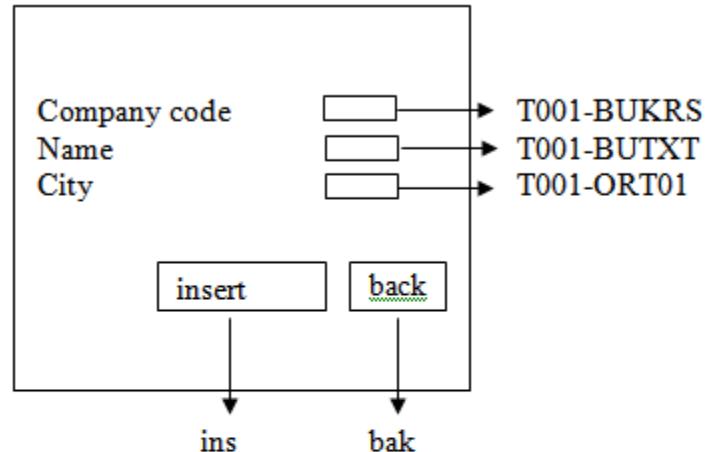
TYPES: BEGIN OF TY_KNB1,

BUKRS TYPE KNB1-BUKRS,

Screen 1000



Screen 1000



Tables T001.

T001 BUKRS BUTXT ORT01 LAND1 -----

--	--	--	--

```

KUNNR TYPE KNB1-KUNNR,
AKONT TYPE KNB1-AKONT,
END OF TY_KNB1.
DATA: WA_KNB1 TYPE TY_KNB1,
      IT_KNB1 TYPE TABLE OF TY_KNB1.

```

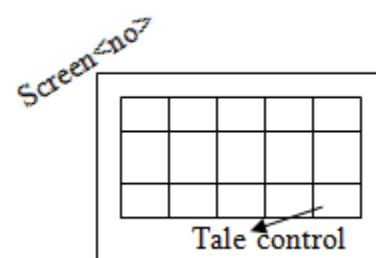
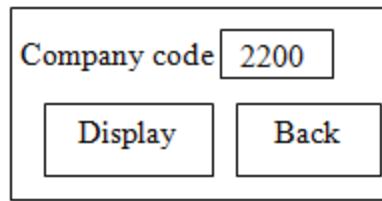
```
MODULE USER_COMMAND_2000 INPUT.
```

```

IF SY-UCOMM = 'DIS'.
  SELECT BUKRS KUNNR AKONT FROM KNB1 INTO TABLE IT_KNB1 WHERE BUKRS =
A.
  LEAVE TO LIST-PROCESSING.
  LOOP AT IT_KNB1 INTO WA_KNB1.
    WRITE:/ WA_KNB1-BUKRS, WA_KNB1-KUNNR, WA_KNB1-AKONT.
  ENDLOOP.
ELSEIF SY-UCOMM = 'BACK'.
  LEAVE PROGRAM.
ENDIF.
ENDMODULE.
```

Working with table control: -

Table control is used to display the multiple records in a tabular format.



Syntax of declaring the table control in ABAP editor: -

Controls <table control name> type table view using screen <screen no>.

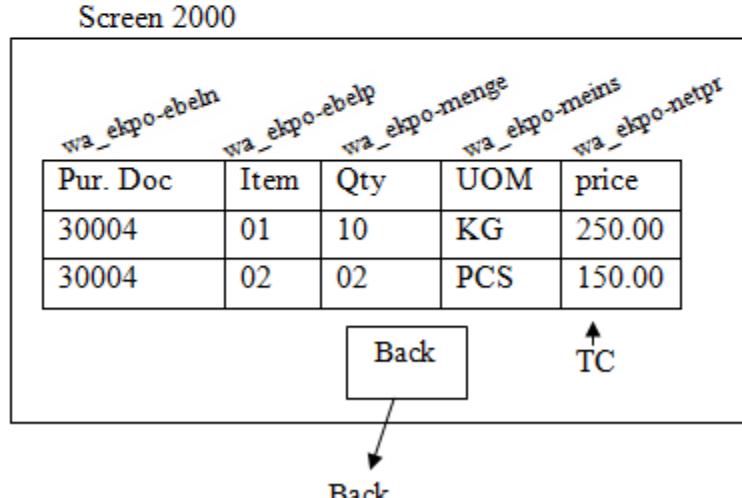
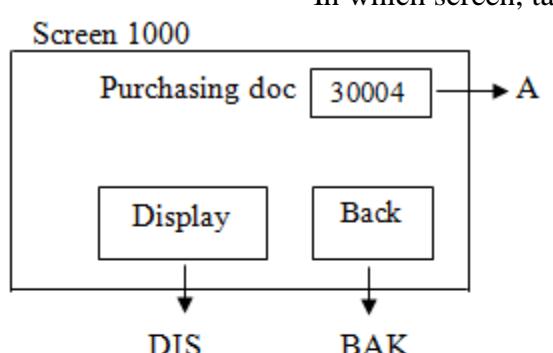
→ Design the screen as shown in the below.

After the user provide the purchasing doc number in the 1000's screen & click on display button then we display the purchasing document item details in a tabular format in 2000's screen.

Steps to design table control: -

Select the table control screen element & draw it. Double click on it. Provide the name. Select vertical, horizontal check boxes, multiple radio buttons. Click on dictionary / program fields button (F6). Provide the table name. Select the required fields. Click on OK & place it top right. Double click on each input field. Provide the name as wa_ekpo-ebeln, wa_ekpo-ebelp, wa_ekpo-meins, and wa_ekpo-netpr like this. Design the back button. Save.

Syntax of transferring the data from internal table to table control in the flow logic editor: -



Loop at <IT> into <WA> with control <table control> cursor <table control> - current_line.

Module <module name>.

Endloop.

This is not required, if we are maintain
table control field names & work area field
names are same.

Note: - When ever we are working with loop & endloop in any one of the event then we must declare a dummy loop & endloop in another event.

CONTROLS TBC TYPE TABLEVIEW USING SCREEN 2000.

DATA A TYPE EKPO-EBELN.

DATA: BEGIN OF WA_EKPO,
EBELN TYPE EKPO-EBELN,
EBELP TYPE EKPO-EBELP,
MENGE TYPE EKPO-MENGE,
MEINS TYPE EKPO-MEINS,
NETPR TYPE EKPO-NETPR,
END OF WA_EKPO.
DATA IT_EKPO LIKE TABLE OF WA_EKPO.
MODULE USER_COMMAND_1000 INPUT.

IF SY-UCOMM = 'DIS'.
SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO
WHERE EBELN = A.
CALL SCREEN 2000.

ELSEIF SY-UCOMM = 'BACK'.
LEAVE PROGRAM.

ENDIF.

ENDMODULE.

MODULE USER_COMMAND_2000 INPUT.

IF SY-UCOMM = 'BAK'.
LEAVE TO SCREEN 0.

ENDIF.

ENDMODULE.

Flow logic of 1000 screen:-

PROCESS BEFORE OUTPUT.

* MODULE STATUS_1000.

PROCESS AFTER INPUT.

MODULE USER_COMMAND_1000.

Flow logic of 2000 screen: -

PROCESS BEFORE OUTPUT.

* MODULE STATUS_2000.

LOOP AT IT_EKPO INTO WA_EKPO WITH CONTROL TBC CURSOR TBC-CURRENT_LINE.
ENDLOOP.

PROCESS AFTER INPUT.

LOOP.

ENDLOOP.

MODULE USER_COMMAND_2000.

In the work area field names, table control field names are different suppose V1, V2, V3, V4, V5.

PBO of 2000: -

Loop at it_ekpo into wa_ekpo with control TC cursor TC-current_line.

Module xyz.

Endloop.

wa_ekpo

Pur. Doc	Item	Qty	UOM	price
30004	01	10	KG	250.00

it_ekpo

Pur. Doc	Item	Qty	UOM	price
30004	01	10	KG	250.00
30004	02	02	PCS	150.00

Program: -

Module xyz output.
V1 = wa_ekpo-ebeln.
V2 = wa_ekpo-ebelp.
V3 = wa_ekpo-menge.
V4 = wa_ekpo-meins.
V5 = wa_ekpo-netpr.
Endmodule.

→ Design the screen as shown in the below.

After the user provide the company code & city on display button then we display the customers under company details in a tabular format in 2000 screen. If the user clicks on download button in 2000 screen then we download the selected records into presentation server.

Note: – In the PAI dummy loop & endloop acts like loop at table control.

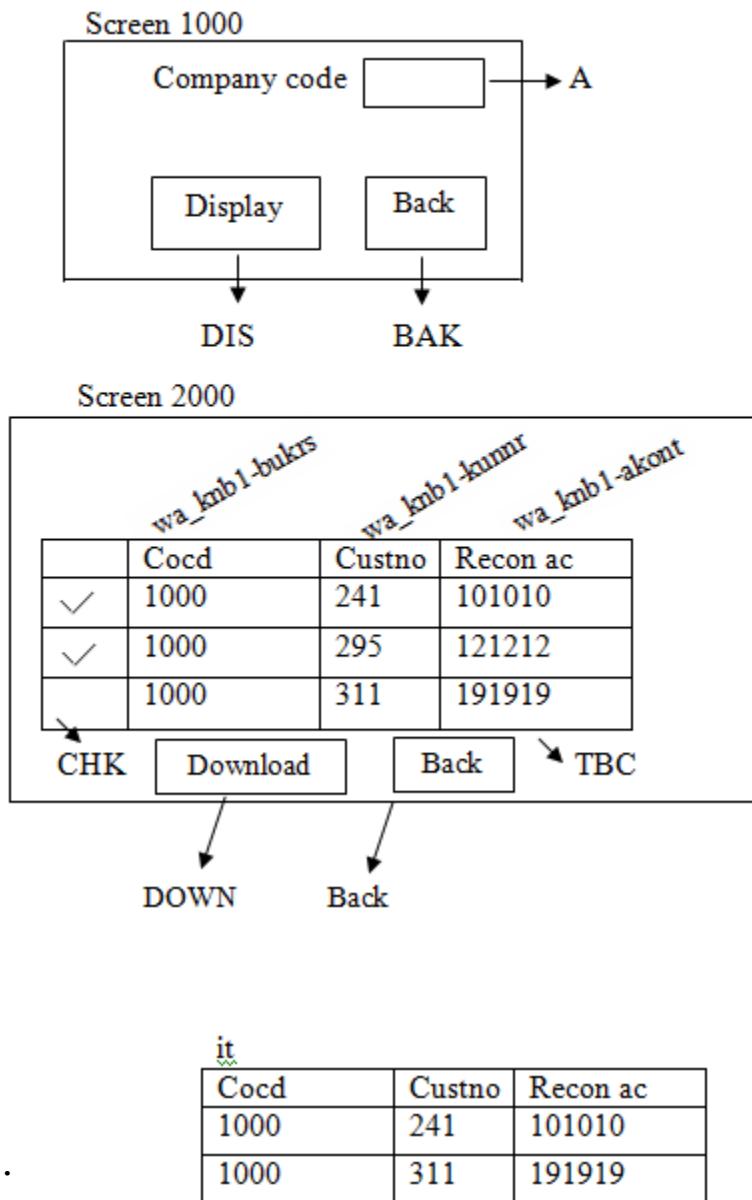
Steps to provide the check box to the table control:-

Double click on table control. Provide the name. provide the vertical, horizontal check boxes, multiple radio buttons. Select the w/SelColumn check box & provide the cheek box name.

```

CONTROLS TBC TYPE TABLEVIEW
USING SCREEN 2000.
DATA CHK.
DATA A TYPE KNB1-BUKRS.
DATA: BEGIN OF WA_KNB1,
      BUKRS TYPE KNB1-BUKRS,
      KUNNR TYPE KNB1-KUNNR,
      AKONT TYPE KNB1-AKONT,
      END OF WA_KNB1.
DATA IT_KNB1 LIKE TABLE OF WA_KNB1.
DATA IT LIKE IT_KNB1.
MODULE USER_COMMAND_1000 INPUT.
  IF SY-UCOMM = 'DIS'.
    SELECT BUKRS KUNNR AKONT FROM KNB1 INTO TABLE IT_KNB1 WHERE
BUKRS = A.
    CALL SCREEN 2000.
  ELSEIF SY-UCOMM = 'BACK'.
    LEAVE PROGRAM.
  ENDIF.
ENDMODULE.
MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'DOWN'.

```



```

CALL FUNCTION 'DOWNLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT.
ELSEIF SY-UCOMM = 'BAK'.
  LEAVE TO SCREEN 0.
ENDIF.
ENDMODULE.

```

```

MODULE XYZ INPUT.
  IF CHK = 'X'.
    APPEND WA_KNB1 TO IT.
  ENDIF.
ENDMODULE.

```

Flow logic of 2000 screen: -

```

PROCESS BEFORE OUTPUT.
* MODULE STATUS_2000.
LOOP AT IT_KNB1 INTO WA_KNB1 WITH CONTROL TBC CURSOR TBC-
CURRENT_LINE.
ENDLOOP.
PROCESS AFTER INPUT.
LOOP.
MODULE XYZ.
ENDLOOP.
MODULE USER_COMMAND_2000.

```

Steps to provide the mask to the particular field: -

Double click on the field in the pop of window. Click on program tab in attributes block. Select the input field is 'NOT POSSIBLE'.

Steps to provide the input field is mandatory: -

Double click on the field in the pop of window. Click on program tab in attributes block. Select the input field is 'REQUIRED'.

Working with POV: -

PoV is an event which is triggered at the time of user clicks on F4 button. This is used to provide the list of possible values.

Note: – F4IF_INT_TABLE_VALUE_REQUEST is function module which is used to provide the F4 help to the input variable. The input for the above function module is

F4IF_INT_TABLE_VALUE_REQUEST

- <DATA INTERNAL TABLE> (which data we want to provide F4 help)
- <Return field in the data internal table>
- <Field name> (for which field, we want to provide F4)
- <Screen number>
- <Program name>
- <Value_ORG> = 'S'

→ Design the screen as shown in the below. →

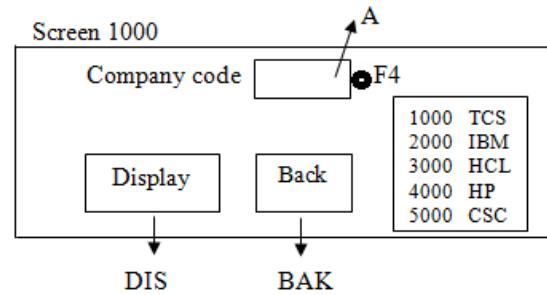
If the user click on F4 button then we display the all company codes & company names as F4. After user select the company code & click on display button then we display the customers under company details (BUKRS, KUNNR, AKONT) like a ordinary report. If the user click on BACK button then we come back to program.

Steps of module in POV event: -

Field <field name> module <module name>.



For which field we want to provide F4.



```

DATA A TYPE T001-BUKRS.
DATA: BEGIN OF WA_KNB1,
      BUKRS TYPE KNB1-BUKRS,
      KUNNR TYPE KNB1-KUNNR,
      AKONT TYPE KNB1-AKONT,
      END OF WA_KNB1.
DATA IT_KNB1 LIKE TABLE OF WA_KNB1.
DATA: BEGIN OF WA_T001,
      BUKRS TYPE T001-BUKRS,
      BUTXT TYPE T001-BUTXT,
      END OF WA_T001.
DATA IT_T001 LIKE TABLE OF WA_T001.
MODULE USER_COMMAND_1000 INPUT.
  IF SY-UCOMM = 'DIS'.
    SELECT BUKRS KUNNR AKONT FROM KNB1 INTO TABLE IT_KNB1 WHERE
BUKRS = A.
    LEAVE TO LIST-PROCESSING.
    LOOP AT IT_KNB1 INTO WA_KNB1.
      WRITE:/ WA_KNB1-BUKRS, WA_KNB1-KUNNR, WA_KNB1-AKONT.
    ENDLOOP.
  ELSEIF SY-UCOMM = 'BACK'.
    LEAVE PROGRAM.
  ENDIF.
ENDMODULE.
MODULE XYZ INPUT.
  SELECT BUKRS BUTXT FROM T001 INTO TABLE IT_T001.
  CALL FUNCTION 'F4IF_INT_TABLE_VALUE_REQUEST'
    EXPORTING
      RETFIELD      = 'BUKRS'
      DYNPPROG      = 'ZMPPR6'
      DYNPNR        = '1000'
      DYNPROFIELD   = 'A'
      VALUE_ORG     = 'S'
    TABLES
      VALUE_TAB    = IT_T001.
ENDMODULE.

```

Flow logic of 1111 screen: -

PROCESS BEFORE OUTPUT.

* MODULE STATUS_1000.

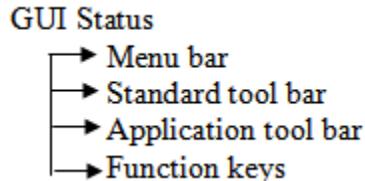
PROCESS AFTER INPUT.
MODULE USER_COMMAND_1000.
PROCESS ON VALUE-REQUEST.
FIELD A MODULE XYZ.

Working with menu painter:

It's a tool to design the user interface to the program the transaction code for menu painter is '**SE41**'.

GUI Components

GUI Title



Note: - The PBO of each screen contains by default GUI title & GUI status.

Working with sub screen

areas:-

Sub screen area must be placed in normal screen only. Each sub screen area can call only one sub screen at a time.

→ Design the screen as shown in the below.

Syntax of calling the sub screen from sub screen area:-

Call subscreen <subscreen area name> including <program name> '<screen number>'.

Ex:-

Call subscreen SA1 including SY-REPID '0100'.

Note: - SY-REPID is the system variable which contains the current program name.

Steps to design the back button (working with GUI):-

Remove the comment of module in the PBO event. Double click on module name. By default it contains GUI status & GUI title. Uncomment the PF-Status. Provide the status name. Double click on it. Provide the short description. Enter. Expand the function keys. Enable the back button. Save, check, activate the GUI. Click on back.

Note: - If you want to navigate to subscreens from normal screen then we must call the subscreen area names in the PAI of normal screen.

TABLES: T001, KNA1.

MODULE STATUS_1000 OUTPUT.

SET PF-STATUS 'STAT'.

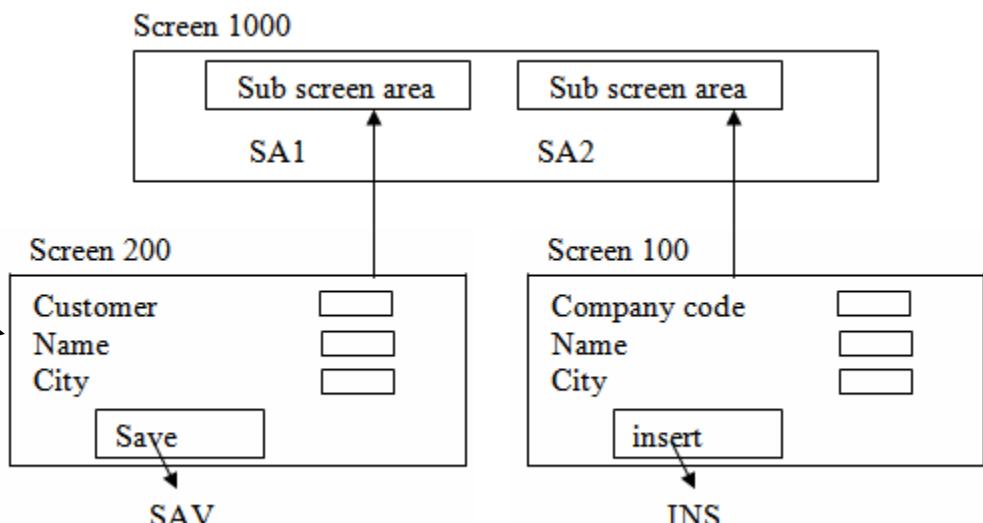
ENDMODULE.

MODULE USER_COMMAND_1000 INPUT.

IF SY-UCOMM = 'BACK'.

LEAVE TO SCREEN 0.

ENDIF.



```

ENDMODULE.

MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'SAV'.
    INSERT KNA1 FROM KNA1.
    IF SY-SUBRC = 0.
      MESSAGE S000(ZMESSAGE1) WITH 'SAVED SUCCESSFULLY'.
    ELSE.
      MESSAGE E000(ZMESSAGE1) WITH 'NOT SAVED'.
    ENDIF.
  ENDIF.
ENDMODULE.

MODULE USER_COMMAND_3000 INPUT.
  IF SY-UCOMM = 'INS'.
    INSERT T001 FROM T001.
    IF SY-SUBRC = 0.
      MESSAGE S000(ZMESSAGE1) WITH 'INSERTED SUCCESSFULLY'.
    ELSE.
      MESSAGE E000(ZMESSAGE1) WITH 'NOT INSERTED'.
    ENDIF.
  ENDIF.
ENDMODULE.

```

Flow logic of 1000 screen.

PROCESS BEFORE OUTPUT.

```

  MODULE STATUS_1000.
    CALL SUBSCREEN: SA1 INCLUDING SY-REPID '2000',
                  SA2 INCLUDING SY-REPID '3000'.

```

PROCESS AFTER INPUT.

```

  MODULE USER_COMMAND_1000.
    CALL SUBSCREEN: SA1, SA2.

```

Flow logic of 2000 screen:-

PROCESS BEFORE OUTPUT.

* MODULE STATUS_2000.

PROCESS AFTER INPUT.

MODULE USER_COMMAND_2000.

Flow logic of 3000 screen:-

PROCESS BEFORE OUTPUT.

* MODULE STATUS_3000.

PROCESS AFTER INPUT.

MODULE USER_COMMAND_3000.

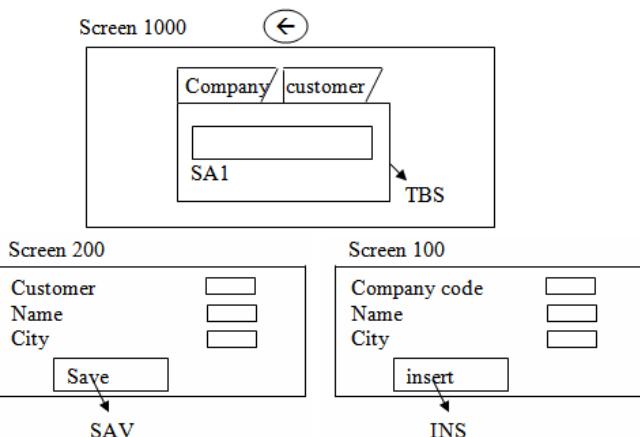
Working with tab strip:-

- Strip of tabs.
- Each tab must contain at least one sub screen area.
- Each sub screen area can call only one sub screen at a time.
- By default tab strip contains 2 tabs.
- Only one tab is always activated.

→ Design the screen as shown in the below.

Syntax of declaring the tab strip in ABAP editor:-

Controls <table strip name> type tabstrip.



Note: - When ever we are working with tabstrip then it's better to maintain tab name & function code of the tab name same.

Syntax of activate the tab: -

<tabstrip name> - Active tab = '<tab name>'.

Steps to design the strip control: -

Select the tabstrip control screen element. Draw it. Double click on it. Provide the name (TBS). Provide number of tab titles. Double click on tab1. Provide the name of tab1 (TAB1), provide the text function code as tab1(Company). Select the subscreen area screen element. Draw it. Double click on it. Provide the name(SA1). Repeat the steps for all the tabs.

CONTROLS TBS TYPE TABSTRIP.

TABLES: T001, KNA1.

MODULE USER_COMMAND_1000 INPUT.

```
IF SY-UCOMM = 'BACK'.
  LEAVE TO SCREEN 0.
ELSEIF SY-UCOMM = 'TAB1'.
  TBS-ACTIVETAB = 'TAB1'.
ELSEIF SY-UCOMM = 'TAB2'.
  TBS-ACTIVETAB = 'TAB2'.
ENDIF.
```

ENDMODULE.

MODULE STATUS_1000 OUTPUT.

```
SET PF-STATUS 'STAT'.
```

ENDMODULE.

MODULE USER_COMMAND_0100 INPUT.

```
IF SY-UCOMM = 'INS'.
  INSERT T001 FROM T001.
ENDIF.
```

ENDMODULE.

MODULE USER_COMMAND_0200 INPUT.

```
IF SY-UCOMM = 'SAV'.
  INSERT KNA1 FROM KNA1.
ENDIF.
```

ENDMODULE.

Flow logic of 1000 screen: -

PROCESS BEFORE OUTPUT.

```
MODULE STATUS_1000.
  CALL SUBSCREEN: SA1 INCLUDING SY-REPID '0100',
  SA2 INCLUDING SY-REPID '0200'.
```

PROCESS AFTER INPUT.

```
MODULE USER_COMMAND_1000.
  CALL SUBSCREEN: SA1, SA2.
```

Working with drop down list: -

Note: - 'VRM_SET_VALUES' is the function module which is used to provide the drop down list to the input variable. The input for the above function module is ID (fieldname, for which field we want to provide dropdown), TEXT (Data Internal Table).

Note: - In VRM, we have one type that is VRM_VALUES which contains the above two fields. So we simply declare our internal table by referring VRM_VALUES.

→ Design the screen as shown in the below.

Note: - At the time of designing the screen double click on the drop down field & select the drop down as list box with key in the pop up window.

Note: - T005T is the standard data base table which contains all the country keys & country names.

TYPE-POOLS VRM.

TABLES T001.

```
TYPES: BEGIN OF TY_T005T,
      LAND1 TYPE T005T-LAND1,
      LANDX TYPE T005T-LANDX,
      END OF TY_T005T.
```

```
DATA: WA_T005T TYPE TY_T005T,
      IT_T005T TYPE TABLE OF TY_T005T.
```

MODULE STATUS_2000 OUTPUT.

```
SET PF-STATUS 'STAT'.
DATA: IT TYPE VRM_VALUES,
      WA LIKE LINE OF IT.
```

```
*WA-KEY = 'IN'.
*WA-TEXT = 'INDIA'.
*APPEND WA TO IT.
*WA-KEY = 'CN'.
*WA-TEXT = 'CHINA'.
*APPEND WA TO IT.
*WA-KEY = 'KW'.
*WA-TEXT = 'KUWAIT'.
* APPEND WA TO IT.
```

```
SELECT LAND1 LANDX FROM T005T INTO TABLE IT_T005T WHERE SPRAS = SY-LANGU.
```

LOOP AT IT_T005T INTO WA_T005T.

```
WA-KEY = WA_T005T-LAND1.
WA-TEXT = WA_T005T-LANDX.
APPEND WA TO IT.
```

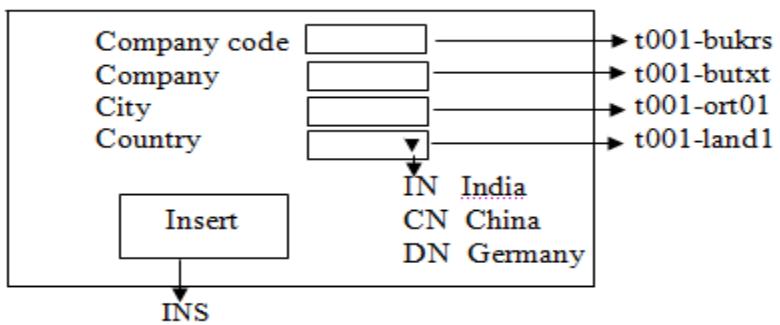
ENDLOOP.

```
CALL FUNCTION 'VRM_SET_VALUES'
  EXPORTING
    ID      = 'T001-LAND1'
    VALUES  = IT.
REFRESH IT.
```

ENDMODULE.

```
MODULE USER_COMMAND_2000 INPUT.
IF SY-UCOMM = 'BACK'.
  LEAVE PROGRAM.
ELSEIF SY-UCOMM = 'INS'.
```

Screen 1000

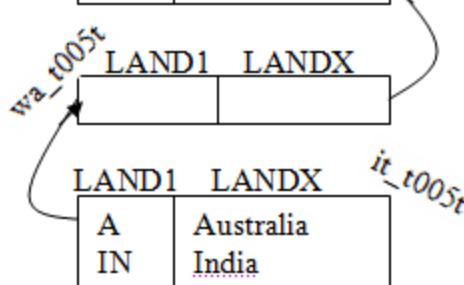


it KEY TEXT

it	KEY	TEXT
	IN	INDIA
	CN	CHINA
	DC	GERMANY

wa KEY TEXT

wa	KEY	TEXT



```

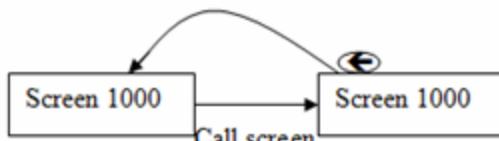
INSERT T001.
IF SY-SUBRC = 0.
  MESSAGE S000 (ZMESSAGE1) WITH 'INSERTED SUCCESSFULLY'.
ELSE.
  MESSAGE E000 (ZMESSAGE1) WITH 'NOT INSERTED'.
ENDIF.
ENDIF.
ENDMODULE.

```

Differences between call screen & set screen

Call screen

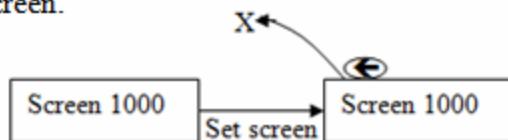
It calls the new screen in the new screen, if the user click on back button then it come back to previous screen.



Call screen

Set screen

It calls the new screen. The new screen acts like an industrial screen. If the user clicks on back button in the new screen, then it never come back to previous screen.



Ranges: -

Ranges is the key word. Which acts of single value, multiple values, single range, multiple ranges.

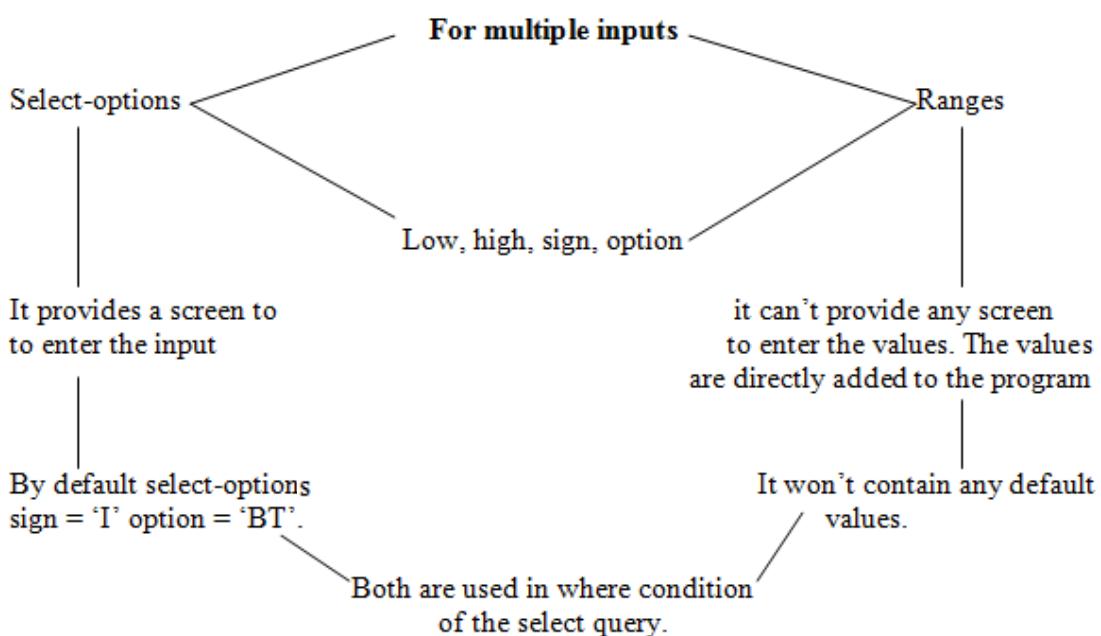
Syntax:-

Ranges <name of the ranges> for <variable name>.

Ex:-

Data V1 type t001-bukrs.

Ranges r_bukrs for v1.



→ Design the screen as shown in the below.

After the user provide the company codes & click on display button then we display the vendors under company details by using ordinary report.

```
Data: A type t001-bukrs,  
      B type t001-bukrs.  
Data v1 like t001-bukrs.  
Ranges r_bukrs for v1.  
Data: begin of wa_lfb1,  
      Bukrs type lfb1-bukrs,  
      Lifnr type lfb1-lifnr,  
      Akont type lfb1-akont,  
      End of wa_lfb1.  
Data it_lfb1 like table of wa_lfb1.
```

```
MODULE USER_COMMAND_1000 INPUT.  
  if sy-ucomm = 'DIS'.  
    r_bukrs-low = A.  
    r_bukrs-high = B.  
    r_bukrs-sign = 'I'.  
    if b is not initial.  
      r_bukrs-option = 'BT'.  
    else.  
      r_bukrs-option = 'EQ'.  
    endif.  
    append r_bukrs.  
    select bukrs lifnr akont from lfb1 into table it_lfb1 where bukrs  
in r_bukrs.  
    leave to list-processing.  
    loop at it_lfb1 into wa_lfb1.  
      write:/ wa_lfb1-bukrs, wa_lfb1-lifnr, wa_lfb1-akont.  
    endloop.  
  elseif sy-ucomm = 'BACK'.  
    leave program.  
  endif.  
ENDMODULE.
```

Working with validations: -

Validations always performed in the PAI event of any screen. There are three types of validations.

1. System validation
2. Validation of flow logic editor
3. validation of ABAP editor

System validations: -

Whenever we are working with date & time format if you entered invalid date & time format then the system automatically validate & provide an error message.

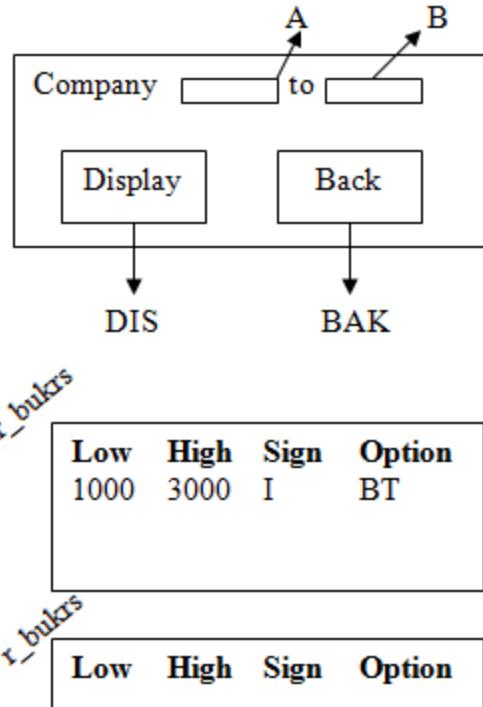
Validation of flow logic editor: -

The validation logic is maintained in flow logic editor of the screen.

Syntax: -

Field <field name> values ('<value1>', '<value2>' ...).

Which field we want to validate.



Ex:-

Field A values ('1000', '2000', '2200').

Validate of ABAP editor: -

The validation logic is maintained in ABAP editor. This is similar as at selection-screen event logic.

Syntax in flow logic editor: -

Field <field name> module <module name>

For which field we want to validate.

→ Design the screen as shown in the below.

CHAIN ---- ENDCHAIN: -

This is used to validate the related input fields. If you aren't using chain & endchain, if you pass invalid input then it display the error field enabled mode & rest of the fields are disable mode. If we use chain & endchain if you get the error then all the fields are displayed in enable mode.

Whenever we're working with validations, if you get the error then the back button functionality isn't work. If you want to enable the back button functionality then we must provide function type as 'E' at the time of providing the function key. & also provide at exit command for the module name of the back button.

In the PAI at exit command module is executed first & later rest of the modules are executed.

Ex: -

PAI of 1000.

Module ABC.

Module XYZ.

First execute → Module XYZ1 at exit-command.

Module XYZ2

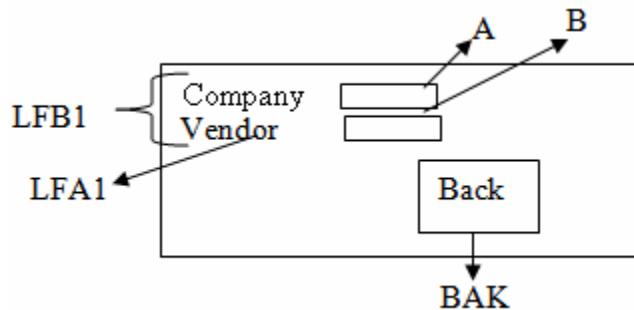
```

PROGRAM ZMPP99910.
DATA A TYPE LFB1-BUKRS.
DATA B TYPE LFB1-LIFNR.
DATA V1 TYPE LFA1-LIFNR.
DATA V2 TYPE LFB1-BUKRS.

MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'BACK'.
    LEAVE TO SCREEN 0.
  ENDIF.
ENDMODULE.

MODULE ABC INPUT.
  SELECT SINGLE LIFNR FROM LFB1 INTO V1 WHERE LIFNR = B.
  IF SY-SUBRC <> 0.
    MESSAGE E000(ZMESSAGE1) WITH 'INVALID VENDOR'.
  ENDIF.
  SELECT SINGLE BUKRS LIFNR FROM LFB1 INTO (V2 , V1) WHERE LIFNR =
B AND BUKRS = A.

```



```

IF SY-SUBRC <> 0.
  MESSAGE E000(ZMESSAGE1) WITH 'THE VENDOR IS NOT UNDER THE
COMPANY'.
ENDIF.
ENDMODULE.
PROCESS BEFORE OUTPUT.
* MODULE STATUS_2000.
*
PROCESS AFTER INPUT.
MODULE USER_COMMAND_2000.

CHAIN.
FIELD A VALUES ('1000','2000','2200').
FIELD B MODULE ABC.
ENDCHAIN.
MODULE USER_COMMAND_2000 AT EXIT-COMMAND.

```

Syntax of calling the model dialogue box: -

Call screen <screen no> starting at <XPOS><YPOS> ending at <XPOS><YPOS>.

Ex:-

Call screen 2000 starting 11 ending at 50 40.

Syntax of calling the executable program: -

Submit <report name> via selection-screen.

Ex: -

Submit ZSPT via selection-screen.

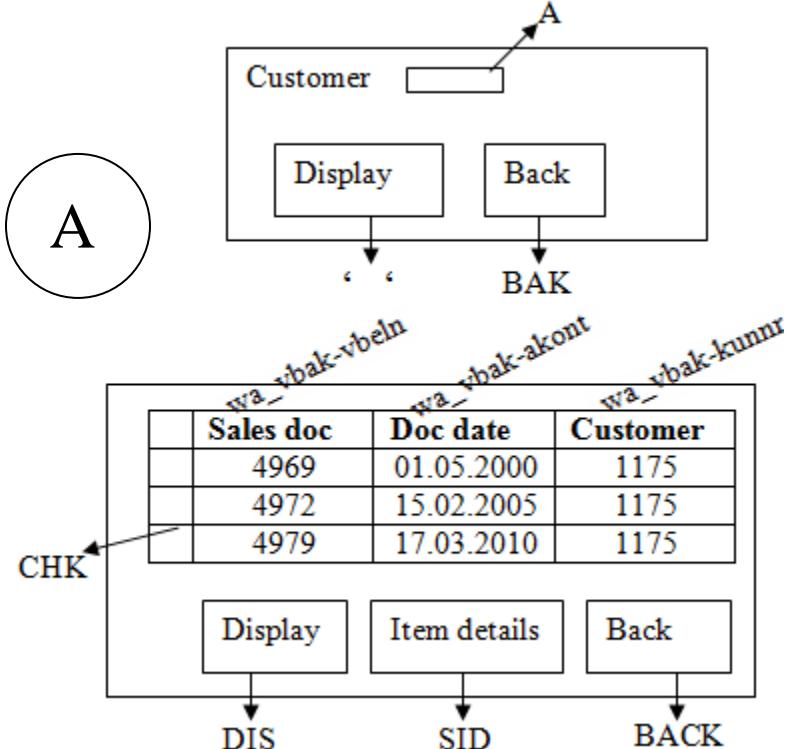
Steps to provide input field as password: -

Double click on input field. Provide name. Click on display tab on the attributes block. Select the check box 'INVISIBLE'.

→ Design the screen as shown in the below.

After the user provide the customer & click on display or enter key then we display the sales document details of customer in a tabular format in 6000 screen.

If the user click on display button then we display the elected sales document details through VA03. If the user click on item details then we display the selected sales document details item details (VBELN, POSNR, KUNNR, MEINS,L NETPR) by using ALV & also validate the given customer.

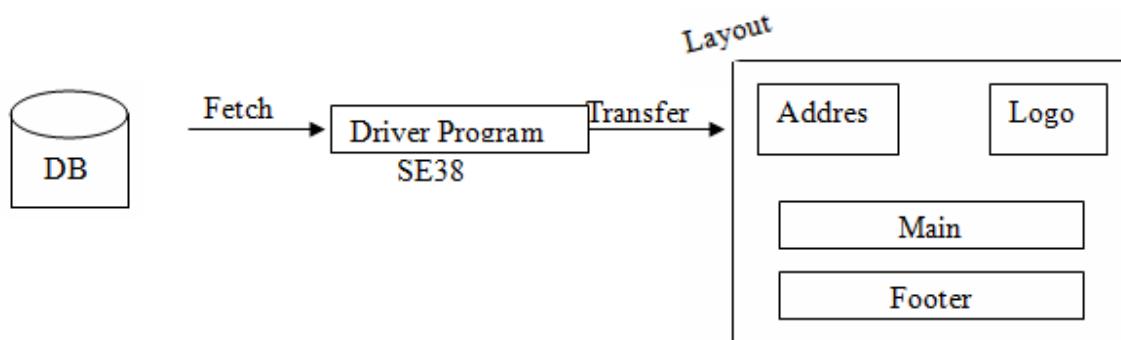
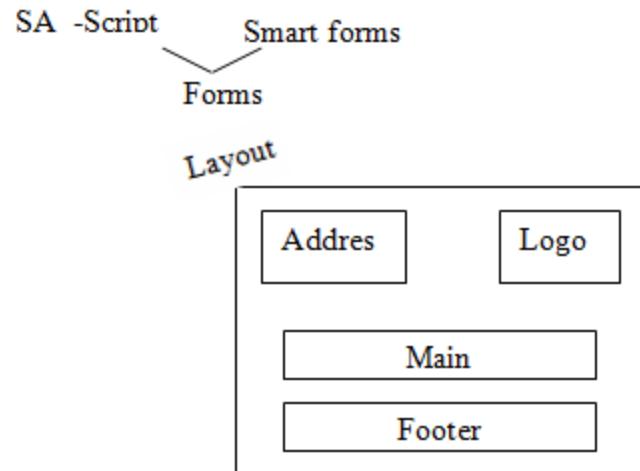


SAP-SCRIPT

In the real time if you want to design the business documents, such as offer letters, experience letters, invoices, commercial invoices etc. we need layout sets. These are designed through forms. Forms are either SAP scripts or smart forms.

SAP-Script is a tool to display the business documents.

The standard SAP provided layout sets for almost all the applications. Most of the times the ABAPer job is either change the layout or adding some additional logic to the standard driver program.



Driver program is used to fetch the data from data base & transfer to the layout.

Components of SAP script: -

1. Layout
2. Driver program

Components of layout: -

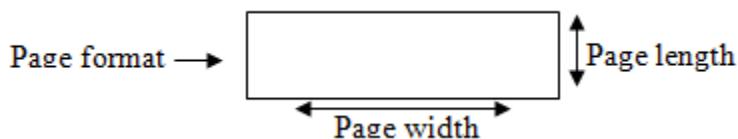
1. Header
2. Pages
3. Windows
4. Page window
5. Paragraph format
6. Character format
7. Documentation

Header: -

Header is used to maintain the administrative information. i.e. form name, language & page format.

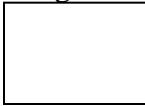
In the real time page formats are created by BASIS people through SPAD transaction.

Page format is the collection of page width & height of displayed document.



Pages: -

Page is the physical area where we can place the windows. We can't print the data directly on the page.



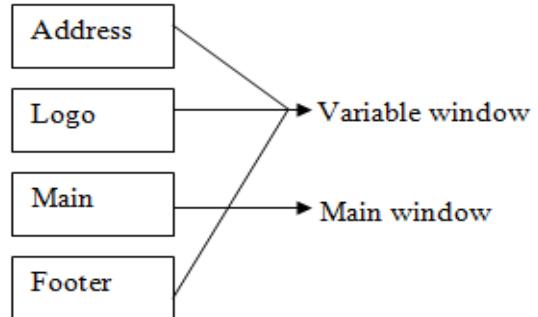
Windows: -

We can paste the same window in any number of pages. We can't print the data directly on the window. There are two types of windows.

1. Main window
2. Variable window

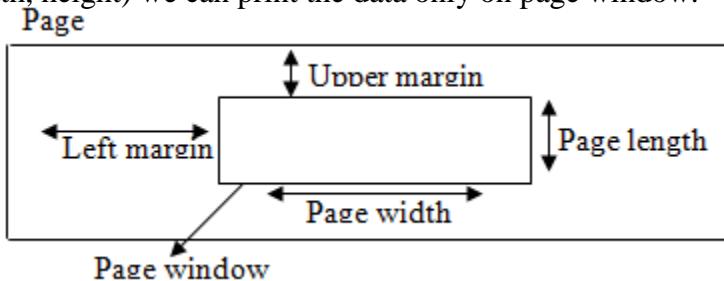
Note: - Main window is the default window in SAP script without a main window we can't design SAP script.

Note: - We can place the variable window only one time per page. Where as main window we can place up to 99 times per page.



Page window: -

Page window is nothing but placing the window on the page with co-ordinates (left margin, upper margin, width, height) we can print the data only on page window.



Paragraph format: -

This is used to print the entire paragraph to the required fonts & style.

Character format: -

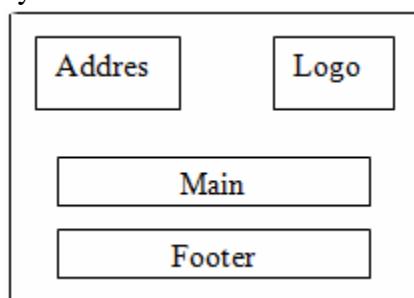
This is used to display the particular text with the required font & style.

Documentation: -

This is used to maintain the document related to the form.

→ Design the screen as shown in the below. →

Note: - SE71 is the transaction code for form painter or form editor.



Steps to design the layout: -

Execute SE71 . Provide the form name. Click on create. Provide short description. Click on pages in the application tool bar. In the menu bar click on edit → create element. Provide the page name, short description. Enter. Repeat the same steps for all pages. Click on windows in the application tool bar. Click on edit → create element. Provide the window name, short description. Enter. Repeat the same steps for all other windows. Click on page window. Click on edit → create element. It'll display the all available windows. Double click on the window & provide the co-ordinations. Click on paragraph formats in the application tool bar. Provide the default paragraph. Enter. Provide short description. Click on header in the application tool bar (F5). Click on basic settings. Provide the first page. Default paragraph. Save the layout. In the menu bar click on settings → form painter. Select the check box graphical form painter.

Enter. Click on layout in the application tool bar. Arrange the layouts by using drag & drop. Minimize the layout. Once again click on settings in the menu bar → form painter remove the graphical form painter. Enter. Save the layout. Check the layout. (Form → check → definition). Activate the layout (Form → active).

We can print the data on the page window is always through symbols. Each symbol start with ‘&’ ends with ‘&’. There are 4 types of symbols.

1. Program symbols.
2. System symbols
3. Standard symbols
4. Text symbols

Program symbols: -

Program symbols are variables in the program.

Ex: -

**&WA_T001-BUKRS&
&WA_KNA1-KUNNR&**

System symbols: -

System symbols are system variables.

EX: -

**&date&
&month&**

Standard symbols: -

Standard symbols are coming from TTDTG standard data base table.

Ex: -

**&Mr&
&Dear&**

Text symbols:-

Text symbols are variables, which are defined in page window.

Ex: -

1: define &A&.

Steps to develop the driver program:-

1. Create an executable program and implement the retrieving logic.
2. Access the layout from the driver program by using ‘OPEN_FORM’ function module. The input for the above function module is form name (layout).
3. Transfer the data from driver program to particular page window by using ‘WRITE_FORM’ function module the input for above function module is window name.
Repeat the same steps for each page window, which contains program symbols.
4. Close the form by using ‘CLOSE_FORM’ function module.

→ Based on the given vendor number display the vendor address in the address window by using SAP-Script.

Steps to provide the symbols on the page window:-

Execute SE71. Provide the form name. Click on change. Click on page window on the application tool bar. Double click on our required window. Click on text elements in the application tool beside header button. Define &WA_LFA1-LIFNR& &WA_LFA1-NAME1& &WA_LFA1-ORT01&.

Click on back, save, check, activate the program.

Steps to execute the driver program: -

Execute the program. Provide the input. Execute. Provide the output is ‘LP01’. Click on print preview.

PARAMETER P_LIFNR TYPE LFA1-LIFNR.

**TYPES: BEGIN OF TY_LFA1,
LIFNR TYPE LFA1-LIFNR,**

```

NAME1 TYPE LFA1-NAME1,
ORT01 TYPE LFA1-ORT01,
END OF TY_LFA1.

DATA WA_LFA1 TYPE TY_LFA1.
SELECT SINGLE LIFNR NAME1 ORT01 FROM LFA1 INTO WA_LFA1 WHERE LIFNR =
P_LIFNR.

* Access the layout from driver program
CALL FUNCTION 'OPEN_FORM'
  EXPORTING
    FORM = 'ZSCRIPT1'.
* Transfer the data to address window. P_LIFNR. 
CALL FUNCTION 'WRITE_FORM'
  EXPORTING
    WINDOW = 'ADDRESS'.
*Close the form
CALL FUNCTION 'CLOSE_FORM'.
CALL FUNCTION 'WRITE_FORM'
  EXPORTING
    ADDRESS
    FORM = 'ZSCRIPT1'.
* Transfer the data to address window. P_LIFNR. 
* &WA_LFA1-LIFNR&
* &WA_LFA1-NAME1&
* &WA_LFA1-ORT01&

```

Working with logo: -

We can print either '.BMP' or '.TIFF' images only.

Note: - When ever we are working with '.BMP' image then we must convert '.BMP' to graphics image by using 'SE78' transaction.

Note: - If we are working with '.TIFF' image then we must convert TIFF to text image by using RSTXLDLC standard program.

Steps to convert '.BMP' to graphics image: -

Execute SE78. Expand the graphics. Double click on bitmap image. Provide the graphics name. Select the radio button 'color bitmap image'. Click on import in the application tool bar. Browse the bitmap image. Enter.

Steps to insert the logo in the page window: -

Execute SE71. Open the form in change mode. Click on page widows in the application tool bar. Double click on logo window. Click on text elements in the application tool bar. In the menu bar click on insert → graphics. Click on stored document server tab. Provide the graphics name. Select the radio button 'color bitmap image'. Enter. Click on back. Save, check, activate.

→ Based on the given vendor number display the vendor purchase orders (LIFNR, EBELN, BEDAT) in the main window and vendor details in header window by using SAP-Script.

Note: - If you get the error WRITE_FORM is invalid START_FORM is missing then we must provide the next page as same page in the form (page).

Steps to provide next page: -

Execute SE71. Open form in change mode. Click on the pages on the application tool bar. Provide next page is page1. Save, check, activate.

Note: - When ever we are working with main window then we must provide text element name otherwise the first information will be printed twice. The text element name start with '/E'.

PARAMETER P_LIFNR TYPE LFA1-LIFNR.

TYPES: BEGIN OF TY_LFA1,

```

LIFNR TYPE LFA1-LIFNR,
NAME1 TYPE LFA1-NAME1,
ORT01 TYPE LFA1-ORT01,
END OF TY_LFA1.

DATA WA_LFA1 TYPE TY_LFA1.
TYPES: BEGIN OF TY_EKKO,
        LIFNR TYPE EKKO-LIFNR,
        EBELN TYPE EKKO-EBELN,
        BEDAT TYPE EKKO-BEDAT,
        END OF TY_EKKO.

DATA: WA_EKKO TYPE TY_EKKO,
      IT_EKKO TYPE TABLE OF TY_EKKO.

SELECT SINGLE LIFNR NAME1 ORT01 FROM LFA1 INTO WA_LFA1 WHERE LIFNR =
P_LIFNR.

SELECT LIFNR EBELN BEDAT FROM EKKO INTO TABLE IT_EKKO WHERE LIFNR =
P_LIFNR.

* Access the layout from driver program
CALL FUNCTION 'OPEN_FORM'
  EXPORTING
    FORM = 'ZSCRIPT1'.

* Transfer the data to address window.
CALL FUNCTION 'WRITE_FORM'
  EXPORTING
    WINDOW = 'ADDRESS'.

* Transfer the data to main window.
LOOP AT IT_EKKO INTO WA_EKKO.
  CALL FUNCTION 'WRITE_FORM'
    EXPORTING
      ELEMENT = 'SATISH'
      WINDOW = 'MAIN'.

ENDLOOP.

*Close the form
CALL FUNCTION 'CLOSE_FORM'.

```

Loop at it_ekko wa_ekko.

CALL FUNCTION 'WRITE_FORM'

→ 'TM'
→ 'MAIN'

Endloop.

P_LIFNR:

LIFNR	EBELN	ORT01
5550	30004	01.05.2000
5550	30005	05.02.2005
5550	30009	31.03.2010

LIFNR	EBELN	ORT01
5550	30004	01.05.2000

Address	Logo
<input type="text"/> TM <input checked="" type="checkbox"/> * &wa_ekko-lifnr& <input checked="" type="checkbox"/> = &wa_ekko-ebeln& <input checked="" type="checkbox"/> = &wa_ekko-bedat&	
Footer	

In the real time most of the times footer window is used to print the page numbers & sign in last page.

Syntax of page numbers :-

PAGE &PAGE& at &SAPSCRIPT-FORMPAGES&
→ Current page → number of pages

Syntax of sign in last page: -

```
/: if &nextpage& = 0.  
* SPRAO TECHNOLOGIES  
/: endif.
```

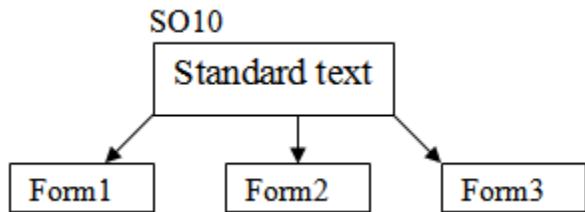
Control commands: -

Control commands are used to control the display output. Control commands start with ‘/’ control commands are

1. Include
2. Define
3. Address ----- endaddress
4. protect ----- endprotect
5. top ----- endtop
6. bottom ----- Endbottom
7. if ----- endif
8. case ----- endcase
9. set date / time mask
10. new-page
11. New window
12. box
13. perform ----- endperform

Include: -

This command is used to include the standard text which is defined in ‘SO10’ transaction into page window. If you want to maintain the same information in more than one form instead of maintaining these information in each form it’s better to maintain those statements in the standard text & later we include the standard text into each form.



Steps to create standard text: -

Execute **SO10**. Provide the standard text name. Click on create. Provide the screen text.

SPRAO TECHNOLOGIES

301, TIRUMALA MANASA COMPLEX

ABOVE DCB BANK

Steps to include the standard text in the page window: -

Execute SE71. open the form in change mode. Click on the page window in the application tool bar. Double click on our required window. Click on text elements (F9). Place the cursor where we want to include the standard text. In the menu bar click on insert → text → standard. Provide the standard text name, enter. Click on back. Save, activate.

Whenever we create standard text it won’t ask any package or request number. So we must create a request number to standard text to transport to quality & live server.

Steps to create the request number to standard text: -

Execute SE38. Provide program name (RSTXTRAN). Execute. Provide the standard text name (ZSTN). Execute. Click on enter. Click on transfer text to correction in the application tool bar. Click on yes. Click on create request. Provide short description. Enter. Request no is ‘EC6K900496’.

This request number is given to basis people then the basis people move the standard text from development server to Quality / Live server.

Define: -

This command is used to declare the variables in the page window.

Ex: -

```
/: define &special& = 'DEC25'.
```

Address - - - - endaddress: -

This command is used to display the address in the format of target countries.

```
/: Address  
* &wa_kna1-name1&  
* &wa_kna1-ort01&  
/: endaddress
```

Protect - - - endprotect: -

This control command is used to print the continuous text without any page break. Here the system check each & every page which page is having the enough of page. If no page is having enough of page then it simply break the text & print in different places.

```
/: protect  
* SPRAO TECHNOLOGIES  
* SR NAGAR  
/: endprotect
```

Top - - - endtop: -

This control command is used to display the header information in the main window.

Ex: -

```
/: top  
* PUR-DOC, ITEM, QTY, UOM, PRICE  
/: endtop.
```

Bottom - - - endbottom: -

This control command is used to print the footer information in the main window.

```
/: bottom  
* Total &v_total&  
/: endbottom
```

Note: - Top & Bottom commands only work in main window.

If - - - - Endif: -

This command functionality similar as ordinary of IF functionality.

```
/: If &wa_mara-matnr& = 'ROH'.  
* Row material.  
/: Elseif &wa_mara-matrn& = 'HALB'.  
* Semi finished product.  
/: Endif.
```

Case - - - - endcase: -

This command functionally similar as ordinary case & end case functionality.

Set date / time mask: -

This command is used to print the date & time as per client required format.

```
/: Set date mask = 'DD/MM/YYYY'.  
* &date&  
12/07/2014  
/: Set time mask = 'HH:MM:SS'.  
* &time&  
09:54:35
```

New - page: -

This control command is used to break the page.

/: If &wa_marc-matnr& = '100 – 200'.
/: New-page.
/: Endif.

New-window: -

This control command is used to call the next window.

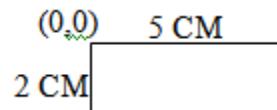
Box: -

This command is used to draw the tables, horizontal lines & vertical lines.

Syntax of box: -

/: BOX xpos '<value>' <unit> ypos '<value>' <unit> width '<value>' <unit> height '<value>' <unit>
intensity '<value>' <unit> frame '<value>' <unit>.

UNITS	DESCRIPTION
CM	CENTIMETER
MM	MILLIMETER
PT	POINT
IN	INCHES
CH	CHAR
TW	TWIP = $\frac{1}{20}$ PT



Ex: -

/: Box XPOS '0' cm YPOS '0' cm width '5' cm height '2' CM frame '20' TW.

Note: - If we want to draw the horizontal line then height is 0, vertical line then width is 0.

/: Box xpos '0' cm ypos '0' cm width '7' cm height '0' cm frame '20' pw.

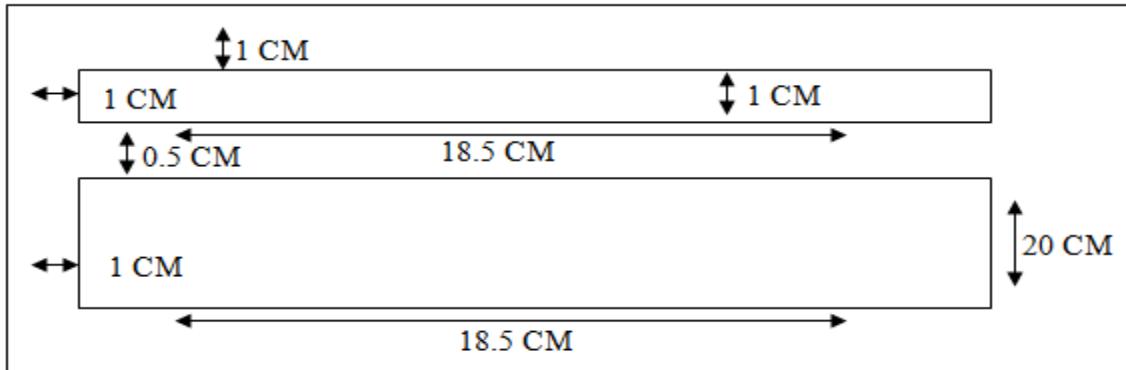
7 CM

/: Box xpos '0' cm ypos '0' cm width '0' cm height '3' cm frame '20' pw.

3 CM

→ Based on the given purchasing document number display the purchasing document item details as shown below by using SAPSCRIPT.

PURCHASE ORDER				
Pur.doc	Item	Qty	UOM	Price
30004	01	10	Kg	250.00
30004	02	02	Pcs	150.00
30004	03	15	Nos	900.00
				Total 1300.00



Title window: -

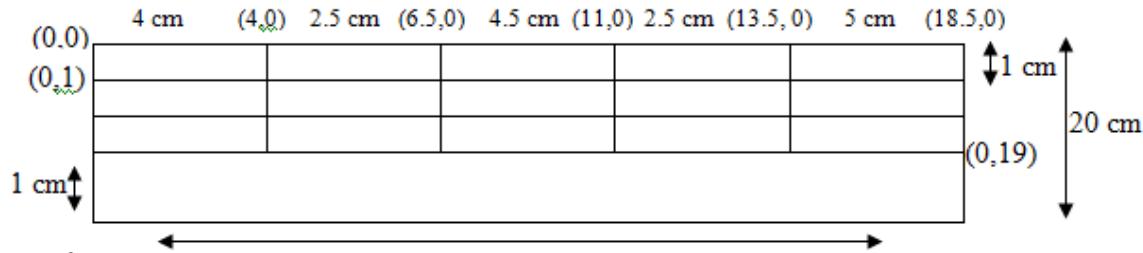
Left margin 1 cm width 18.5 cm

Upper margin 1 cm height 1 cm

Main window: -

Left margin 1 cm width 18.5 cm

Upper margin 2.5 cm height 20 cm



/: Box frame '20' tw.

18.5 cm

/: Box xpos '0' cm ypos '1' cm width '18.5' cm height '0' cm frame '20' tw.

/: Box xpos '0' cm ypos '19' cm width '18.5' cm height '0' cm frame '20' tw.

/: Box xpos '4' cm ypos '0' cm width '0' cm height '19' cm frame '20' tw.

/: Box xpos '6.5' cm ypos '0' cm width '0' cm height '19' cm frame '20' tw.

/: Box xpos '11' cm ypos '0' cm width '0' cm height '19' cm frame '20' tw.

/: Box xpos '13.5' cm ypos '0' cm width '0' cm height '19' cm frame '20' tw.

Steps to create paragraph formats: -

Opens the form in change mode. Click on paragraph formats in the application tool bar. Provide the paragraph format. Enter. Provide short description, provide left margin 0.2 cm select the alignment 'center'. Click on font tab. Select font family 'HELVETICA'. Font size 14 pt. select the bold / italic / underline. Click on tabs button in the right side. Provide tab positions. Click on save. Repeat the same steps for all paragraph formats.

* → default paragraph

(0.0) 4 cm (4.0) 2.5 cm (6.5,0) 4.5 cm (11,0) 2.5 cm (13.5,0) 5 cm (18.5,0)

/E → Text element

/: → Control command

/* → Comment

T1

M1 } User created paragraphs

M2

= → Same line

Left align = left line + 0.2cm.

Right align = Right line - 0.2cm.

Center align = Left line + (column width/2).

1 TAB = ,,

Left alignment: -

M1 PUR.DOC,,ITEM,,QTY,,UOM,,PRICE

M1

Left margin 0.2CM.

Number	Tab position	Alignment
1	4.2CM	Left
2	6.7CM	Left
3	11.2CM	Left
4	13.7CM	Left

Left line + width/2

$$0 + 4/2 = 2.$$

$$4 + 2.5/2 = 5.2$$

$$6.5 + 4.5/2 = 8.7$$

Center alignment

Number	Tab position	Alignment
1	2CM	Center
2	5.2CM	Center
3	8.7CM	Center
4	12.2CM	Center
5	16CM	Center

Note: - In the real time whenever we are working with quantity & amount fields then those information must be printed in right alignment.

M2 &WA_EKPO-EBELN&&WA_EKPO-EBELP&&WA_EKPO-MENGE(ZC)&
= &WA_EKPO-MEINS&&WA_EKPO-NETPR(ZC)&

M2

Left margin 0.2CM

F1 „Total:,,&V_Total&

F1

Left margin 0.2 CM

Number	Tab position	Alignment
1	4.2CM	Left
2	10.8CM	Right
3	11.2CM	Left
4	18.3CM	Right

PARAMETER P_EBELN TYPE EKPO-EBELN.

TYPES: BEGIN OF TY_EKPO,

EBELN TYPE EKPO-EBELN,

EBELP TYPE EKPO-EBELP,

MENGE TYPE EKPO-MENGE,

MEINS TYPE EKPO-MEINS,

NETPR TYPE EKPO-NETPR,

END OF TY_EKPO.

DATA: WA_EKPO TYPE TY_EKPO,
IT_EKPO TYPE TABLE OF TY_EKPO.

DATA V_TOTAL TYPE EKPO-NETPR.

SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO
WHERE EBELN = P_EBELN.

CALL FUNCTION 'OPEN_FORM'

EXPORTING

FORM = 'ZSCRIPT2'.

LOOP AT IT_EKPO INTO WA_EKPO.

CALL FUNCTION 'WRITE_FORM'

EXPORTING

ELEMENT = 'SATISH'

WINDOW = 'MAIN'.

V_TOTAL = V_TOTAL + WA_EKPO-NETPR.

ENDLOOP.

CALL FUNCTION 'CLOSE_FORM'.

FORM ZSCRIPT2

MAIN WINDOW: -

/E SATISH

/: BOX FRAME '20' TW

/: BOX XPOS '0' CM YPOS '1' CM WIDTH '18.5' CM HEIGHT '0' CM FRAME '20' TW

/: BOX XPOS '0' CM YPOS '19' CM WIDTH '18.5' CM HEIGHT '0' CM FRAME '20' TW

/: BOX XPOS '4' CM YPOS '0' CM WIDTH '0' CM HEIGHT '20' CM FRAME '20' TW

/: BOX XPOS '6.5' CM YPOS '0' CM WIDTH '0' CM HEIGHT '20' CM FRAME '20' TW

/: BOX XPOS '11' CM YPOS '0' CM WIDTH '0' CM HEIGHT '20' CM FRAME '20' TW

/: BOX XPOS '13.5' CM YPOS '0' CM WIDTH '0' CM HEIGHT '20' CM FRAME '20' TW

/: TOP

M1 „PUR DOC,,ITEM,,QTY,,UOM,,PRICE

/: ENDTOP

M2 &WA_EKPO-EBELN&,,&WA_EKPO-EBELP&,,&WA_EKPO-MENGE(ZCT)&,

```

= &WA_EKPO-MEINS(K)&,,&WA_EKPO-NETPR(ZCT)&
/: BOTTOM
M3 ,,TOTAL:,,&V_TOTAL&
/: END BOTTOM

```

Format options:-

Format options are used to display the output or print the output as per client requirement.

Format Options	Syntax	Example	Output
Offset	&symbol+offset&	&a& = abcdefgh	&a+3& = defgh
Output length	&symbol(o/p length)&	&a& = abcdefgh	&a(3)& = abc
Omitting leading zeros	&symbol(z)&	&a& = 000100.00	&a(z)& = 100.00
Omitting sign	&symbol(s)&	&a& = -100.00	&a(s)& = 100.00
Leading sign at left	&symbol(<)&	&a& = 100.00-	&a(<)& = -100.00
Leading sign right	&symbol(>)&	&a& = -100.00	&a(>)& = 100.00-
Compress output	&symbol(c)&	&a& = 100.00	&a(c)& = 100.00
Ignore the separators	&symbol(t)&	&a& = 1,00,000.00	&a(t)& = 100000.00
Number of decimals	&symbol(.number)&	&a& = 10.3215	&a(.2)& = 10.32 &a(.)& = 10
Ignore conversions	&symbol(k)&	&a& = &WA_EKPO-MEINS(K)&	

Note: - In the real time before modifying the SAP-SCRIPT we must maintain the backup of SAP-SCRIPT because SAP-SCRIPT doesn't have version management (ABAP editor have version management).

Steps to maintain the backup of SAP-SCRIPT or download the SAP-SCRIPT: -

Execute SE38. Provide the program name RSTXSCRP. Execute. Provide object name as form name. Provide mode is EXPORT. Execute. Provide the file name with .txt. Click on save.

Steps to reload the backup SAP-SCRIPT: -

Execute SE38. Provide the program name RSTXSCRP. Click on execute. Provide the object name as form name. Mode is IMPORT. Execute. Browse the file. Enter.

Note: - RSTXSCRP is the standard program which is used to download as well as upload the SAP-SCRIPT.

Steps to convert the SAP-SCRIPT output to PDF format: -

This is 2 step procedure.

1. Generate / create the spool request number
2. Convert the spool request number to PDF format

Steps to generate the spool request number: -

Execute the driver program. Provide the input. Execute. Provide the output device is LP01. Select the check box new spool request. Click on print.

Steps to identify the spool request number: -

Execute SP01 or SP02. Provide the output devices is LP01. Click on execute. identify the spool.

Steps to convert the spool to PDF format: -

Execute SE38. Provide the program name RSTXPDFT4. Execute. Provide the spool request number, execute. Provide the file name with .PDF.

Note: - We can convert any output to PDF format if the output is available in spool request. We can also convert the report output to PDF format. First we execute the report in background. Then we get the output in a spool, the spool request is convert into PDF by using RSTXPDFT4 standard program.

Steps to execute the report / program in background: -

Execute SE38. Provide the program name. Execute. Provide the input. In the menu bar click on program → execute in background (F9). Click on continue. Click on immediate or click on date / time button. Provide the date & time.

If you want to print the output in both sides then open the form in SE71. Click on pages in the application tool bar. Select the print mode is ‘D’ in the print attributes. Save, check, activate the form.

If you want to print the terms & conditions in back side of each page, print mode D is not possible. We go for pre printed stationary (First we print the terms & conditions on the each paper those papers are loaded into the machine).

Steps to call the multiple frames from driver program: -

1. Create an executable program & implement the retrieving logic.
2. Access the layouts from driver program by using ‘OPEN_FORM’ function module.
3.
 - i. Start the form by using ‘START_FORM’ function module. The input for the above function module is form name.
 - ii. Transfer the data from driver program to particular page window by using ‘WRITE_FORM’ function module. The input for the above function module is window name. Repeat the same step (ii) for each page window which contains program symbols.
 - iii. End the form by using ‘END_FORM’ function module.

Repeat the step 3 for each form.

Close the form by using ‘CLOSE_FORM’ function module.

TABLES EKPO.

DATA V_TOTAL TYPE EKPO-NETPR.

SELECT-OPTIONS S_EBELN FOR EKPO-EBELN.

TYPES: BEGIN OF TY_EKPO,
EBELN TYPE EKPO-EBELN,
EBELP TYPE EKPO-EBELP,
MENGE TYPE EKPO-MENGE,
MEINS TYPE EKPO-MEINS,
NETPR TYPE EKPO-NETPR,
END OF TY_EKPO.

DATA: WA_EKPO TYPE TY_EKPO,

IT_EKPO TYPE TABLE OF TY_EKPO.

SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO

WHERE EBELN IN S_EBELN.

ZTFORM3

CALL FUNCTION 'OPEN_FORM'.

CALL FUNCTION 'START_FORM'
EXPORTING

FORM = 'ZTFORM3'.

LOOP AT IT_EKPO INTO WA_EKPO.

CALL FUNCTION 'WRITE_FORM'
EXPORTING

ELEMENT = 'SATISH'

WINDOW = 'MAIN'.

V_TOTAL = V_TOTAL + WA_EKPO-NETPR.

ZTFORM03

ENDLOOP.

CALL FUNCTION 'END_FORM'.

CALL FUNCTION 'START_FORM'
EXPORTING

PURCHASE ORDER				
Pur.doc	Item	Qty	UOM	Price
30004	01	10	Kg	250.00
30004	02	02	Pcs	150.00
30004	03	15	Nos	900.00
				Total 1300.00

MAIN FORM TERMS AND CONDITION

```

FORM = 'ZTFORM03'.
CALL FUNCTION 'WRITE_FORM'
EXPORTING
WINDOW = 'MAIN'.
CALL FUNCTION 'END_FORM'.

CALL FUNCTION 'CLOSE_FORM'.

```

Steps to debug the SAP-SCRIPT: -

METHOD 1: -

Execute SE71. Provide the form name. In the menu bar click on utilities → activate debugger. Now execute the driver program. Provide the input. Execute. Click on all. Click on print preview. Now the form is in debugging mode. Continuously click on 'F5' button. Identify the field names & their values.

METHOD 2: -

Execute SE38. Provide the program name RSTXDEBUG. Execute the driver program in a separate session. Provide the input. Execute. Click on OK. Click on print preview. Continuously click on 'F5' button. Identify the field names & field values.

Note: - From the driver program to main window data is transferred first. Next only other window data transfers.

MCHA (Material Batch Table) : -

MATNR → (Material number)

WERKS → (Plant number)

CHARG → (Batch number)

HSDAT → (Mfg. date)

VFDAT → (Exp. Date)

Working with labels: -

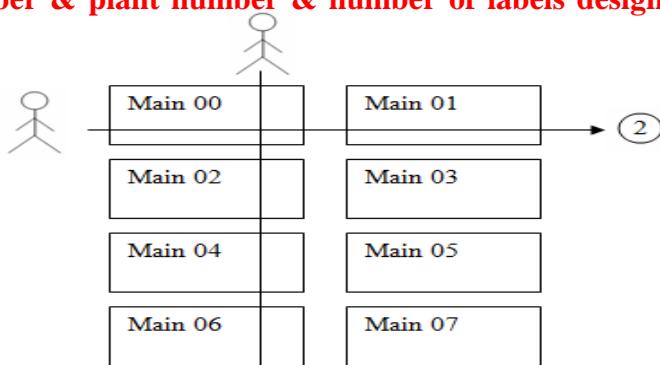
Labels are used to print the same information in each window.

In the real time in the where house module we design the so many labels such as accepted labels, rejected labels, on test labels, control sample label . . .

Depends the label size we split the main window into smaller window.

→ Based on the given material number & plant number & number of labels design the accepted labels as shown in the below.

Material: -----
Plant: -----
Batch: -----
Mfg.dt: -----
Exp.dt: -----



Steps to design the form: -

Execute SE71. Provide the form name. Click on create. Provide short description. Create the page. Click on windows in the application tool bar. In the menu bar click on edit → Main window. Provide the window area. Provide area → left margin 1.00 cm, upper margin 1.00 cm, area width 18.5 cm, area height 25.00 cm, horizontal → spacing 1.00 cm, number 2, vertical → spacing 1cm, number 4. Click on enter. Create the paragraph format. Provide header information. Save, check, activate.

PARAMETER: P_MATNR TYPE MCHA-MATNR,
P_WERKS TYPE MCHA-WERKS,
P_NOL TYPE I.

```

DATA: BEGIN OF WA_MCHA,
      MATNR TYPE MCHA-MATNR,
      WERKS TYPE MCHA-WERKS,
      CHARG TYPE MCHA-CHARG,
      HSDAT TYPE MCHA-HSDAT,
      VFDAT TYPE MCHA-VFDAT,
      END OF WA_MCHA.
SELECT SINGLE MATNR WERKS CHARG HSDAT VFDAT FROM MCHA INTO WA_MCHA
WHERE MATNR = P_MATNR AND WERKS = P_WERKS.
* Access the layout from drive program
CALL FUNCTION 'OPEN_FORM'
  EXPORTING
    FORM = 'ZFORM195'.
* Transfer the data to main window
DO P_NOL TIMES.
  CALL FUNCTION 'WRITE_FORM'
    EXPORTING
      ELEMENT = 'HAI'
      WINDOW = 'MAIN'.
ENDDO.
* Close the form
CALL FUNCTION 'CLOSE_FORM'.
MAIN WINDOW: -
/E TM
* Material,:&wa_mcha-matnr&
* Plant,: &wa_mcha-werks&
* Batch,: &wa_mcha-charg&
* Mfg.dt,: &wa_mcha-hsdat&
* Exp.dt,: &wa_mcha-vfdat&
/: new-window
Working with Standard SAP-SCRIPT

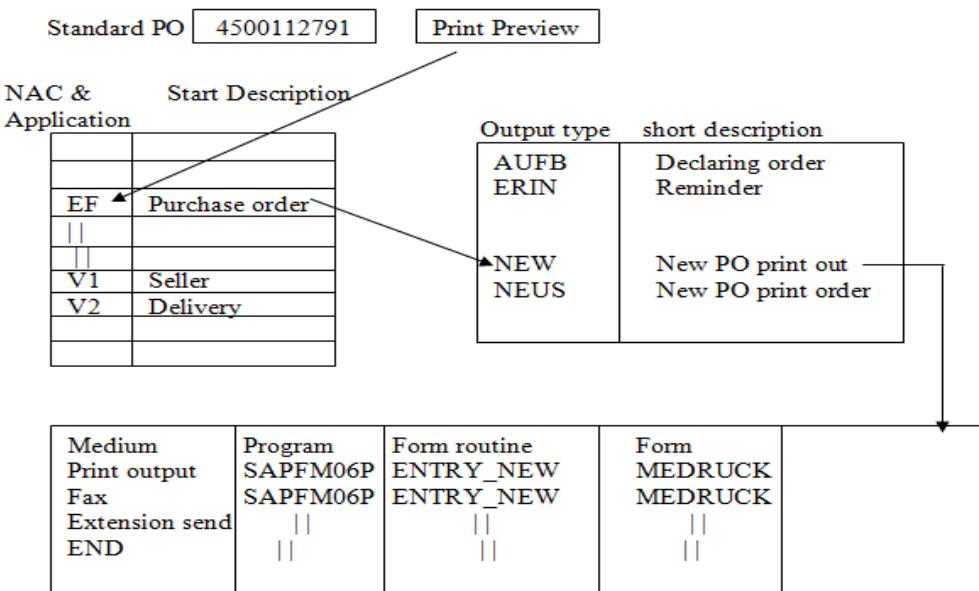
```

Change layout Adding some additional logic to standard driver program

Note: - TNAPR is the standard data base table, which contains all the standard layouts & driver programs.

Note: - NACE is the transaction code, which contains all the application & their driver programs & layouts.

If we want to take the print preview of purchase order then execute ME23N transaction.



If you want to display the purchase order print preview then we execute the ME23N transaction & provide the purchase order number & click on print preview in the application tool bar. Then it goes to NACE transaction & identify the application at purchase order. Against the application it identify the output type (NEW) against the output type it identifies the medium print output. Against the medium it triggers the standard program & form. Based on the form we print the output.

In the real time output types are created by functional people based on the document category.

Ex: -

For domestic purchase order they create one output type. For amendment domestic purchase orders one output type. For import purchase order they create one output type. For stock transfer order they create one output type.

Steps to change the layout: -

1. Identify the standard layout / form
2. Copy the standard form into 'Z' form
3. Convert the language from original (DE) to our required language of the form based on requirement
4. Change 'Z' layout as per client requirement.
5. Place the new layout/form into NACE transaction.

→ **Modify the standard purchase order layout (MEDRUC) to incorporate the logo.**

Steps to identify the standard layout or form: -

Execute NACE transaction. Select the purchase order application (EF) & click on output types in the application tool bar. Select the output type which is provided by functional people. Double click on processing routines in the left panel. Against print output medium identify the form MEDRUCK.

Steps to copy the standard form into 'Z' form: -

Execute 'SE71'. In the menu bar click on utilities → copy from client. Provide the form name MEDRUCK. Source client is 000. Target form ZSPT_930_MEDRUCK. Click on execute, save, local object.

Steps to convert the languages: -

Execute 'SE71'. Provide the original language 'DE'. Click on change. In the menu bar click on utilities → convert original language. Provide to original language 'EN'. Enter.

Note: – We can create the windows page windows paragraph & character formats only in original language. That is automatically reflected to all other languages. The text in the windows isn't reflected to other languages.

Steps to change the layout as per client requirement: -

Execute 'SE71'. Provide the form name & original language. Click on change. Create the logo window. Place the logo window on the page. Align the layout & insert the graphics image in the logo window. Save, check, activate.

Steps to place the new layout / form into the NACE transaction: -

Execute NACE transaction. Select the application. Click on output types. Select the output type. Double click on processing routines in the left panel. Click on change mode. Remove the old form & place the new form. Save.

Steps to identify the output type & language of purchase order: -

Execute 'ME23N'. Provide the purchase order number. Click on messages in the application tool bar. Identify the output type & language.

Steps to take the print preview of sales order: -

Execute VA03 transaction. Provide the sales order number. In the menu bar click on sales document → issue output to. Select the message type. Click on print options. Provide destination LP01. Click on execute. Click on print preview in the bottom.

Note: – In the real time the output device is not always LP01, depends on the printer (laser, dot matrix) & depends on the language (EN, DE, CH) the output devices are created by basis people.

Perform - - - - endperform: -

This control command is used to adding some additional logic to the standard driver program without disturbing the standard driver program.

Syntax of perform - - - endperform (calling) in page window: -

```

/: Perform <form name> in program <subroutine pool program>
Where the definition is available ←
/: using &input1&
/: using &input2&
  ||
/: changing &output1&
/: changing &output2&
  ||
/: endperform

```

Syntax of definition in subroutine pool program: -

Form <form name> tables <input> structure ITCSY <output> structure ITCSY.

----- }
----- } business logic
----- }

/: Endform.

Here input & output acts like an internal table with header line which contains two fields. That is name & value.

Note: - ITCSY is the structure which contains the two fields name & value.

Here all the using parameters & their values are stored into input internal tables. & all the changing parameters are stored into output internal tables. Here the business logic is read the input field & their value based on the values, we will fetch the data from data base & modify the output field value.

→ Based on the given company code display the company code, company name, city by using SAP-SCRIPT with out disturbing the driver program add the country by using subroutine pool program.

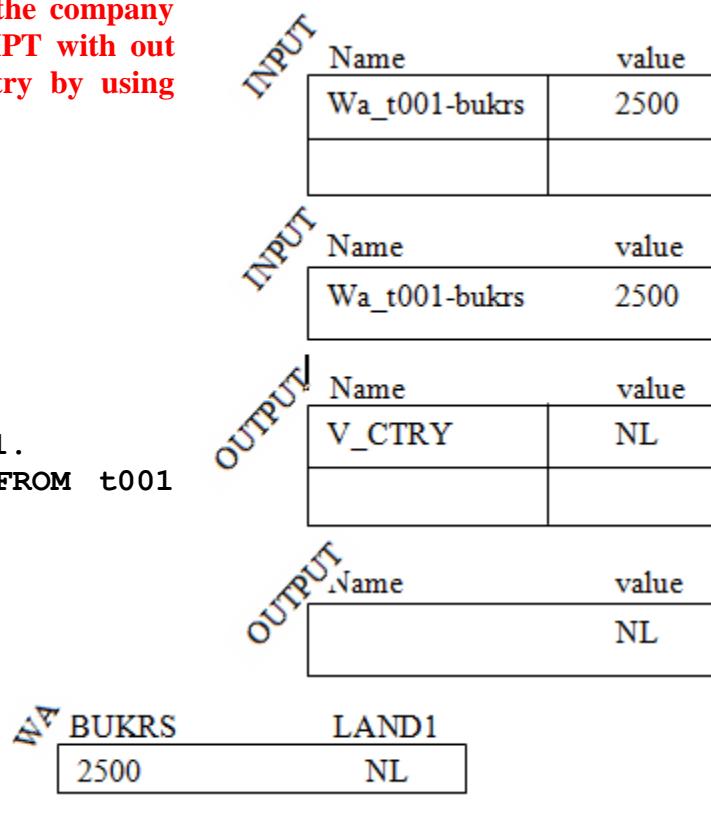
ZSPT 930 DRIVER PROGRAM3

```

PARAMETER p_bukrs TYPE t001-bukrs.
TYPES: BEGIN OF ty_t001,
         bukrs TYPE t001-bukrs,
         butxt TYPE t001-butxt,
         ort01 TYPE t001-ort01,
         END OF ty_t001.
DATA: wa_t001 TYPE ty_t001,
      it_t001 TYPE TABLE OF ty_t001.
SELECT SINGLE bukrs butxt ort01 FROM t001
INTO wa_t001 WHERE bukrs =
p_bukrs.
CALL FUNCTION 'OPEN_FORM'
EXPORTING
  form = 'ZFEB26'.

CALL FUNCTION 'WRITE_FORM'
EXPORTING
  element = 'SATISH'
  window = 'MAIN'.
CALL FUNCTION 'CLOSE_FORM'.

```



```

ZSPT_930_FORM3 /E      SATISH
*      &WA_T001-BUKRS&
*      &WA_T001-BUTXT&
*      &WA_T001-ORT01&
/:     PERFORM GET_COUNTRY IN PROGRAM Z11SCRIPT3
/:     USING &WA_T001-BUKRS&
/:     CHANGING &V_LAND1&
/:     ENDPERFORM
*      COMPANY COUNTRY: &V_LAND1&

```

ZSPT 930 CTRY (SUBROUTINE POOL PROGRAM):-

```

DATA: BEGIN OF WA,
      BUKRS TYPE T001-BUKRS ,
      LAND1 TYPE T001-LAND1 ,
      END OF WA.

FORM GET_COUNTRY TABLES ITAB STRUCTURE ITCSY OTAB STRUCTURE ITCSY.
  READ TABLE ITAB WITH KEY NAME = 'WA_T001-BUKRS'.
  SELECT SINGLE BUKRS LAND1 FROM T001 INTO WA WHERE BUKRS = ITAB-VALUE.
  OTAB-VALUE = WA-LAND1.
  MODIFY OTAB TRANSPORTING VALUE WHERE NAME = 'V_LAND1'.
ENDFORM.

```

→ Develop a driver program to display the material number & plant number with out disturbing the driver program we add the material description & plant description by using subroutine pool program.

```

PARAMETER P_MATNR TYPE MARC-MATNR.
TYPES: BEGIN OF TY_MARC,
        MATNR TYPE MARC-MATNR,
        WERKS TYPE MARC-WERKS,
        END OF TY_MARC.

DATA WA_MARC TYPE TY_MARC.
SELECT SINGLE MATNR WERKS FROM MARC INTO WA_MARC WHERE MATNR =
P_MATNR.

CALL FUNCTION 'OPEN_FORM'
  EXPORTING
    FORM
          = 'ZTSCRIPT2'.

CALL FUNCTION 'WRITE_FORM'
  EXPORTING
    ELEMENT
          = 'SATISH'
    WINDOW
          = 'MAIN'.

```

```

CALL FUNCTION 'CLOSE_FORM'.

/E   SATISH
*   &WA_MARC-MATNR&
*   &WA_MARC-WERKS&
/:  PERFORM GET_DES IN PROGRAM ZTSCRIPT02
/:  USING &WA_MARC-MATNR&
/:  USING &WA_MARC-WERKS&
/:  CHANGING &V_MDES&
/:  CHANGING &V_PDES&
/:  ENDPERFORM
*   MAT DES: &V_MDES&
*   PLANT DES: &V_PDES&

```

The diagram illustrates the data flow between input and output tables. It shows two input tables on the left and three output tables on the right, connected by arrows indicating the flow from input to output.

INPUT	Name	value
Wa_marc-matnr	100-200	
Wa_marc-werks	2010	

INPUT	Name	value
Wa_marc-werks	2010	

OUTPUT	Name	value
V_MDES	MARKERS	
V_PDES	SR NAGAR	

OUTPUT	Name	value
		SR NAGAR

```

DATA: BEGIN OF WA_MAKT,
      MATNR TYPE MAKT-MATNR,
      MAKTX TYPE MAKT-MAKTX,
      END OF WA_MAKT.
DATA: BEGIN OF WA_T001W,
      WERKS TYPE T001W-WERKS,
      NAME1 TYPE T001W-NAME1,
      END OF WA_T001W.
FORM GET_DES TABLES INPUT STRUCTURE ITCSY
OUTPUT STRUCTURE ITCSY.
READ TABLE INPUT WITH KEY NAME = 'WA_MARC-MATNR'.
SELECT SINGLE MATNR MAKTX FROM MAKT INTO WA_MAKT WHERE MATNR =
INPUT-VALUE.
OUTPUT-VALUE = WA_MAKT-MAKTX.
MODIFY OUTPUT TRANSPORTING VALUE WHERE NAME = 'V_MDES'.
READ TABLE INPUT WITH KEY NAME = 'WA_MARC-WERKS'.
SELECT SINGLE WERKS NAME1 FROM T001W INTO WA_T001W WHERE WERKS =
INPUT-VALUE.
OUTPUT-VALUE = WA_T001W-NAME1.
MODIFY OUTPUT TRANSPORTING VALUE WHERE NAME = 'V_PDES'.
ENDFORM.

```

Text element: -

The text element is the name given to the block of statements in the page window. Text element name start with /E. Normally the write form functional module transfers the data from driver program to all the statements which are available in the page window.

Call function ‘WRITE_FORM’

Exporting

FORM = ‘ADDRESS’.

ADDRESS	*	&wa_t001-bukrs&
	*	&wa_t001-ort01&

If you provide text element name to the write form function module then the ‘WRITE_FORM’ function module transfers the data from driver program to all the statements which are available in the text element.

Call function ‘WRITE_FORM’

Exporting

Element = ‘DHAWAN’.

Window = ‘ADDRESS’

ADDRESS	/E	SATISH
	*	&WA_T001-BUKRS&
ADDRESS	*	&WA_T001-ORT01&
	/E	DHAWAN
ADDRESS	*	&WA_LFA1-LIFNR&
	*	&WA_LFA1-NAME1&

Note: - The page window contains at least one text element then we must provide the text element name to the write from function module.

EKET (Scheduling agreement table) : -

EBELN → Purchasing document number

EBELP → Item number

EINDT → Delivery date

→ **Modify the standard purchase order layout to incorporate the item wise delivery date.**

In the object we add the additional logic of item wise delivery date to the standard driver program through subroutine pool program. Before adding the additional logic first we take a printout or print preview of existing layout & later we put the debugging mode & identify the right place with the help of printout or print preview. Implement the logic.

Steps to identify the right place in the page window where we add the additional logic to the page window: -

Execute 'ME23N'. provide PO number. Click on print preview or take a printout. Now execute the SE71. provide form name. in the menu bar click on utilities → Activate debugger. Now execute ME23N in a separate session. Click on print preview. Now the form is in debugging mode. Click on ok. Continuously click on F5 button. Identify the right window & text element. Right place is window name 'MAIN'. Element name is 'ITEM_LINE_1'

FORM: ZSPT930_MEDRUCK

WINDOW 'MAIN': -

IL

```
/: PERFORM GET_DELDT IN PROGRAM ZTDELDLT
/: USING &EKPO-EBELN&
/: USING &EKPO-EHELP&
/: CHANGING &V_DD&
/: ENDPERFORM
/  &EKPO-EHELP&,,&EKPO-EMATN&,,&EKPO-TXZ01&,,&V_DD+6(2)&.&V_DD+4(2)&.
=      &V_DD+0(4)&
```

Sub routine pool program: -

```
PROGRAM ZTDELDLT.
DATA V1 TYPE EKPO-EBELN.
DATA V2 TYPE EKPO-EHELP.

DATA: BEGIN OF WA_EKET,
      EBELN TYPE EKET-EBELN,
      EHELP TYPE EKET-EHELP,
      EINDT TYPE EKET-EINDT,
      END OF WA_EKET.
```

```
FORM GET_DELDT TABLES INPUT STRUCTURE
ITCSY OUTPUT STRUCTURE ITCSY.
  READ TABLE INPUT WITH KEY 'EKPO-EBELN'.
  V1 = INPUT-VALUE.
  READ TABLE INPUT WITH KEY 'EKPO-EHELP'.
  V2 = INPUT-VALUE.
  SELECT SINGLE EBELN EHELP EINDT FROM EKET INTO WA_EKET WHERE
  EBELN = V1 AND EHELP = V2.
  OUTPUT-VALUE = WA_EKET-EINDT.
  MODIFY OUTPUT TRANSPORTING VALUE WHERE NAME = 'V_DD'.
ENDFORM.
```

INPUT	
Name	value
Ekpo-ebeln	4500011279
Ekpo-eelp	10

INPUT	
Name	value
Ekpo-eelp	10

OUTPUT	
Name	value
V_ADD	20010522

OUTPUT	
Name	value
	20010522

WA_EKET	EBELN	EHELP	EINDT
	4500011279	10	20010522

V_ADD = 20010522
 &v_add+6(2)&.&v_add+4(2)&.&v_add+0(4)&

22 05 2001

Types of windows in the SAP-SCRIPT: -

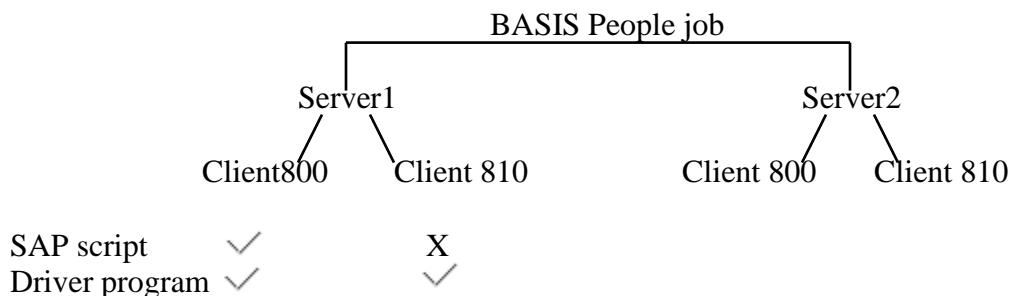
1. Main window
2. Variable window
3. Constant window

Control window is the fixed window in all the pages.

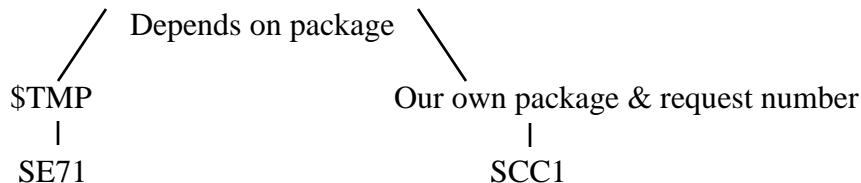
Differences between MAIN window and VARIABLE window: -

MAIN WINDOW	VARIABLE WINDOW
1. It's used to print the continuous data.	1. Based on the window width & height only we can print the data.
2. We can split the main window into smaller windows.	2. We can't split the variable window.
3. Without a main window we can't design SAP-SCRIPT.	3. Without a variable window we can design SAP-SCRIPT. We can create only variable window.
4. Top & Bottom control commands only work in main window.	4. Top & Bottom aren't work in variable window.
5. Next page = 0 isn't possible in main window.	5. Next page = 0 is possible in variable window.
6. We must provide the text element name to the main window. Otherwise the first information will be printed twice.	6. We no need to provide the text element name in the variable window.

SAP script is client dependent that means if you design the SAP script in one client that isn't reflected to all other clients in the same server.



Copy the SAP script from one client to another client in the same server



Steps to copy the SAP script frame one client to another client (800 to 810) into the script is available in \$TMP: -

In 810 client execute SE71. In the menu bar click on utilities → copy from client. Provide the form name source. Client is 800. Provide the target form (ZSPT_930_FORM). Execute.

Steps to change the package at any object: -

Execute SM30. Provide the table name 'TADIR'. Click on maintain. Enter & check the our object type. If our object type isn't available, then select the object type & provide the form name or object name. Click

on execute. Double click on our object. Remove the old package. Place the new package. Click on save. Create the request (F8). Provide short description. Note down the request. Enter.

Steps to copy the SAP script from 800 to 810 client if the form is available in our own package & request number: -

In 810 client execute ‘SCC1’. Provide the source client, number, request number. Select the including request sub tasks. Click on start immediately in the application tool bar. Click on yes.

Note: – We can’t copy the SAP script one server to another server. This is done by BASIS people. We can copy the SAP script within the server only.

Note: – ‘RSTXFCPY’ is the standard program to copy the SAP script from one client to another client.

READ_TEXT: -

It’s the function module which is used to read the standard text information. The input for the above function module is

1. Text ID
2. Name
3. Object
4. Language

The output for the above function module is an internal table which contains two fields. They are TDFORMAT & TDLINE.

If you want to identify the input of the above function module then open the standard text in the menu bar. Click on goto → header. Identify the name, language, text id, object.

Note: – In the real time we use this function module to read the purchasing document header text, purchase document item text, sales document header, sales document item text, invoice header text, invoice item text

When ever we are working with ‘READ_TEXT’ module, we must uncomment the execution.

Data: IT like table of TDLINE,

WA like line of IT.

Call function ‘READ_TEXT’

Exporting

ID = ‘ST’

Language = sy-langu

Name = ‘ZSPT_930_ST’

Object = ‘TEXT’

Lines = IT.

Exceptions

Loop at IT into WA.

Write:/ WA-TDFORMAT, WA-TDLINE.

Endloop.

→ Based on the given material number, display the material numbers, material descriptions. If the functional people maintain the material description in the purchase order text then we print this information otherwise print the MAKTX.

Steps to create the material: -

Execute MM01. Select the provide industry sector, material type. Enter. Select Basic data1, purchase order text, enter. Provide short description. Provide the material group. Click on purchase order text tab. Provide the detailed description & save.

Data V like THEAD-TDNAME

Loop at it_makt into wa_makt.

S_MATNR 100-200 to 100-200

* Apply the conversion routine if it required

Call function 'READ_TEXT'

Name = V

Object = 'MATERIAL'

Language = sy-langu

Id = 'BEST'

Lines = IT.

If sy-subrc = 0.

Read table it into wa index 1.

Write:/ wa_makt-matnr, wa-pdformat.

Else.

Write:/ wa_makt-mant, wa_makt-maktx.

Endif.

Endloop.

MATNR	MAKTX
100-200	Markers
100-210	Chairs
100-300	Fans

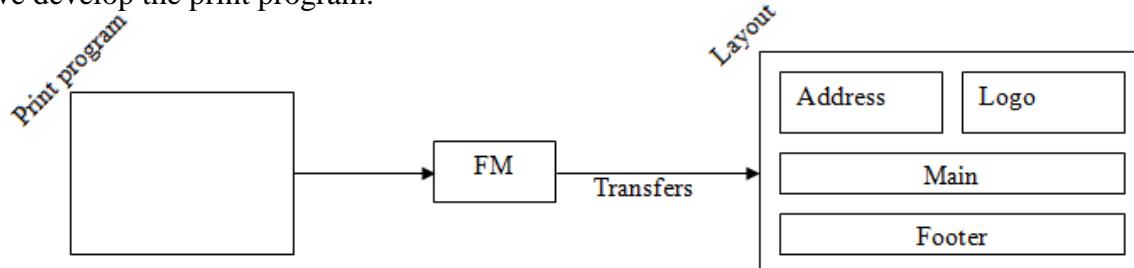
SMART FORMS: -

Smart forms are used to design the business documents such as invoices, purchase orders, sales orders. . . smart form is introduced from 4.6C version onwards.

Procedure of the smart form: -

Based on the client requirement we design the smart form layout by using ‘SMARTFORMS’ transaction code & provide the necessary symbols, save, check, activate.

When ever we activate the smart form it generates a function module. Based on the function module we develop the print program.



Function module is used to transfers the data from print program to layout.

Components of SMART FORMS: -

1. Smart form layout
2. Function Module
3. Print program

Components of Smart form layout: -

1. Global settings
2. Pages and windows

Global settings are the collection of form attribute, form interface, global definitions.

Form attributes: -

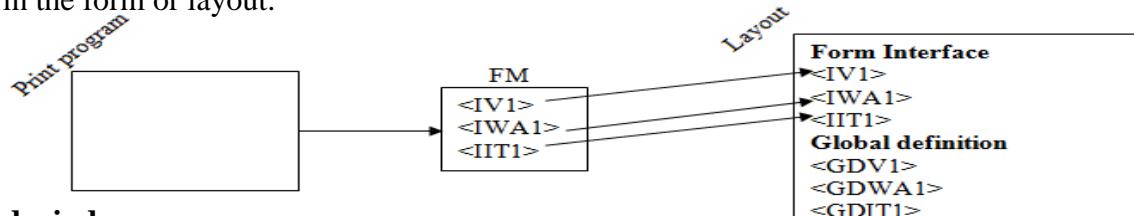
These are used to maintain the administrative information that is form name, language, page format, default style.

Form Interface: -

This is used to declare the variables, work areas and internal tables which are needed to transfers the data from print program to layout

Global definition: -

These are used to declare the variables, work area, internal tables which are needed to implement the logic in the form or layout.



Pages and windows: -

These are used to design the smart form layout.

Note: – ‘SMARTFORMS’ is the transaction code to design the smart form layout.

→ Based on the given company code, display the company code, comp name & city by using smart forms.

Steps to design the smart form:-

Execute ‘SMARTFORMS’. Select the radio button form. Provide the form name. Click on create. Provide short description. Double click on form interface in the left panel. The import tab (I_BUKRS, type, t001-bukrs). Double click on global definitions in the left panel. Click on types tab. Declare the types.

Types: begin of ty_t001,

Bukrs type t001-bukrs,

Butxt type t001-butxt,
 Ort01 type t001-ort01,
 End of ty_t001.

Click on global data tab. Provide work area. (WA_T001 TYPE TY_T001).

Click on initialization tab & implement the logic. Provide input output parameters.

INPUT PARAMETER OUTPUT PARAMETER

I_BUKRS	WA_T001
select single bukrs butxt ort01 from t001 into wa_t001 where bukrs = i_bukrs.	

Expand the page in the left panel. Select the main window. Right click → create → text. Double click on text. Click on editor under general attributes tab. Provide symbols.

&wa_t001-bukrs&
 &wa_t001-butxt&
 &wa_t001-ort01&

Click on back. Save, check, activate. In the menu bar click on environment → function module name. based on this function module we develop the print program.

Report ZSPT_930_PRINT_PROGRAM

Parameter p_bukrs type t001-bukrs.

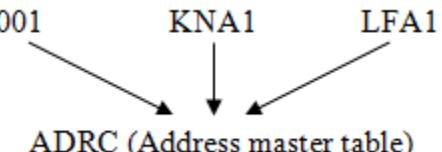
Call function '/1BCDWB/SF00000341'

Exporting

I_BUKRS = P_BUKRS.

Note: - In the SAP summarized data is available in t001, kna1,

lfa1 & their detailed information is available in 'ADRC' table. The link is 'ADRNR'.



Working with address window: -

In the real time if you want to print the address then you must use address window. This input for the address window is address number (ADRNR)

→ Based on the given customer number, display the customer address by using address window in the smart form.

Steps to design the smart form: -

SMART FORM NAME: ZSPT_930_SF2

Form interface:

Import:

I_KUNNR TYPE KNA1_KUNNR

Global definition

Types:

```

types: begin of ty_kna1,
      kunnr type kna1-kunnr,
      adrnr type kna1-adrnr,
      end of ty_kna1.
  
```

Global data:

Wa_kna1 type ty_kna1

Initialization:

I_KUNNR WA_KNA1

select single kunnr adrnr from kna1 into wa_kna1 where kunnr = i_kunnr.

Select the page in the left panel. Right click → create → address. Double click on address. Provide the address number in the general attributes tab. Save, check, activate. In the menu bar click on environment → function module name. Based on this function module we develop the print layout.

```

REPORT ZSM1.
parameter p_kunnr type kna1-kunnr.
CALL FUNCTION '/1BCDWB/SF00000260'
  EXPORTING
    I_KUNNR = p_kunnr.

```

Note: - If you want to declare the select-options in the smart form then we must declare one structure with the following fields in the data dictionary & later we refer the structure in the tables tab of form interface in the smart form.

→ Based on the given purchasing document numbers, display the purchasing document numbers, document dates & vendor numbers by using smart forms.

Sign → (C, 1)

Option → (C, 2)

Low }
High }

Depends on the field

VBELN C
VBELN 10

Structure: ZVBAK1

Sign char 1

Option char 2

Low char 10

High char 10

Steps to design the smart form: -

Form interface:

Tables:

I_SVBELN like ZVBAK1

Global definition

Types:

```

types: begin of ty_vbak,
      vbeln type vbak-vbeln,
      audat type vbak-audat,
      kunnr type vbak-kunnr,
      end of ty_vbak.

```

Global data:

Wa_vbak type ty_vbak

It_vbak type table of ty_vbak

Initialization:

I_SEBELN IT_VBAK

```

select vbeln audat kunnr from vbak into table it_vbak where vbeln in
i_svbeln.

```

Expand the page in left panel. Select the main window. Right click → create → flow logic → loop. Provide internal table name into work area name in the data tab. (IT_VBAK INTO WA_VBAK).

Select the loop into the left panel. Right click → create → text. Double click on text. Click on editor in the general attributes tab.

&wa_vbak-vbeln& &wa_vbak-audat& &wa_vbak-kunnr&

Click on back, save, check, activate.

```

REPORT ZTEST199.
tables vbak.
select-options s_vbeln for vbak-vbeln.
CALL FUNCTION '/1BCDWB/SF00000254'
TABLES
  I_SVBELN = s_vbeln.

```

Note: - We can test the smart form independently without using the print program.

Working with graphic: -

By using graphic window we can print the logo in the smart form. The input for the graphic window is graphics image.

We can print the .BMP images in the smart form. When ever we are working with .BMP image then we must convert graphic image by using SE78 transaction.

Steps to place the logo in smart form: -

Execute ‘SMARTFORMS’. Open the smart form in change mode. Select the page in the left panel. Right click → create → graphic. Double click on the graphics in the left panel. Provide the name (logo name), object (Graphics), ID (BMAP). Select the radio button color Bitmap image (BCOL). Click on form painter in the application tool bar. Align the windows. Once again click on form painter. Save, check, activate.

Note: - ‘RSTXPD4T4’ is the standard program. We can convert the smart form output to PDF format.

Steps to print the watermark or background pictures in smart forms: -

Execute ‘SMARTFORMS’. Open the form in change mode. Double click on page in the left panel. Click on background picture tab. Provide the name (SPG1), object (GRAPHICS), id (BMAP). Select the radio button colour. Select the output mode is print preview & print. Provide the position. Save, check, activate the smart form.

Steps to convert SAP-SCRIPT to SMARTFORM: -

Execute ‘SMARTFORMS’. Provide the smart form name. In the menu bar click on utilities. Migration → import SAPSCRIPT FORM. Provide the script name (ZSPRAO_7AM_FORM). Enter. Click on save.

Note: - By using FB_MIGRATE_FORM function module we can convert the SAPSCRIPT to smart form.

Working with SMARTSTYLES: -

SMARTSTYLES are used to create the paragraphs as well as character formats in the smart form. The transaction code for smart styles is ‘SMARTSTYLES’.

Steps to create paragraph & character formats: -

Execute ‘SMARTSTYLES’. Provide the style name (ZSPRAO_7AM_SS1). Click on create. Provide short description. Select the paragraph formats in the left panel. Right click on node. Provide the paragraph format name. Enter. Provide short description. Provide the left margin (0.2 CM). Click on font tab. Select the font family (Helve), font size (14), font style (bold). Select the checkbox color & select the colour. Click on tabs tab. Provide the tab positions. Click on save. Repeat the same steps for all the paragraph formats. Select the character format in the left panel. Right click → create node. Provide the character format name. Enter. Provide short description. Select the bar code name if it’s required. Click on font tab. Provide the font family, size, style. Click on color check box. Select color. Click on save. Repeat the same steps for all character formats. Double click on header data. Select the standard paragraph as default paragraph. Save, check, activate.

Working with table: -

Table is used to print the data in a tabular format. Table contains 3 sections.

1. Header
2. Main
3. Footer

Based on the client requirement which data is varying that part consider as a main area. Above main area consider as a header & below main area consider as footer.

→ Based on the given purchasing document numbers, display the purchase order details as shown in the below.

Note: - When ever we are working with table then we must create different lines with different cells based on the requirement.

For header

Line1	C1
-------	----

4	3	4.5	2.5	4.5
C1	C2	C3	C4	C5

For main area: -

We can use line2.

For footer

We can use line1.

Note: - SPELL_AMOUNT is the function module which is used to convert the amount in words. The input for the above function module is amount & currency and output for the above function module is amount in words.

Smart form name: ZSPRAO_7AM_SF6

Form Attributes

Output options

Styles: ZSPRAO_7AM_SS2

Form interface: -

Tables:

I_sebeln like ZSPRAO_7AM_SS

Global definitions

Types

```
types: begin of ty_ekpo,
      ebeln type ekpo-ebeln,
      ebelp type ekpo-ebelp,
      menge type ekpo-menge,
      meins type ekpo-meins,
      netpr type ekpo-netpr,
      end of ty_ekpo.
```

Global data

Wa_ekpo	type	ty_ekpo
It_ekpo	type	table of ty_ekpo
V_total	type	ekpo-netpr
AIW	type	SPELL

Initialization: -

I_SEBELN	IT_EKPO
IT_EKPO	V_TOTAL
WA_EKPO	AIW
V_TOTAL	

PURCHASE ORDER				
PURDOC	ITEM	QTY	UOM	PRICE
30004	01	10.00	PCS	200.00
30004	02	20.00	BOX	200.00
Amount				400.00
Amount in words: Four hundred rupees only.				

← 18.5 cm →

Header

Main

Footer

```

Select EBELN EHELP MENGE MEINS NETPR from EKPO into table it_ekpo
where Ebeln in I_SEBELN.
loop at it_ekpo into wa_ekpo.
v_total = v_total + wa_ekpo-netpr.
endloop.
CALL FUNCTION 'SPELL_AMOUNT'
EXPORTING
  AMOUNT          = v_total
  CURRENCY        = 'INR'
IMPORTING
  IN_WORDS        = AIW.

```

Double click on main window in the left panel. Click on output options tab. Provide the co ordinations of main window.

Left margin 1 CM Width 18.5 CM

Upper margin 1CM height 25 CM

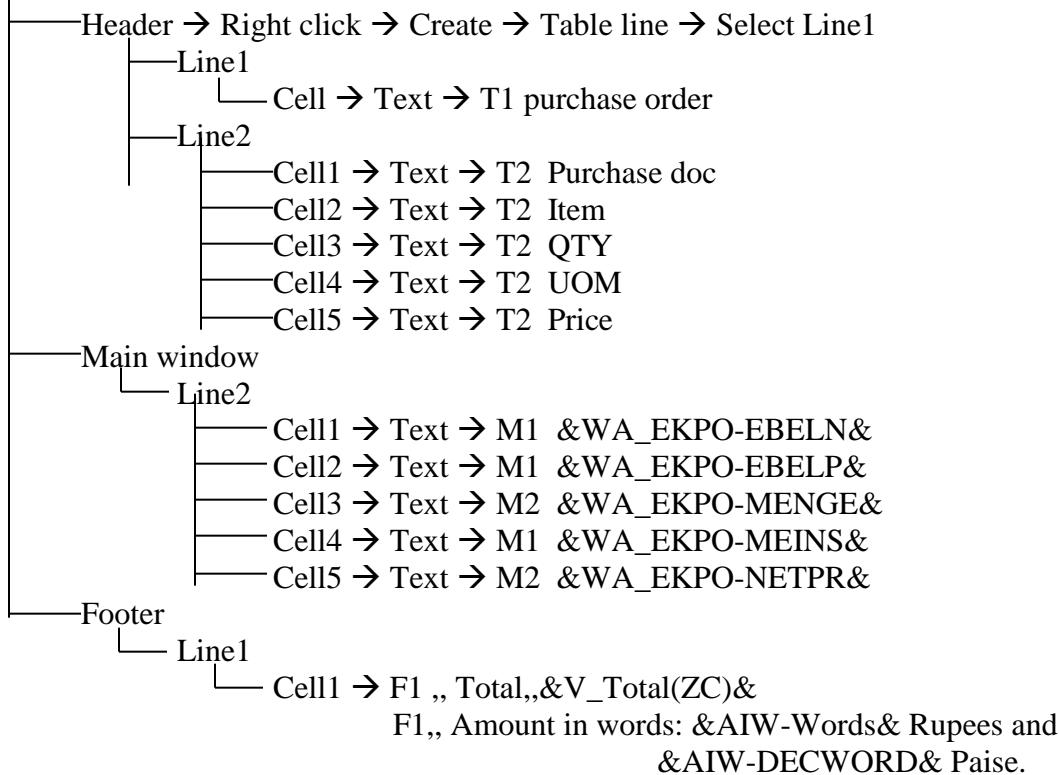
Select the main window in the left panel right click → create → table. Double click on table. In the data tab provide internal table name into work area name (IT_EKPO into WA_EKPO). Click on tables tab. Select the LTYPE1. Right click → rename line. Provide new name as line1. Select the ‘Line1’. Click on select pattern under table tab. Click on display framed pattern. Select the pattern. Select the ‘Line1’. Right click → insert → empty line underneath. Select the ‘Ltype1’. Right click → rename line. Provide the new name as ‘Line2’. Select the line2. Click on details in top right. Provide the each call width.

Line1 **18.5 cm**

Line2 **4cm 3cm 4.5cm 2.5cm 4.5cm**

Click on table painter in the top right. Select the ‘Line2’. Click on select pattern under table tab. Select the pattern.

Table



Save, check, activate the smart form.

T1

Helve, 16, Bold, Center

T2

Helve, 14, Bold, Center

M1

Helve, 14, Bold, Left alignment, Left margin 0.2 cm

M2

Helve, 14, Bold, Right alignment

F1

Tab position

1. 14 cm left alignment
2. 18.3 cm right alignment

Working with template: -

Template is used to print the data in a fixed column & fixed rows.

→ Based on the given purchasing document number, display as show in below.

Smart form name: ZSPRAO_7AM_SF7

Form interface

Import

I_EBELN TYPE EKKO-EBELN

Global definitions

Types

```

TYPES: BEGIN OF TY_EKKO,
        EBELN TYPE EKKO-EBELN, Line2 Column 1
        BEDAT TYPE EKKO-BEDAT,
        LIFNR TYPE EKKO-LIFNR,
        BUKRS TYPE EKKO-BUKRS,
        END OF TY_EKKO.
    
```

Global data

WA_EKKO TYPE TY_EKKO

Initialization

I_EBELN WA_EKKO

```

SELECT SINGLE EBELN BEDAT LIFNR BUKRS FROM EKKO INTO WA_EKKO WHERE
EBELN = I_EBELN.
    
```

Select the main window in the left panel. Right click → create → Template. In the template tab select the C1. Right click → rename line. Provide new name as line1. Select the line1. Click on details in the top right. Provide the height, each cell width. Click on table painter in the top right. Select the line1. Click on select pattern under template tab. Select the required pad. Repeat the same steps for all the lines. Select the template in the left panel. Right click → Create → Text. Double click on text. Click on editor under general attributes tab. (Pur.doc: &wa_ekko-ebeln&). Click on back. Click on output options tab. Provide the line number and column number in the bottom. Repeat the same steps for all other text. Save, check activate the smart form.

Events in SMARTFORMS: -

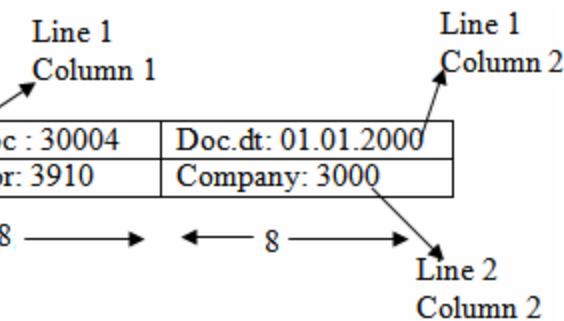
1. Event on sort begin
2. Event on sort end

Event on sort begin: -

It's an event which is triggered at the first record of each block.

ADV: - It's used to display the individual headings

This is similar as at new field name in the control break statement.



Event on sort end:

It's an event which is triggered at the last record of each block.

ADV: - It's used to display the subtotals.

This is similar as at end of field name in the control break statement.

→ Based on the given purchasing document numbers, display the purchasing item details as shown in the below by using 'SMARTFORMS'.

SMART FORM NAME: ZSPRAO_7AM_SF8

FORM INTERFACE

Table

I_SEBELN LIKE ZSPRAO_7AM_SS

Global definitions

Types:

```
TYPES: BEGIN OF TY_EKPO,
      EBELN TYPE EKPO-EBELN,
      EBELP TYPE EKPO-EBELP,
      MENGE TYPE EKPO-MENGE,
      MEINS TYPE EKPO-MEINS,
      NETPR TYPE EKPO-NETPR,
      END OF TY_EKPO.
```

Global data

Wa_ekko	type	ty_ekpo
It_ekpo	type table of	ty_ekpo
V1	type	ekpo-netpr
V2	type	ekpo-netpr

Initialization

I_sebeln	it_ekpo
Wa_ekpo	v2
It_ekpo	

```
SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO
WHERE EBELN IN I_SEBELN.
```

```
LOOP AT IT_EKPO INTO WA_EKPO.
```

```
V2 = V2 + WA_EKPO-NETPR.
```

```
ENDLOOP.
```

Select the main window in the left panel. Right click → create → text. Double click on text. Click on editor.

* grand total: &v2(zc)&

Click on back. Select the main window once again. Right click → create → flow logic → loop. Double click on loop. In the data tab provide

It_ekpo	into	wa_ekpo
---------	------	---------

In the below sort criteria block provide field name is Ebeln. Select the check box 'event on sort begin'. Select the 'event on sort begin' in the left panel. Right click → create → text. Double click on text.

* &wa_ekpo-ebeln&

Select the loop in left panel. Right click → create → text. Double click on the text. Click on editor.

* &wa_ekpo-ebelp& &wa_ekpo-menge(zc)& &wa_ekpo-meins& &wa_ekpo-netpr(zc)&

Click on back. Select the text in left panel. Right click → create → flow logic → program lines. Double click on code in the left panel. Provide input, output parameters.

Wa_ekpo v1

V1 = v1 + wa_ekpo-netpr

30004			
01	10	KG	250.00
02	20	PCS	150.00
Sub total			400.00
30005			
01	05	BOX	500.00
Sub total			500.00
Grand total			900.00

Double click on loop in the left panel. In the sort criteria block provide field name as Ebeln and select the check box event on sort end. Select the event on sort end in left panel. Right click → create → text. Double click on text.

* Sub total: &v1(zc)&

Click on back. Select the text in left panel. Right click → create → flow logic → program lines.

Double click on code. Implement the logic & input parameter is v1.

Clear v1.

Save, check, activate.

In the menu bar click on environment → function module name. based on this function module we develop the print program.

TABLES EKPO.

SELECT-OPTIONS S_EBELN FOR EKPO-EBELN.

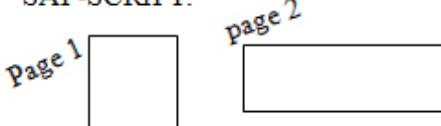
CALL FUNCTION '/1BCDWB/SF00000265'

TABLES

I_SEBELN = S_EBELN.

Differences between SAP Script & SMARTFORMS

SAP SCRIPT

1. Multiple page formats aren't possible in SAP-SCRIPT.

2. Labels are possible in SAP-SCRIPT.
3. Without a Main window we can't create SAP-SCRIPT.
4. SAP-SCRIPT is a client dependent that means if you create a script in one client that's not reflected into all other clients in same server.
5. Control commands are worked in SAP-SCRIPT (Protect, top, bottom)
6. Colors aren't possible in this.
7. Water mark / background picture isn't possible in script.
8. Paragraph & character formats aren't reusable in script.
9. By using 'RSTXDBUG' standard program we can debug the script.
10. We maintain the backup of script in .TXT file.
11. When ever we activate the script it won't generates function module.
12. We can't develop the code in script.
13. We can convert script to smart form.
14. Script is suitable for complex coding

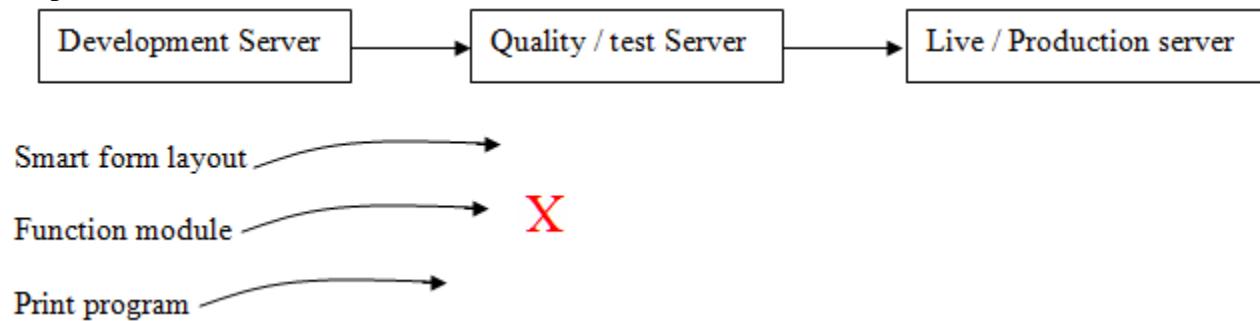
SMART FORM

1. Multiple page formats are possible in SMARTFORMS.
2. Labels aren't possible in smart form.
3. Without a Main window we can design smart forms.
4. Smart form is client independent. That means if we create smart form function module in any one of the client then automatically reflect into all other clients in same server.
5. Control commands are aren't possible in smart form.
6. Colors are possible in smart form.
7. Watermark / background picture is possible in smart form.
8. Paragraph & character formats are reusable in smart form.
9. By using static break points (break-point) we can debug the smart form.
10. We maintain the backup of smart form in .XML file.
11. When ever we activate the smart form it generates a function module.
12. We can develop the code in smart form.
13. We can't convert smart form to script.
14. Smart form is suitable for complex design.

Note: - In the smart forms function module number we can't transported to quality & live server.

Depends on server configuration function module number is generated. So we can't fix the function module number in the print program. We always generate the function module by using

'SSF_FUNCTION_MODULE_NAME'. The input for the above function module is smart form name. the output for the above function module is smart form number.



```
REPORT ZSF.
TABLES EKPO.
SELECT-OPTIONS S_EBELN FOR EKPO-EBELN.
DATA V_FM TYPE RS38L_FNAM.
CALL FUNCTION 'SSF_FUNCTION_MODULE_NAME'
  EXPORTING
    FORMNAME = 'ZSF2'
  IMPORTING
    FM_NAME = V_FM.
CALL FUNCTION V_FM
  TABLES
    I_SEBELN = S_EBELN.
```

Note: - Now-a-days most of the companies used zebra printers to print the labels. Because the cost of payable is cheap, quality is good. Gum thickness is also good. Zebra printers don't support sap script only. It supports smart forms. So we must design the labels through smart form.

→ Based on the given material number & number of labels design the accepted labels as shown in the below.

Material	:	_____
Plant	:	_____
Batch	:	_____
MFG.DT	:	_____
EXP.DT	:	_____

At the time of label design BASIS people create page format based on the table width & height through 'SPAD' transaction & given to us. Based on this page format we design the label.

Smart form name: ZSPRAO_7AM_SF9.

FORM INTERFACE

Import

I_MATNR	TYPE	MCHA-MATNR
I_NOL	TYPE	I

Global definitions

Types

```
TYPES: BEGIN OF TY_MCHA,
      MATNR TYPE MCHA-MATNR,
      WERKS TYPE MCHA-WERKS,
      CHARG TYPE MCHA-CHARG,
      HSDAT TYPE MCHA-HSDAT,
```

```
VFDAT TYPE MCHA-VFDAT,
END OF TY_MCHA.
```

```
TYPES: BEGIN OF TY,
      NO TYPE SYINDEX,
      END OF TY.
```

Global data

WA_MCHA	TYPE	TY_MCHA
IT_MCHA	TYPE TABLE OF	TY_MCHA
WA	TYPE	TY
IT	TYPE TABLE OF	TY

Initialization

I_MATNR	WA_MCHA
I_NOL	WA
	IT

```
SELECT SINGLE MATNR WERKS CHARG HSDAT VFDAT FROM MCHA INTO WA_MCHA
WHERE MATNR = I_MATNR.
```

```
DO I_NOL TIMES.
```

```
WA-NO = SY-INDEX.
```

```
APPEND WA TO IT.
```

```
ENDDO.
```

Double click on main window in the left panel. Click on output options tab. Provide the co ordinates.

Left margin: 1CM width: 18.5 CM

Upper margin: 1 CM Window height 2.5 CM

Select the main window in the left panel. Right click → create → flow logic → loop. Double click on loop. Click on data tab. Provide (IT into WA). Select the loop. Right click → Create → Text. Double click on text.

```
MATERIAL : &WA_MCHA-MATNR&
PLANT    : &WA_MCHA-WERKS&
BATCH    : &WA_MCHA-CHARG&
MFG.DT   : &WA_MCHA-HSDAT&
EXP.DT   : &WA_MCHA-VFDAT&
PARAMETER: S_MATNR TYPE MCHA-MATNR,
           S_NOL TYPE I.
```

```
DATA V_FM TYPE RS38L_FNAM.
```

```
CALL FUNCTION 'SSF_FUNCTION_MODULE_NAME'
```

```
  EXPORTING
```

```
    FORMNAME = 'ZSF3'
```

```
  IMPORTING
```

```
    FM_NAME = V_FM.
```

```
CALL FUNCTION V_FM
```

```
  EXPORTING
```

```
    I_MATNR = S_MATNR
```

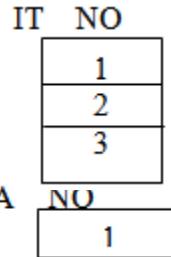
```
    I_NOL = S_NOL.
```

Each & every window & text editor contains the following additional events in the conditions tab.

1. Only on first page
2. Not on first page
3. Only after end of Main window
4. Only before end of Main window
5. Only on page

1. Only on first page: - This is used to print the window or text editor information only on first page.

2. Not on first page:- This is used to print the window or text editor information from 2nd page on wards.



3. Only after end of Main window:- This is used to print the window or text editor information after main window data printing completion.

4. Only Before end of Main window: - This is used to print the window or text information on each page until the main window is completed.

5. Only on page:- This is used to print the window or text editor information on a specified page.

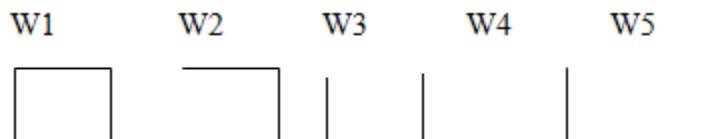
Working with BOX & Shading:-

Each and every window & text editor contains BOX & shading in the output options tab.

Steps to draw the box & shading: -

Double click on required window or text editor. Click on output options tab. Select the check box lines with provide the spacing (0.2 cm) if it's required, color. If you want to add or remove any line then click on that line in the preview. If you want to shading, then select the shading color.

When ever we are working with Boxes in the smart form based on the requirement we consider **each** part as window & draw the boxes for the window & also move lines.



Types of window in smart form

1. Main window
2. Secondary window (It's similar as variable window in smart form)
3. Copies window
4. Final window

Copies window: - When ever we want to print the same document multiple copies with different leadings then we use copies window.

In the real time the same invoice document is printed 3 copies with different headings. That is government form, company form, customer form. Here we use copies window to print the different headings on the same document.

Steps to work with copies window: -

Execute 'SMARTFORMS'. Open the smart form in change mode. Select the page in the left panel. Right click → create → window. Double click on window. Select window type as copies window in general attributes tab. Select the copies window in the left panel. Right click → create → flow logic → program lines. Double click on code.

```
IF SFSY-COPYCOUNT = 1.  
V = 'GOVERNMENT COPY'.  
ELSEIF SFSY-COPYCOUNT = 2.  
V = 'COMPANY COPY'.  
ELSEIF SFSY-COPYCOUNT = 3.  
V = 'CUSTOMER COPY'.  
ENDIF.
```

Output parameter V.

Select the code in left panel. Right click → create → text. Double click on text. Click on editor. &V&

Click on back. Save, check, activate.

At the time of print preview in the print program provide output device 'LP01'. Provide number of copies 3. click on print preview & absorb the different headings by click on next page.

Note: - SFSY is the structure which contains all the smart forms system variables.

If we want to print the page number

&SFSY-PAGE&

If we want to print total number of pages

&SFSY-FORM PAGES&
DATE → &SFSY-DATE&

Final window is used to print the total amount in the last page.

Note: - By using static break points (Break-point keyword) we can debug the smart form & also placing the dynamic break points in the function module we can debug the smart form.

Folder:- This is used to print the continuous text without any page break.

This functionality is similar as protect & end protect control command in SAP – SCRIPT.

Alternative: - This acts like if & endif control command in the SAP – SCRIPT.

Command: - This is used to break the page. This is similar as new page control command in smart form.

Note: - In the real time output device isn't always LP01. depending on the printer type (Laser printer, Dot Matrix printer) & language (English, Chinese, Japanese) the output device is created by BASIS people through 'SPAD' transaction.

Steps to provide Microsoft word as a text editor in SAP SCRIPT and SMART FORM

Method 1:

- * Execute I18N customizing
- * Double click on MS word as editor
- * Select the SAP SCRIPT and SMARTFORM check boxes and click on active.
- * Yes

Method 2: Open any text editor. Then in menu bar click on goto → configure editor. Select graphical pc editor check box. Enter. You will get the MS Word editor.

Note: - In the realtime some times we develop the entire code in the print program only. Printed values are transferred to smartform layout. Here we must create one structure with the transferred fields in the data dictionary later we declare the work area and internal table in the form interface in the smart form based on structure.

→ **Based on the given company code, display the company code, company name, city by using smart form and develop the entire code in the print program only.**

Here we create one structure with BUKRS, BUTXT, ORT01 (which data we want to transfer). Based on this structure we declare the work area import tab of form interface to carry the data.

Structure name: ZSPRAO_7AM_SS2.

SMART FORM Name: ZSPRAO_7AM_SF10.

Form interface

Import

I_WA like ZSPRAO_7AM_SS2.

Select the MAIN window → right click → text

```
&I_WA-BUKRS&
&I_WA-BUTXT&
&I_WA-ORT01&
```

Print Program

```
REPORT ZSF4.
PARAMETER P_BUKRS TYPE T001-BUKRS .
DATA: BEGIN OF WA_T001,
      BUKRS TYPE T001-BUKRS ,
      BUTXT TYPE T001-BUTXT ,
      ORT01 TYPE T001-ORT01 ,
      END OF WA_T001 .
SELECT SINGLE BUKRS BUTXT ORT01 FROM T001 INTO WA_T001 WHERE BUKRS
= P_BUKRS .
CALL FUNCTION '/1BCDWB/SF00000267'
  EXPORTING
```

```

I_WA = WA_T001.

→ Based on the given purchasing document number display the document number, doc date,
vendor (ALV). Select any check box of any record and click on PRINT button then display the
purchasing item details in smart form.

REPORT ZALVR2.

TABLES EKKO.

SELECT-OPTIONS S_EBELN FOR EKKO-EBELN.
TYPE-POOLS SLIS.

TYPES: BEGIN OF TY_EKKO,
       EBELN TYPE EKKO-EBELN,
       BEDAT TYPE EKKO-BEDAT,
       LIFNR TYPE EKKO-LIFNR,
       A(2) TYPE C,
       END OF TY_EKKO.

DATA: WA_EKKO TYPE TY_EKKO,
      IT_EKKO TYPE TABLE OF TY_EKKO.

SELECT EBELN BEDAT LIFNR FROM EKKO INTO TABLE IT_EKKO WHERE EBELN
IN S_EBELN.

DATA: IT_FCAT TYPE SLIS_T_FIELDCAT_ALV,
      WA_FCAT LIKE LINE OF IT_FCAT.

WA_FCAT-FIELDNAME = 'A'.
WA_FCAT-COL_POS = '1'.
WA_FCAT-EDIT = 'X'.
WA_FCAT-CHECKBOX = 'X'.
WA_FCAT-OUTPUTLEN = '3'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'EBELN'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-SELTEXT_M = 'PUR DOC'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'BEDAT'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-SELTEXT_M = 'DOC DATE'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

WA_FCAT-FIELDNAME = 'LIFNR'.
WA_FCAT-COL_POS = '4'.
WA_FCAT-SELTEXT_M = 'VENDOR'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.

DATA: IT_EVENT TYPE SLIS_T_EVENT,
      WA_EVENT LIKE LINE OF IT_EVENT.

```

```

WA_EVENT-NAME = 'PF_STATUS_SET'.
WA_EVENT-FORM = 'PF'.
APPEND WA_EVENT TO IT_EVENT.
WA_EVENT-NAME = 'USER_COMMAND'.
WA_EVENT-FORM = 'UC'.
APPEND WA_EVENT TO IT_EVENT.

CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
EXPORTING
  I_CALLBACK_PROGRAM = SY-CPROG
  IT_FIELDCAT        = IT_FCAT
  IT_EVENTS          = IT_EVENT
TABLES
  T_OUTTAB           = IT_EKKO.

FORM PF USING M TYPE SLIS_T_EXTAB.
  SET PF-STATUS 'STAT'.
ENDFORM.

FORM UC USING D LIKE SY-UCOMM E TYPE SLIS_SELFIELD.
  IF D = 'PRINT'.
    READ TABLE IT_EKKO INTO WA_EKKO INDEX E-TABINDEX.

    CALL FUNCTION '/1BCDWB/SF00000275'
      EXPORTING
        I_EBELN = WA_EKKO-EBELN.
  ENDIF.
ENDFORM.

Smart form
Global Settings
Form interface
I_EBELN  TYPE EKKO-EBELN
Global Definitions
Global data
WA_EKPO  TYPE          TY_EKPO
WA_EKKO  TYPE          TY_EKKO
IT_EKPO  TYPE TABLE OF TY_EKPO

Types
TYPES: BEGIN OF TY_EKPO,
        EBELN TYPE EKPO-EBELN,
        EHELP TYPE EKPO-EHELP,
        MENGE TYPE EKPO-MENGE,
        MEINS TYPE EKPO-MEINS,
        NETPR TYPE EKPO-NETPR,
        END OF TY_EKPO.

TYPES: BEGIN OF TY_EKKO,
        EBELN TYPE EKKO-EBELN,
        BEDAT TYPE EKKO-BEDAT,
        END OF TY_EKKO.

Initialization SELECT EBELN EHELP MENGE MEINS NETPR FROM EKPO INTO TABLE
IT_EKPO

```

**Input parameters (I_EBELN), output parameters (IT_EKPO, WA_EKPO)
WHERE EBELN = I_EBELN.**

**SELECT SINGLE EBELN BEDAT FROM EKKO INTO WA_EKKO WHERE EBELN =
I_EBELN.**

Table:-

Header

Line1 - create → text → purchasing document

Line 2: - row1 → create → text → pur doc: &wa_ekko-ebeln&
Row2 → create → text → doc date: &wa_ekko-bedat&

Line 3: row1 → text → purchasing document

Row2 → text → item

Row3 → text → qty

Row4 → text → uom

Row5 → text → price

Main: -

Line3: row1 → text → &wa_ekpo-ebeln&
Row2 → text → &wa_ekpo-ebelp&
Row3 → text → &wa_ekpo-menget&
Row4 → text → &wa_ekpo-meins&
Row5 → text → &wa_ekpo-netpr&

Debugging

Debugging is a tool to trace the program execution line by line. Debugging is used to change the field values at run time. Debugging is used to stop the program execution at any executable statement by using break points.

There are 2 types of break points.

1. Static break point
2. Dynamic break point

Static break point

1. Static break points are placed by using BREAK-POINT keyword.
2. State break points aren't a user specific. That means any user can execute the program. Then the cursor stops at break point keyword. (By using conditions we can set the static break points are user specific).
3. In any version at the program (Active / Inactive), we place static break point.

Dynamic break point

1. Dynamic break points are placed by using  button in the application tool bar.
2. Dynamic break points are user specific.
3. In an activate version of the program only we can place the dynamic break point.

Note: - SY-UNAME is the system variable which contains the current user name.

If SY-UNAME = 'SAPUSER'.

BREAK-POINT.

Endif.

Steps to place the dynamic break points: -

Place the cursor where we want to stop the program execution. Click on stop button in the application tool bar. Then it automatically set the break point. If you want to remove the break point then place the cursor on the same line & click on stop button in the application tool bar.

Note: - We can place up to 30 break points in the program. At the time of debugging mode F5 → line by line execution, F6 → At a time one block is executed (At a time subroutine & function module is executed), F7 → come of the block, F8 → first it'll check is there any other break points available or not. If there is available then it goes to next break point. Otherwise come out of the program.

Watch Point: -

Watch point is used to stop the program execution based on the condition. We can place up to 10 watch points in the program.

Steps to create watch point: -

In the debugging mode click on watch point which is in the application tool bar. Provide the field name. Provide the relational operator & Comp.field/value. Enter. Click on F5 button. When ever the watch point is reached then the program is stopped.

Fields: -

This is used to identify the fields or variable values and also we can change the values.

Steps to change the field values: -

Provide the field name in left side. Click on enter. Then we get the value in the right side. Remove the value place the new value and click on change field (pencil symbol in right side).

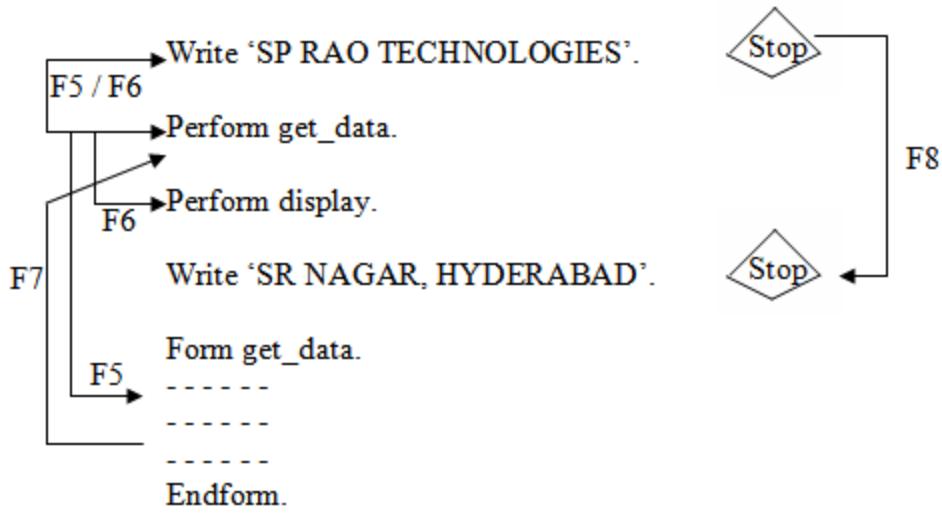


Table: - Endform.

This is used to display the internal table fields & their value & also perform the internal table operations (Append, Insert, and Delete).

Break Points: -

This is used to identify the all the break points which are placed in the program & their line number.

Watch points: -

This is used to identify the all available watch points & also we can change the watch point condition.

Callstack: -

This is used to identify the current execution event.

Over view: -

This is used to identify the all the events and all the blocks which are available in the program.

ABAP new debugger: -

Desktop1: -

In this ABAP source code is displayed in the left side, global & local variables & their values are displayed in right side.

Desktop2: -

In this ABAP source code is displayed in the left side, ABAP stack is displayed in right side (currently which block is executed under which event).

Desktop3: -

In this source code is displayed in the top & global & local variables & their values are displayed in bottom.

Standard: -

In this source code is displayed in the left side. ABAP stack is displayed in right side top. Global & local variables are displayed in right side bottom.

Structures: -

This is used to identify the work area fields & their values & also change the values.

Tables: -

This is used to display the internal table fields & their values & also perform the internal table operations.

Objects: -

This is used to identify the all the methods of objects & also check their values.

Detail display: -

This is used to identify the detailed information of any particular field.

Break point / watch points: -

This is used to identify the all the break points as well watch points in the program.

Difference: -

This is used to compare the any two field values & also display their history.

Differences between classic debugger & new debugger

Classic debugger

1. In this we have no desktops.
2. By using this we can't debug object oriented program.
3. In this we can't compare any two field values.
4. In this it won't show global & local variables of the program.

New debugger

1. In this we have desktop1, desktop2, desktop3 & standard.
2. By using this we can debug the object oriented programs.
3. In this we can compare any two field values.
4. In this it provides the global & local variables of the program

There are two types of debugging

1. Place the break points in the program & run the program in debugging mode.
2. Execute the program & provide the input & set the program in debugging mode by using '/H'. '/H' is the runtime debugger.

The following ways are used to identify the errors in standard program

1. By using where used list we identify the error location.
2. By using watch point.
3. By using break point.
4. By using source code scanner.
5. By using ABAP runtime analysis [SE30].
6. By using SQL trace [ST05].

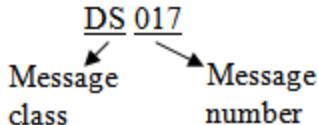
When ever we execute any transaction code if you get the error or message if you want to identify the location of the message then we use following techniques.

EX: -

When ever we try to open a program which isn't created, then it throws a message. This message is triggered from which location we identify now.

By using where used list: -

Execute SE38. provide the program which isn't created. Click on display. Then we get the message. Double click on that message. Identify the message number. In that last three digit is message number. Rest of the things is message class.



Execute SE91. Provide message class. Click on display. Select the message number. Click on where used list in the application tool bar. Enter. It displays the so many programs. Double click on each & every program & identify our message is available in which program.

By using watch points: -

Execute SE38. Provide the program name. Execute '/H' before display. Then debugging switched on. Click on display. In the menu bar click on classic debugger. Click on watch point in the application tool bar. Provide field name as SY-MSGID. Provide relational operator (=). Provide comparison value S017. Click on F8. & identify the right location.

By using break points: -

Execute SE38. Provide the program name. Execute '/H'. Click on display. In the menu bar click on break points. Break point at message / statement. If it is a statement then provide 'write'. Enter. Click on F8. Identify the right location of the error.

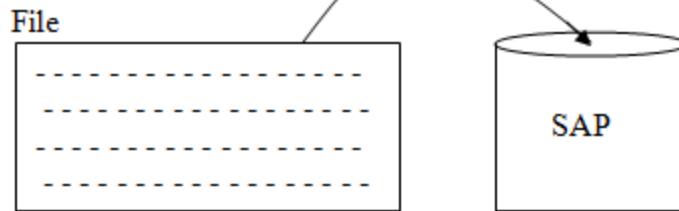
By using source code: -

Execute SE93. Provide the transaction code. Click on display. Identify the package. Execute SE38. Provide the program name RS_ABAP_SOURCE_SCAN. Execute. Provide the package & provide string searched for (S017). Execute. it provide the all the locations where the message is available. Double click on each and every message or location. Place the break point. Execute SE38. Provide the program name. Click on display. Then the cursor is stops at right location.

Note: - By using CODE_SCANNR transaction also we identify the right location.

BDC **(Batch Data Conversion / Communication)**

BDC is used to upload the data from flat file to SAP system.



Develop a BDC program is nothing but to automate the existing transaction code. Each transaction can create only one record at a time. If you want to create the thousands of records, one way is execute the same transaction thousands of time. Another way is develop a BDC program to automate the existing transaction.

Steps of the standard transaction codes: -

1. XK01 / MK01 / FK01 → Create Vendor.
2. XD01 / VD01 / FD01 → Create Customer.
3. MM01 → Create Material
4. ME51N → Create Purchase Requisition
5. ME21N → Create Purchase Order
6. MB01 → Create Material Document
7. VA01 → Create Sales Order
8. VL01 → Create Delivery
9. VF01 → Create Billing
10. FI01 → Create Bank
11. KS01 → Create Cost Center
12. KE51N → Create Profit Center
13. FB01 → Create Accounting Document
14. CS01 → Create BOM (Bill of Material)
15. MSC1N → Create Batch
16. COR1 → Create Process Order
17. C201 → Create Recipe

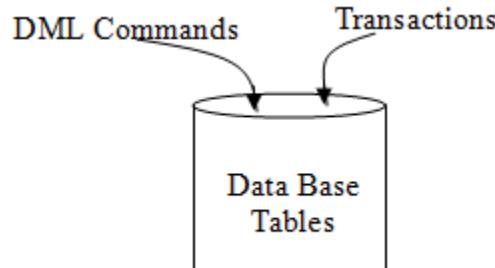
Note: - 1 → Create 2 → Change 3 → Display

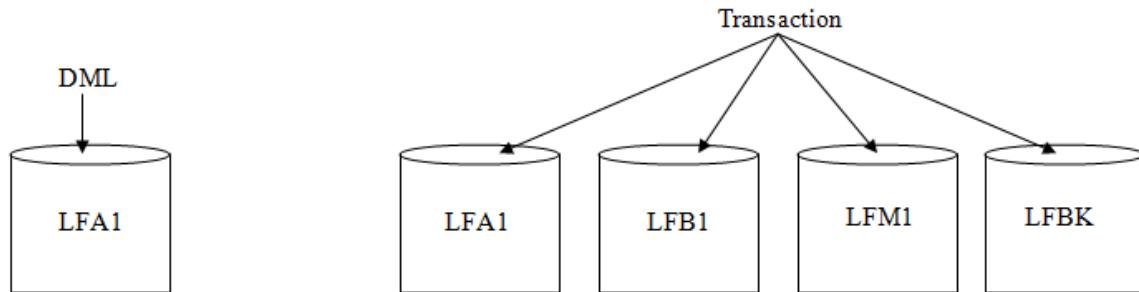
Steps to create a vendor : -

Execute XK01. Provide vendor number, account group. Click on enter. Provide the name, search term ½, country. Save.

Note: - We can perform the data base table operation either through DML commands or through Transaction codes.

DML commands are used to update only one data base table at a time, where as transaction code is used to update their relevant data base tables at a time.





Steps to develop the BDC program : -

1. Analyze the transaction code
 - Analyzing the screen as well as field details
2. Prepare the flat file.
3. Upload the data from flat file to internal table / BDC program.
4. For each record in the internal table, we collect the screen and field details to automate the transaction.
5. For each record in the internal table, call the transaction.

Steps in detail: -

Step 1: -

Analyzing the screen and field details is nothing but identifying the technical information of each screen and field. If you want to identify the technical information, execute the transaction. Place the cursor on input fields. Click on F1 button. Click on technical information. Identify the screen & field details. It's very difficult to identify the technical information of entire transaction. So we go for 'SHDB' transaction.

'SHDB' is the transaction code to collect the technical information of entire transaction (Do the recording).

Steps to Do The Recording : -

Execute 'SHDB'. Click on new recording in the application tool bar. Provide the recording name (any name). Provide the transaction code. Click on start recording or enter. Provide the vendor number, account group. Enter. Provide the name (any name), search term, country. Click on save.

Note: - When ever we click on save button recording will be stopped.

Note: - BDC_OKCODE is the last entry of any screen.

Note: - In the real time recording is provide by functional people either in development server or in quality server depends on the data availability.

Step 2: -

In the real time functional people or end users provide a sample file in the development server to test the BDC program.

Step 3: -

'UPLOAD' is the function module which is used to browse the file as well as upload the data from file to internal table. The input for the above functional module is

1. File type → 'DAT'
2. Data internal table which is similar as file.

Note: - In the real time instead of upload functional module we always use GUI_UPLOAD + F4_filename function module.

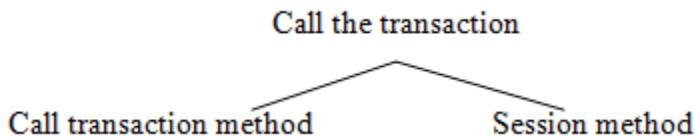
Step 4: -

Collect the screen & field details are nothing but fill an internal table which contains the following fields.

1. PROGRAM → Program name
2. DYNPRO → Screen number
3. DYNBEGIN → Starting position
4. FNAM → Field name
5. FVAL → Field value

Note: - In the DDIC we have one structure that is **BDCDATA** which contains above fields, so we simply declare our internal table by referring **BDCDATA** structure.

Step 5: -



Syntax of call transaction method: -

Call transaction ‘<Transaction code>’ using <BDCDATA internal table> mode ‘A/N/E’.

A → All screens

N → No screens

E → Error screens

→ **Develop a conversion program to upload the vendor master data from flat file to SAP system by using BDC call transaction method through XK01 transaction. The flat file contains vendor numbers, names and search terms.**

Step 1 (Do the record): -

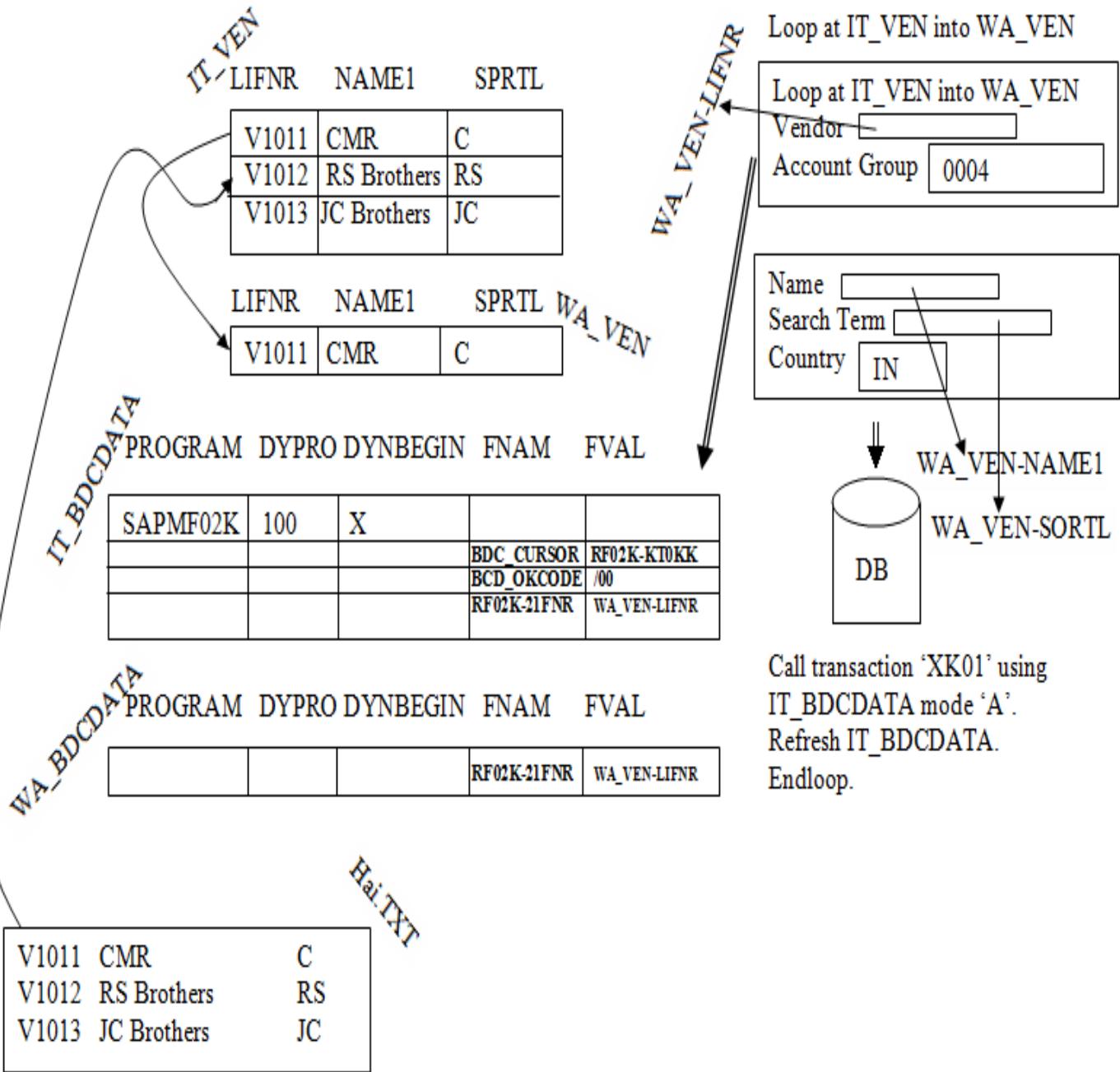
Execute ‘SHDB’. Click on new recording. Provide recording name (ZSXK01). Provide transaction code (XK01). Enter. Provide the vendor number (v1010), account group (0004). Enter. Provide the name (Big Bazar), search term (BB), country (IN). Save.

```
TYPES: BEGIN OF TY_VEN,
        LIFNR TYPE LFA1-LIFNR,
        NAME1 TYPE LFA1-NAME1,
        SORTL TYPE LFA1-SORTL,
        END OF TY_VEN.
DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.
DATA: WA_BDCDATA LIKE BDCDATA,
      IT_BDCDATA LIKE TABLE OF WA_BDCDATA.
* Upload the data.
CALL FUNCTION 'UPLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_VEN.
```

```

LOOP AT IT_VEN INTO WA_VEN.
WA_BDCDATA-PROGRAM = 'SAPMF02K'.
WA_BDCDATA-DYNPRO = '0100'.
WA_BDCDATA-DYNBEGIN = 'X'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_CURSOR'.
WA_BDCDATA-FVAL = 'RF02K-KT0KK'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_OKCODE'.
WA_BDCDATA-FVAL = '/00'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'RF02K-LIFNR'.
WA_BDCDATA-FVAL = WA_VEN-LIFNR.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'RF02K-KTOKK'.
WA_BDCDATA-FVAL = '0004'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
* 2nd screen and field details
WA_BDCDATA-PROGRAM = 'SAPMF02K'.
WA_BDCDATA-DYNPRO = '0110'.
WA_BDCDATA-DYNBEGIN = 'X'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_CURSOR'.
WA_BDCDATA-FVAL = 'LFA1-LAND1'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_OKCODE'.
WA_BDCDATA-FVAL = '=UPDA'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'LFA1-NAME1'.
WA_BDCDATA-FVAL = WA_VEN-NAME1.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'LFA1-SORTL'.
WA_BDCDATA-FVAL = WA_VEN-SORTL.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'LFA1-LAND1'.
WA_BDCDATA-FVAL = 'IN'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
CALL TRANSACTION 'XK01' USING IT_BDCDATA MODE 'A'.
REFRESH IT_BDCDATA.
ENDLOOP.

```



Call transaction 'XK01' using
IT_BDCDATA mode 'A'.
Refresh IT_BDCDATA.
Endloop.

→ Develop a conversion program to upload the customer number data from flat file to SAP system by using BDC Call transaction method through XD01 transaction. The flat file contains the customer numbers, names, search terms & street.

Do the recording: - Execute SHDB. Click on new recording in the application tool bar. Provide recording name (ZXD01), transaction code (XD01). Enter. Provide the customer number (12501), account group (0004). Enter. Provide the name (GMR INFRA LTD), search term (GMR), street (Ameerpet), country (IN), language key (EN). Save.

Steps to create a transaction code for BDC program: -

Execute SE93. Provide the transaction code [(zsbdc2) any name]. Click on create. Provide short description. Select the radio button program and selection screen. Enter. Provide the program name. Select the GUI check boxes. Click on save.

```

TYPES: BEGIN OF TY_CUS,
      KUNNR TYPE KNA1-KUNNR,
      NAME1 TYPE KNA1-NAME1,
      SORTL TYPE KNA1-SORTL,
      STRAS TYPE KNA1-STRAS,
      END OF TY_CUS.

DATA: WA_CUS TYPE TY_CUS,
      IT_CUS LIKE TABLE OF WA_CUS.

DATA: WA_BDCDATA LIKE BDCDATA,
      IT_BDCDATA LIKE TABLE OF WA_BDCDATA.

* UPLOAD THE DATA.

CALL FUNCTION 'UPLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_CUS.

LOOP AT IT_CUS INTO WA_CUS.

WA_BDCDATA-PROGRAM = 'SAPMF02D'.
WA_BDCDATA-DYNPRO = '0100'.
WA_BDCDATA-DYNBEGIN = 'X'.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

WA_BDCDATA-FNAM = 'BDC_CURSOR'.
WA_BDCDATA-FVAL = 'RF02D-KTOKD'.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

WA_BDCDATA-FNAM = 'BDC_OKCODE'.
WA_BDCDATA-FVAL = '/00'.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

WA_BDCDATA-FNAM = 'RF02D-KUNNR'.
WA_BDCDATA-FVAL = WA_CUS-KUNNR.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

WA_BDCDATA-FNAM = 'RF02D-KTOKD'.
WA_BDCDATA-FVAL = '0004'.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

* 2nd screen details

WA_BDCDATA-PROGRAM = 'SAPMF02D'.
WA_BDCDATA-DYNPRO = '0110'.
WA_BDCDATA-DYNBEGIN = 'X'.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

WA_BDCDATA-FNAM = 'BDC_CURSOR'.
WA_BDCDATA-FVAL = 'KNA1-SPRAS'.
APPEND WA_BDCDATA TO IT_BDCDATA.

CLEAR WA_BDCDATA.

WA_BDCDATA-FNAM = 'BDC_OKCODE'.
WA_BDCDATA-FVAL = '=UPDA'.
APPEND WA_BDCDATA TO IT_BDCDATA.

```

```

CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-NAME1'.
WA_BDCDATA-FVAL = WA_CUS-NAME1.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-SORTL'.
WA_BDCDATA-FVAL = WA_CUS-SORTL.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-STRAS'.
WA_BDCDATA-FVAL = WA_CUS-STRAS.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-LAND1'.
WA_BDCDATA-FVAL = 'IN'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-SPRAS'.
WA_BDCDATA-FVAL = 'EN'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.

CALL TRANSACTION 'XD01' USING IT_BDCDATA MODE 'A'.
REFRESH IT_BDCDATA.
ENDLOOP.

```

Differences between call transaction method & session method

Call transaction

1. Call transaction method can process only one transaction at a time.
2. In call transaction method we manually handle the errors.
3. This method is fast.
4. This is immediate data base updation.
5. This is suitable if the flat file contains less amount of data.
6. Background scheduling isn't possible in this method.
7. It returns the SY-SUBRC value.
8. Synchronous as well as asynchronous data base updation.
9. Synchronous process

Session Method

1. Session method can process any number of transactions at a time.
2. In this method an error log will be generated that will be handle the errors.
3. This method is slower.
4. In this method after processing the session through SM35 only data base is updated.
5. This is suitable if the flat file contains huge amount of data.
6. Background scheduling is possible in this session.
7. It can't return the SY-SUBRC value.
8. Synchronous data base updation
9. Asynchronous process

Steps to work with session method: -

1. Do the Recording.
2. Prepare flat file.
3. Upload the data from flat file to internal table.
4. Create the session by using 'BDC_OPEN_GROUP' function module.

The input for the above function module is

- i. GROUP → Name of the session, which is used to process the session.
 - ii. KEEP → Re maintain the session. After processing the session (Activate = 'X').
 - iii. HOLDDATE → The session is locked, until it reaches the hold date.
 - iv. USER → Valid user.
5. Loop at <Data internal table>.
-
-

Call the transaction by using 'BDC_INSERT' function module.

The input for the above function module is

- i. <TCODE>
- ii. <BDCDATA INTERNAL TABLE>

6. Close the session by using 'BDC_CLOSE_GROUP' function module.

→ Develop a conversion program to upload the customer master data from flat file to SAP system by using BDC session method. The flat file contains customer numbers, names, search terms, street.

Steps to process the session (after execution the program): -

Execute SM35. Select the session name. Click on process in the application tool bar. Click on process.

TYPES: BEGIN OF TY_CUS,

```
KUNNR TYPE KNA1-KUNNR,  
NAME1 TYPE KNA1-NAME1,  
SORTL TYPE KNA1-SORTL,  
STRAS TYPE KNA1-STRAS,  
END OF TY_CUS.
```

DATA: WA_CUS TYPE TY_CUS,

```
IT_CUS LIKE TABLE OF WA_CUS.
```

DATA: WA_BDCDATA LIKE BDCDATA,

```
IT_BDCDATA LIKE TABLE OF WA_BDCDATA.
```

*** UPLOAD THE DATA.**

CALL FUNCTION 'UPLOAD'

EXPORTING

```
FILETYPE = 'DAT'
```

TABLES

```
DATA_TAB = IT_CUS.
```

CALL FUNCTION 'BDC_OPEN_GROUP'

EXPORTING

```
GROUP      = 'DARLING'
```

*** HOLDDATE = FILLER8**

```
KEEP      = 'X'
```

```
USER      = SY-UNAME.
```

LOOP AT IT_CUS INTO WA_CUS.

```
WA_BDCDATA-PROGRAM = 'SAPMF02D'.
```

```
WA_BDCDATA-DYNPRO   = '0100'.
```

```
WA_BDCDATA-DYNBEGIN = 'X'.
```

```
APPEND WA_BDCDATA TO IT_BDCDATA.
```

```

CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_CURSOR'.
WA_BDCDATA-FVAL = 'RF02D-KTOKD'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_OKCODE'.
WA_BDCDATA-FVAL = '/00'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'RF02D-KUNNR'.
WA_BDCDATA-FVAL = WA_CUS-KUNNR.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'RF02D-KTOKD'.
WA_BDCDATA-FVAL = '0004'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
* 2nd screen details
WA_BDCDATA-PROGRAM = 'SAPMF02D'.
WA_BDCDATA-DYNPRO = '0110'.
WA_BDCDATA-DYNBEGIN = 'X'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_CURSOR'.
WA_BDCDATA-FVAL = 'KNA1-SPRAS'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'BDC_OKCODE'.
WA_BDCDATA-FVAL = '=UPDA'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-NAME1'.
WA_BDCDATA-FVAL = WA_CUS-NAME1.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-SORTL'.
WA_BDCDATA-FVAL = WA_CUS-SORTL.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-STRAS'.
WA_BDCDATA-FVAL = WA_CUS-STRAS.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-LAND1'.
WA_BDCDATA-FVAL = 'IN'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.
WA_BDCDATA-FNAM = 'KNA1-SPRAS'.
WA_BDCDATA-FVAL = 'EN'.
APPEND WA_BDCDATA TO IT_BDCDATA.
CLEAR WA_BDCDATA.

```

```

CALL FUNCTION 'BDC_INSERT'
  EXPORTING
    TCODE      = 'XD01'
  TABLES
    DYNPROTAB = IT_BDCDATA.
  REFRESH IT_BDCDATA.
ENDLOOP.

* Close the session
CALL FUNCTION 'BDC_CLOSE_GROUP'.

```

BNKA (Bank Master Table)

BANKS → Bank country key

BANKL → Bank key

BANKA → Bank name

Steps to create a bank: -

Execute FI01. Provide bank country key 'IN', bank key [any name (669111)]. Enter. Provide the bank name. Save.

→ Develop a conversion program to upload the vendor and customer master data from two flat files to SAP system by using BDC session method. The vendor flat files contain vendor numbers, names & search term, customer flat file contains customer numbers, customer names, search terms & street.

CALL FUNCTION 'UPLOAD' ← · · · ·

- 'DAT'
- IT_VEN.

CALL FUNCTION 'UPLOAD' ← · · · ·

- 'DAT'
- IT_CUS.

CALL FUNCTION 'BDC_OPEN_GROUP'

- GROUP = 'SPMT'
- KEEP = 'X'
- USER = SY-UNAME

LOOP AT IT_VEN INTO WA_VEN.

----- } Collect the screen and field details of vendor

CALL FUNCTION 'BDC_INSERT'

- 'XK01'
- IT_BDCDATA.

REFRESH IT_BDCDATA.

→ ENDLOOP.

LOOP AT IT_CUS INTO WA_CUS.

----- } Collect the screen and field details of vendor

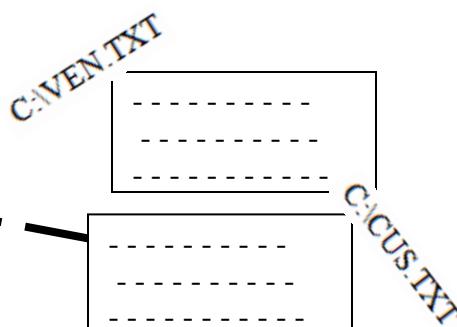
CALL FUNCTION 'BDC_INSERT'

- 'XD01'
- IT_BDCDATA.

REFRESH IT_BDCDATA.

→ ENDLOOP.

CALL FUNCTION 'BDC_CLOSE_GROUP'.



```

DATA: BDCDATA LIKE BDCDATA      OCCURS 0 WITH HEADER LINE.
TYPES: BEGIN OF TY_VEN,
       LIFNR TYPE LFA1-LIFNR,
       NAME1 TYPE LFA1-NAME1,
       SORTL TYPE LFA1-SORTL,
       END OF TY_VEN.
DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.

TYPES: BEGIN OF TY_CUS,
       KUNNR TYPE KNA1-KUNNR,
       NAME1 TYPE KNA1-NAME1,
       SORTL TYPE KNA1-SORTL,
       STRAS TYPE KNA1-STRAS,
       END OF TY_CUS.
DATA: WA_CUS TYPE TY_CUS,
      IT_CUS TYPE TABLE OF TY_CUS.

START-OF-SELECTION.
CALL FUNCTION 'UPLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_VEN.
CALL FUNCTION 'UPLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_CUS.

CALL FUNCTION 'BDC_OPEN_GROUP'
  EXPORTING
    GROUP      = 'DARLING2'
*    HOLDDATE   = FILLER8
    KEEP       = 'X'
    USER       = SY-UNAME.
LOOP AT IT_VEN INTO WA_VEN.
  perform bdc_dynpro      using 'SAPMF02K' '0100'.
  perform bdc_field       using 'BDC_CURSOR'
                           'RF02K-KTOKK'.
  perform bdc_field       using 'BDC_OKCODE'
                           '/00'.
  perform bdc_field       using 'RF02K-LIFNR'
                           WA_VEN-LIFNR.
  perform bdc_field       using 'RF02K-KTOKK'
                           '0004'.
  perform bdc_dynpro      using 'SAPMF02K' '0110'.
  perform bdc_field       using 'BDC_CURSOR'
                           'LFA1-LAND1'.
  perform bdc_field       using 'BDC_OKCODE'
                           '=UPDA'.

```

```

        perform bdc_field          using 'LFA1-NAME1'
                                         WA_VEN-NAME1.
        perform bdc_field          using 'LFA1-SORTL'
                                         WA_VEN-SORTL.
        perform bdc_field          using 'LFA1-LAND1'
                                         'KW'.

        CALL FUNCTION 'BDC_INSERT'
          EXPORTING
            TCODE      = 'XK01'
          TABLES
            DYNPROTAB = BDCDATA.
          REFRESH BDCDATA.
ENDLOOP.

LOOP AT IT_CUS INTO WA_CUS.
  perform bdc_dynpro    using 'SAPMF02D' '0100'.
  perform bdc_field     using 'BDC_CURSOR' 'RF02D-KTOKD'.
  perform bdc_field     using 'BDC_OKCODE' '/00'.
  perform bdc_field     using 'RF02D-KUNNR' WA_CUS-KUNNR.
  perform bdc_field     using 'RF02D-KTOKD' '0004'.
  perform bdc_dynpro    using 'SAPMF02D' '0110'.
  perform bdc_field     using 'BDC_CURSOR' 'KNA1-SPRAS'.
  perform bdc_field     using 'BDC_OKCODE' '=UPDA'.
  perform bdc_field     using 'KNA1-NAME1' WA_CUS-NAME1.
  perform bdc_field     using 'KNA1-SORTL' WA_CUS-SORTL.
  perform bdc_field     using 'KNA1-STRAS' WA_CUS-STRAS.
  perform bdc_field     using 'KNA1-LAND1' 'IN'.
  perform bdc_field     using 'KNA1-SPRAS' 'EN'.

  CALL FUNCTION 'BDC_INSERT'
    EXPORTING
      TCODE      = 'XD01'
    TABLES
      DYNPROTAB = BDCDATA.
    REFRESH BDCDATA.
ENDLOOP.
CALL FUNCTION 'BDC_CLOSE_GROUP'.

FORM BDC_DYNPRO USING PROGRAM DYNPRO.
CLEAR BDCDATA.
BDCDATA-PROGRAM = PROGRAM.
BDCDATA-DYNPRO   = DYNPRO.
BDCDATA-DYNBEGIN = 'X'.
APPEND BDCDATA.
ENDFORM.

FORM BDC_FIELD USING FNAM FVAL.
CLEAR BDCDATA.
BDCDATA-FNAM = FNAM.
BDCDATA-FVAL = FVAL.
APPEND BDCDATA.
ENDFORM.

```

→ Develop a conversion program to upload the bank details from flat file to SAP system by using BDC call transaction method through FI01 transaction. The flat file contains Bank country key, bank key & bank name.

Steps to do the recording:-

Execute SHDB. Click on new recording in the application tool bar. Provide recording name (ZSFI01), transaction code (FI01). Click on start recording. Provide bank country key, bank key. Enter. Provide the bank name. Save. Save the recording.

Steps to develop the program from recording:-

Execute SHDB. Select the recording name. click on program in the application tool bar. Provide the program name (ZSPR_930AM_BDC5). Select the radio button transfer from recording. Enter. Provide title. Select the status, application. Click on source code. Save in our own package.

```
DATA: BDCDATA LIKE BDCDATA OCCURS 0 WITH HEADER LINE.
```

```
TYPES: BEGIN OF TY_BANK,  
       BANKS TYPE BNKA-BANKS,  
       BANKL TYPE BNKA-BANKL,  
       BANKA TYPE BNKA-BANKA,  
       END OF TY_BANK.
```

```
DATA: WA_BANK TYPE TY_BANK,  
      IT_BANK TYPE TABLE OF TY_BANK.
```

```
START-OF-SELECTION.
```

```
  CALL FUNCTION 'UPLOAD'  
    EXPORTING  
      FILETYPE = 'DAT'  
    TABLES  
      DATA_TAB = IT_BANK.
```

```
LOOP AT IT_BANK INTO WA_BANK.
```

```
  perform bdc_dynpro      using 'SAPMF02B' '0100'.  
  perform bdc_field       using 'BDC_CURSOR'  
                           'BNKA-BANKL'.  
  perform bdc_field       using 'BDC_OKCODE'  
                           '/00'.  
  perform bdc_field       using 'BNKA-BANKS'  
                           WA_BANK-BANKS.  
  perform bdc_field       using 'BNKA-BANKL'  
                           WA_BANK-BANKL.  
  perform bdc_dynpro      using 'SAPMF02B' '0110'.  
  perform bdc_field       using 'BDC_CURSOR'  
                           'BNKA-BANKA'.  
  perform bdc_field       using 'BDC_OKCODE'  
                           '=UPDA'.  
  perform bdc_field       using 'BNKA-BANKA'  
                           WA_BANK-BANKA.
```

```
  CALL TRANSACTION 'FI01' USING BDCDATA MODE 'A'.  
  REFRESH BDCDATA.
```

```
ENDLOOP.
```

```
FORM BDC_DYNPRO USING PROGRAM DYNPRO.  
CLEAR BDCDATA.
```

```

BDCDATA-PROGRAM = PROGRAM.
BDCDATA-DYNPRO = DYNPRO.
BDCDATA-DYNBEGIN = 'X'.
APPEND BDCDATA.
ENDIFORM.

FORM BDC_FIELD USING FNAM FVAL.
CLEAR BDCDATA.
BDCDATA-FNAM = FNAM.
BDCDATA-FVAL = FVAL.
APPEND BDCDATA.
ENDIFORM.

```

→ Develop a conversion program to upload the vendor city from flat file to SAP system by using BDC call transaction method through XK02 transaction. The flat file contains vendor numbers and city.

Steps to do the recording: -

Execute SHDB. Click on new recording in the application tool bar. Provide the recording name, transaction code (XK02). Enter. Provide existing vendor number (V1011). Select the address checkbox. Enter. Provide the city. Save.

Note: - When ever we are working with update transaction then we must remove the other than flat file fields recording steps from recording by using minus (-) symbol in the application tool bar.

Here we remove the NAME1, SORTL, LAND1 steps.

```

DATA: BDCDATA LIKE BDCDATA OCCURS 0 WITH HEADER LINE.
TYPES: BEGIN OF TY_VC,
        LIFNR TYPE LFA1-LIFNR,
        ORT01 TYPE LFA1-ORT01,
        END OF TY_VC.
DATA: WA_VC TYPE TY_VC,
      IT_VC TYPE TABLE OF TY_VC.

start-of-selection.
  CALL FUNCTION 'UPLOAD'
    EXPORTING
      FILETYPE = 'DAT'
    TABLES
      DATA_TAB = IT_VC.

LOOP AT IT_VC INTO WA_VC.
  perform bdc_dynpro      using 'SAPMF02K' '0101'.
  perform bdc_field       using 'BDC_CURSOR'
                           'RF02K-D0110'.
  perform bdc_field       using 'BDC_OKCODE'
                           '/00'.
  perform bdc_field       using 'RF02K-LIFNR'
                           WA_VC-LIFNR.
  perform bdc_field       using 'RF02K-D0110'

```

```

          'X'.
perform bdc_dynpro      using 'SAPMF02K' '0110'.
perform bdc_field       using 'BDC_CURSOR'
                           'LFA1-ORT01'.
perform bdc_field       using 'BDC_OKCODE'
                           '=UPDA'.
perform bdc_field       using 'LFA1-ORT01'
                           WA_VC-ORT01.
perform bdc_field       using 'LFA1-LAND1'
                           'IN'.

CALL TRANSACTION 'XK02' USING BDCDATA MODE 'A'.
REFRESH BDCDATA.
ENDLOOP.

FORM BDC_DYNPRO USING PROGRAM DYNPRO.
CLEAR BDCDATA.
BDCDATA-PROGRAM = PROGRAM.
BDCDATA-DYNPRO = DYNPRO.
BDCDATA-DYNBEGIN = 'X'.
APPEND BDCDATA.
ENDFORM.

FORM BDC_FIELD USING FNAM FVAL.
CLEAR BDCDATA.
BDCDATA-FNAM = FNAM.
BDCDATA-FVAL = FVAL.
APPEND BDCDATA.
ENDFORM.

```

Handle the error in call transaction method: -

1. By using 'FORMAT_MESSAGE' function module
2. Handling the errors through SESSION method

FORMAT_MESSAGE is the function module which is used to handle the errors in call transaction method. The input for the above function module is

1. Message id
2. Message number
3. Message1
4. Message2
5. Message3
6. Message4
7. language

The output for the above function module is 'Meaningful message'.

Syntax of call transaction: -

Call transaction '<TCODE>' using <BDCDATA Internal table> mode 'A/N/E' messages into <BDCMSGCOLL Internal table>.

The call transaction method written the success or failure information into BDCMSGCOLL Internal table.
Some of the fields in BDCMSGCOLL Internal table: -

1. MSGID → Message ID
2. MSGNR → Message number
3. MSGV1 → Message1
4. MSGV2 → Message2

5. MSGV3 → Message3
6. MSGV4 → Message4

Note: - In the DDIC, we have one structure. i.e. BDCMSGCOLL, which contains above fields. So we simply declare our internal table by referring BDCMSGCOLL structure.

Note: - When ever we are handling the errors in call transaction method then we must provide mode is 'N'.

→ Develop a conversion program to upload the vendor master data from flat file to SAP system by using BDC call transaction method & also download the error messages (handling the errors). The flat file contains vendor numbers, account groups, name & search term.

```
DATA: BDCDATA LIKE BDCDATA      OCCURS 0 WITH HEADER LINE.
```

```
TYPES: BEGIN OF TY_VEN,
       LIFNR TYPE LFA1-LIFNR,
       KTOKK TYPE LFA1-KTOKK,
       NAME1 TYPE LFA1-NAME1,
       SORTL TYPE LFA1-SORTL,
       END OF TY_VEN.
```

```
DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.
```

```
DATA: BEGIN OF WA_ERROR,
      LNO TYPE SYTABIX,
      MSG(100) TYPE C,
      END OF WA_ERROR.
```

```
DATA IT_ERROR LIKE TABLE OF WA_ERROR.
```

```
DATA: WA_BMC LIKE BDCMSGCOLL,
      IT_BMC LIKE TABLE OF WA_BMC.
```

```
DATA V_MSG(100) TYPE C.
```

```
start-of-selection.
```

```
  CALL FUNCTION 'UPLOAD'
    EXPORTING
      FILETYPE = 'DAT'
    TABLES
      DATA_TAB = IT_VEN.
```

```
LOOP AT IT_VEN INTO WA_VEN.
```

```
  WA_ERROR-LNO = SY-TABIX.
  perform bdc_dynpro      using 'SAPMF02K' '0100'.
  perform bdc_field       using 'BDC_CURSOR'
                           'RF02K-KTOKK'.
  perform bdc_field       using 'BDC_OKCODE'
                           '/00'.
  perform bdc_field       using 'RF02K-LIFNR'
                           WA_VEN-LIFNR.
  perform bdc_field       using 'RF02K-KTOKK'
                           WA_VEN-KTOKK.
  perform bdc_dynpro      using 'SAPMF02K' '0110'.
  perform bdc_field       using 'BDC_CURSOR'
                           'LFA1-LAND1'.
  perform bdc_field       using 'BDC_OKCODE'
```

```

        '=UPDA'.
perform bdc_field      using 'LFA1-NAME1'
                           WA_VEN-NAME1.
perform bdc_field      using 'LFA1-SORTL'
                           WA_VEN-SORTL.
perform bdc_field      using 'LFA1-LAND1'
                           'IN'.

CALL TRANSACTION 'XK01' USING BDCDATA MODE 'N' MESSAGES INTO
IT_BMC.

IF SY-SUBRC <> 0.
LOOP AT IT_BMC INTO WA_BMC.

CALL FUNCTION 'FORMAT_MESSAGE'
EXPORTING
  ID      = WA_BMC-MSGID
  LANG    = SY-LANGU
  NO      = WA_BMC-MSGNR
  V1      = WA_BMC-MSGV1
  V2      = WA_BMC-MSGV2
  V3      = WA_BMC-MSGV3
  V4      = WA_BMC-MSGV4
IMPORTING
  MSG     = V_MSG.
IF SY-SUBRC = 0.
  WA_ERROR-MSG = V_MSG.
  APPEND WA_ERROR TO IT_ERROR.
  CLEAR WA_ERROR.
ENDIF.
ENDLOOP.
ENDIF.
REFRESH: BDCDATA, IT_BMC.
ENDLOOP.

CALL FUNCTION 'DOWNLOAD'
EXPORTING
  FILETYPE = 'DAT'
TABLES
  DATA_TAB = IT_ERROR.

FORM BDC_DYNPRO USING PROGRAM DYNPRO.
CLEAR BDCDATA.
BDCDATA-PROGRAM = PROGRAM.
BDCDATA-DYNPRO   = DYNPRO.
BDCDATA-DYNBEGIN = 'X'.
APPEND BDCDATA.
ENDFORM.

```

C:\VEN\TXT

H5050	---	BIGBAZAR	---
H5051	004	CMR	CMR
H5052	---	RS BROTH	RS

IT_BMC

MSGIO	MSGNR	MSGV1	MSGV2	MSGV3	MSGV4
191	705	Account	Group	Is	Missed

WA_BMC

MSGIO	MSGNR	MSGV1	MSGV2	MSGV3	MSGV4
191	705	Account	Group	Is	Missed

V_MSG

Account group is missed

WA_ERROR

LNO	MSG
1	Account group is missed

IT_ERROR

LNO	MSG
1	Account group is missed
1	Search term is missed
2	Account group is missed

Handling the errors through session method: -

Call function 'BDC_OPEN_GROUP'

- GROUP = 'HE'
- KEEP = 'X'
- USER = SY-UNAME.

LOOP AT IT_VEN INTO WA_VEN.

Call transaction 'XK01' using IT_BDCDATA mode 'N'.

If SY-SUBRC <> 0.

CALL FUNCTION 'BDC_INSERT'

- 'XK01'
- IT_BDCDATA.

ENDIF.

REFRESH IT_BDCDATA.

ENDLOOP.

CALL FUNCTION 'BDC_CLOSE_GROUP'.

After, we execute the program, we process the session 'HE' through 'SM35' in background & observe the error log.

```
DATA: BDCDATA LIKE BDCDATA      OCCURS 0 WITH HEADER LINE.
```

```
TYPES: BEGIN OF TY_VEN,
```

```
    LIFNR TYPE LFA1-LIFNR,
```

```
    KTOKK TYPE LFA1-KTOKK,
```

```
    NAME1 TYPE LFA1-NAME1,
```

```
    SORTL TYPE LFA1-SORTL,
```

```
END OF TY_VEN.
```

```

DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.

start-of-selection.
  CALL FUNCTION 'UPLOAD'
    EXPORTING
      FILETYPE = 'DAT'
    TABLES
      DATA_TAB = IT_VEN.

  CALL FUNCTION 'BDC_OPEN_GROUP'
    EXPORTING
      GROUP      = 'DARLING3'
*     HOLDDATE  = FILLER8
      KEEP       = 'X'
      USER       = SY-UNAME.

LOOP AT IT_VEN INTO WA_VEN.
  perform bdc_dynpro      using 'SAPMF02K' '0100'.
  perform bdc_field       using 'BDC_CURSOR'
                                'RF02K-KTOKK'.
  perform bdc_field       using 'BDC_OKCODE'
                                '/00'.
  perform bdc_field       using 'RF02K-LIFNR'
                                WA_VEN-LIFNR.
  perform bdc_field       using 'RF02K-KTOKK'
                                WA_VEN-KTOKK.
  perform bdc_dynpro      using 'SAPMF02K' '0110'.
  perform bdc_field       using 'BDC_CURSOR'
                                'LFA1-LAND1'.
  perform bdc_field       using 'BDC_OKCODE'
                                '=UPDA'.
  perform bdc_field       using 'LFA1-NAME1'
                                WA_VEN-NAME1.
  perform bdc_field       using 'LFA1-SORTL'
                                WA_VEN-SORTL.
  perform bdc_field       using 'LFA1-LAND1'
                                'IN'.

CALL TRANSACTION 'XK01' USING BDCDATA MODE 'N'.
IF SY-SUBRC <> 0.
  CALL FUNCTION 'BDC_INSERT'
    EXPORTING
      TCODE      = 'XK01'
    TABLES
      DYNPROTAB = BDCDATA.
ENDIF.
REFRESH BDCDATA.
ENDLOOP.
CALL FUNCTION 'BDC_CLOSE_GROUP'.

```

Session over view (SM35): -

Analysis: -

This is used to identify the number of transactions are available in the session and their status and also this is used to identify the screens & fields information.

Process: -

This is used to process the session either in foreground or background or error mode.

Statistics: -

This is used to identify the quick information of the session. I.e. how many transactions are successfully processed how many are deleted. How many are still to be process.

Log: -

This is used to identify the each & every step of entire session processing.

Recording:-

This is used to cal the SHDB transaction code.

Delete: -

This is used to delete the sessions from the session overview.

Lock: -

This is used to lock the session until a particular date.

Unlock: -

This is used to unlock the session which is already locked.

Syntax of concatenate: -

Concatenate <variable1> <variable2> ---- into <variable3> separated by '<delimiter>'.

Ex: -

```
Data A(10) type C value 'SPRAO'.
Data B(20) type C value 'TECH'.
Data C(30) type C.
Concatenate A B into C separated by ' '.
Write C.
O/P → SPRAO TECH
```

Ex: -

```
Data A(2) type C.
Data R(20) type C.
A = 01.
Concatenate 'SPRAO(' A ')' into R.
Write R.
O/P → SPRAO(1)
```

Note: - Concatenate is only possible for character data types (C, N, D, T) not for numeric data type (I, F, P).

Syntax of Split: -

Split <variable1> at '<delimiter>' into <variable1> <variable2> -----

Ex: -

```
Data A(30) type C value 'SPRAO TECH'.
Data B(10) type C.
Data C(20) type C.
Split A at ' ' into B C.
Write:/ B, C.
```

O/P → SPRAO TECH

Ex: -

```
Data V(30) type C value '1000, TCS, HYD'.
Data: V1(4) type C,
      V2(4) type C,
      V3(4) type C.
Split V at ',' into V1 V2 V3.
Write:/ V1, V2, V3.
O/P → 1000 TCS HYD
```

→ Based on the given vendor numbers, display the vendor numbers, vendor names & cities as shown in the below. If the user clicks on update button then we update the vendor cities of selected checkbox by using BDC call transaction method through 'XK02' transaction method.

UPDATE

<input checked="" type="checkbox"/>	V1010	BIGBAZAR	<u>HYD</u>	PUN
<input type="checkbox"/>	V1011	RS BROTH	<u>CHE</u>	
<input checked="" type="checkbox"/>	V1012	CMR	<u>BAN</u>	MUM

```
DATA: BDCDATA LIKE BDCDATA      OCCURS 0 WITH HEADER LINE.
```

```
DATA V TYPE SYLINNO.
```

```
TABLES LFA1.
```

```
SELECT-OPTIONS S_LIFNR FOR LFA1-LIFNR.
```

```
DATA: A, B.
```

```
TYPES: BEGIN OF TY_VEN,
       LIFNR TYPE LFA1-LIFNR,
       NAME1 TYPE LFA1-NAME1,
       ORT01 TYPE LFA1-ORT01,
       END OF TY_VEN.
```

```
DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.
```

```
DATA: BEGIN OF WA,
      LIFNR TYPE LFA1-LIFNR,
      ORT01 TYPE LFA1-ORT01,
      END OF WA.
```

```
DATA IT LIKE TABLE OF WA.
```

```
SELECT LIFNR NAME1 ORT01 FROM LFA1 INTO TABLE IT_VEN WHERE LIFNR IN
S_LIFNR.
```

```
LOOP AT IT_VEN INTO WA_VEN.
```

```
WRITE:/ A AS CHECKBOX, WA_VEN-LIFNR, WA_VEN-NAME1, WA_VEN-ORT01 INPUT.
```

```
ENDLOOP.
```

```
V = SY-LINNO.
```

```
SET PF-STATUS 'STAT'.
```

```
AT USER-COMMAND.
```

```
IF SY-UCOMM = 'UPD'.
```

```
DO V TIMES.
```

```
READ LINE SY-INDEX FIELD A INTO B
      WA_VEN-LIFNR INTO WA-LIFNR
      WA_VEN-ORT01 INTO WA-ORT01.
```

```

IF B = 'X'.
APPEND WA TO IT.
CLEAR WA.
ENDIF.
ENDDO.

LOOP AT IT INTO WA.
perform bdc_dynpro      using 'SAPMF02K' '0101'.
perform bdc_field        using 'BDC_CURSOR'  'RF02K-LIFNR'.
perform bdc_field        using 'BDC_OKCODE'   '/00'.
perform bdc_field        using 'RF02K-LIFNR'  WA-LIFNR.
perform bdc_field        using 'RF02K-D0110' 'X'.
perform bdc_dynpro      using 'SAPMF02K' '0110'.
perform bdc_field        using 'BDC_CURSOR'  'LFA1-ORT01'.
perform bdc_field        using 'BDC_OKCODE'   '=UPDA'.
perform bdc_field        using 'LFA1-ORT01'  WA-ORT01.

```

```

CALL TRANSACTION 'XK02' USING BDCDATA MODE 'A'.
REFRESH BDCDATA.
ENDLOOP.
ENDIF.

```

```

FORM BDC_DYNPRO USING PROGRAM DYNPRO.
=====
ENDFORM.

FORM BDC_FIELD USING FNAM FVAL.
=====
ENDFORM.

```

Note: - When ever we are working with conversion program if the flat file contains date field then we must consider as char 10 in the data internal table if the flat file contains quantity & amount fields then we must consider as char 15 in the data internal table.

→ Develop a conversion program to upload the cost center master data from flat file to SAP system by using BDC call transaction method through KS01 transaction. The flat file contains controlling area, cost center number, from date, to date, name, person responsible.

Steps to do the recording: -

Execute SHDB. Click on new recording in the application toolbar. Provide the recording name (SKS01). Provide the transaction code (KS01). Enter. Provide controlling area (6000), provide the cost center (15440), provide the from date (26.01.2015), to date (31.01.2015). Enter. Provide the name (SPRAO TECH), person responsible (venkat). Select the cost center category (5), hierarchical area 1000, business area (0001), save. Enter. [CSKS (Cost center master data), CSKT (Cost center description table)].

Data: BDCDATA like BDCDATA OCCURS 0 WITH HEADERLINE.

Types: Begin of ty_cost,

- KOKRS type CSKS-KOKRS,
- KOSTL type CSKS-KOSTL,
- VFD(10) type C,
- VTD(10) type C,
- KTEXT type CSKT-KTEXT,
- VERAK type CSKS-VERAK,

End of ty_cost.
 Data: wa_cost type ty_cost,
 It_cost type table of ty_cost.
 Start-of-selection.
 Call function 'UPLOAD'
 Exporting
 FILETYPE = 'DAT'
 Tables
 DATA_TAB = IT_COST.
 Loop at it_cost into wa_cost.
 ======
 Perform bdc_field using 'CSKSZ-KOKRS' WA_COST-KOKRS.
 Perform bdc_field using 'CSKSZ-KOSTL' WA_COST-KOSTL.
 Perform bdc_field using 'CSXSZ-DATAB_ANFO' WA_COS-VFD.
 Perform bdc_field using 'CSKSZ-DATB1_ANFO' WA_COST-VTD.
 ======
 Perform bdc_field using 'CSKSZ-KTEXT' WA_COST-KTEXT.
 Perform bdc_field using 'CSKSZ-VERAK' WA_COST-VERAK.
 ======
 Call transaction 'KS01' using BDCDATA mode 'A'.
 Refresh BDCDATA.
 Endloop.
 Form BDC-DYNPRO using program DYNPRO.
 ======
 Endform.
 Form BDC_FIELD using FNAM FVAL.
 ======
 Endform.

LFBK (Vendor Bank Table)

LFINR → Vendor number
 BANKS → Bank County Key
 BANKL → Bank key
 BANKN → Account Number

KNBK (Customer Bank Table)

KUNNR → Customer
 BANKS → Bank Country Key
 BANKL → Bank Key
 BANKN → Account number

→ Upload the vendor & vendor bank details from a single flat file to two internal tables. The vendor & vendor bank details are differentiated with V & B. the vendor details are in the flat file vendor numbers, names & search terms. In the flat file bank details are vendor numbers bank country keys bank keys & bank names.

```

DATA V1.
TYPES: BEGIN OF TY_VEN,
        LIFNR TYPE LFA1-LIFNR,
        NAME1 TYPE LFA1-NAME1,
        SORTL TYPE LFA1-SORTL,
      END OF TY_VEN.
  
```

```
DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.
```

```
TYPES: BEGIN OF TY_BANK,
        LIFNR TYPE LFBK-LIFNR,
        BANKS TYPE LFBK-BANKS,
        BANKL TYPE LFBK-BANKL,
        BANKN TYPE LFBK-BANKN,
        END OF TY_BANK.
```

```
DATA: WA_BANK TYPE TY_BANK,
      IT_BANK TYPE TABLE OF TY_BANK.
```

```
DATA: BEGIN OF WA,
      ROW(100) TYPE C,
      END OF WA.
```

```
DATA IT LIKE TABLE OF WA.
```

```
CALL FUNCTION 'UPLOAD'
  EXPORTING
```

```
    FILETYPE = 'DAT'
```

```
  TABLES
```

```
    DATA_TAB = IT.
```

```
LOOP AT IT INTO WA.
```

```
IF WA-ROW+0(1) = 'V'.
```

```
  SPLIT WA-ROW AT ',' INTO V1 WA_VEN-LIFNR WA_VEN-NAME1 WA_VEN-SORTL.
```

```
  APPEND WA_VEN TO IT_VEN.
```

```
  CLEAR WA_VEN.
```

```
ELSE.
```

```
  SPLIT WA-ROW AT ',' INTO V1
```

```
WA_BANK-LIFNR WA_BANK-BANKS WA_BANK-
BANKL WA_BANK-BANKN.
```

```
  APPEND WA_BANK TO IT_BANK.
```

```
  CLEAR WA_BANK.
```

```
ENDIF.
```

```
ENDLOOP.
```

```
LOOP AT IT_VEN INTO WA_VEN.
```

```
  WRITE:/ WA_VEN-LIFNR, WA_VEN-NAME1, WA_VEN-SORTL.
```

```
ENDLOOP.
```

```
ULINE.
```

```
LOOP AT IT_BANK INTO WA_BANK.
```

```
  WRITE:/ WA_BANK-LIFNR, WA_BANK-BANKS, WA_BANK-BANKL, WA_BANK-BANKN.
```

```
ENDLOOP.
```

V1
B

WA
B, H9093, IN, 121212, 1010101010

LIFNR	NAME1	SORTL
H9091	BIG BAZAR	BB
H9092	CMR	CMR
H9093	RS BROTHERS	RS

--	--	--

LIFNR	BANKS	BANKL	BANKN
H9091	IN	121212	100786116
H9091	IN	121214	421140015
H9093	IN	121212	1010101010

LIFNR	BANKS	BANKL	BANKN

V, H9091, BIGBAZAR, BB
 V, H9092, CMR, CMR
 V, H9093, RS BROTHERS, RS
 B, H9091, IN, 121212, 100786116
 B, H9091, IN, 121214, 421140015
 B, H9093, IN, 121212, 1010101010

V, H9091, BIGBAZAR, BB
V, H9092, CMR, CMR
V, H9093, RS BROTHERS, RS
B, H9091, IN, 121212, 100786116
B, H9091, IN, 121214, 421140015
B, H9093, IN, 121212, 1010101010

LIFNR	BANKS	BANKL	BANKN

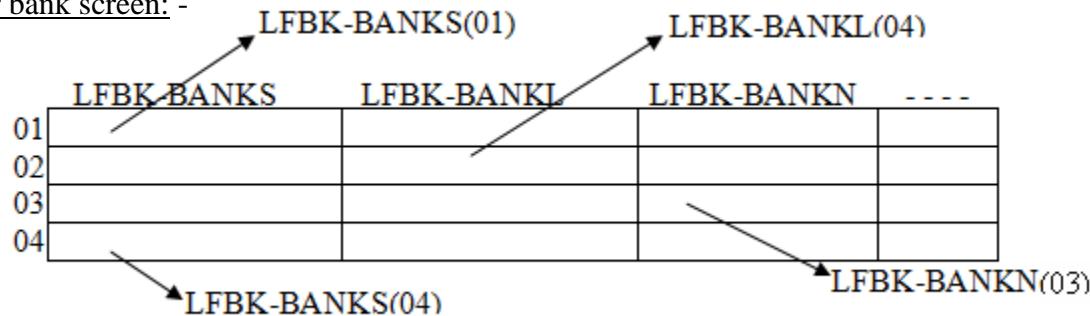
WA_BANK

BDC table control:-

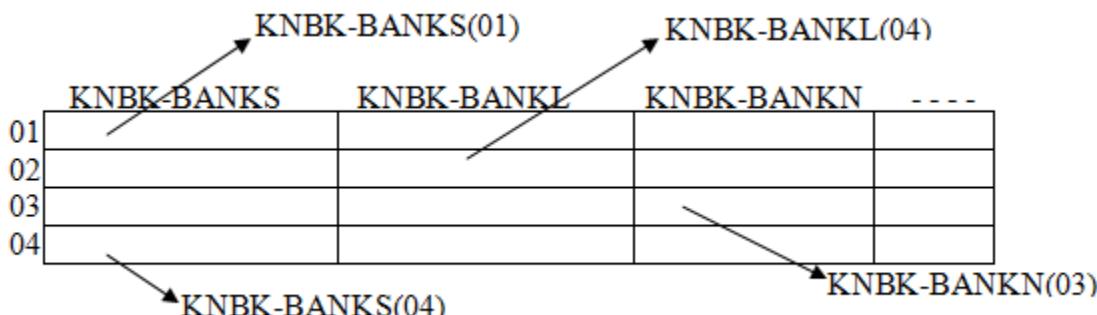
When ever we upload the multiple records in a tabular format for a single transaction then it's called bdc table control.

When ever we upload the vendor bank details, customer bank details then we go for bdc table control. Because one vendor having any number of bank details in a tabular format & customer also having any number of bank details in a tabular format.

Vendor bank screen: -



Customer bank screen: -



→ Develop a conversion program to upload the vendor bank details from flat file to sap system by using BDC call transaction method through XK01 transaction. Flat file contains vendor & vendor bank details with separation at V and B. the vendor details are vendor number, name & search terms. The bank details are vendor number, bank country key, bank key & account number.

Steps to do the recording: -

Execute SHDB. Click on new recording in the application tool bar. Provide recording name (SXK01), transaction code (XK01). Enter. Provide vendor number (H9080), account group (0004). Enter. Provide the name (power grid). Search term (pg), country (IN). Enter. Third screen we no need to provide information. Enter. In 4th screen provide the details.

CTRY BANK KEY BANK ACCOUNT

IN	111111	1234567890
IN	111112	9876543210

Must exist in BNKA table

Click on Save.

```
DATA: BDCDATA LIKE BDCDATA      OCCURS 0 WITH HEADER LINE.
DATA V2 TYPE N.
DATA V_FNAME(20) TYPE C.
DATA V1.
TYPES: BEGIN OF TY_VEN,
        LIFNR TYPE LFA1-LIFNR,
        NAME1 TYPE LFA1-NAME1,
        SORTL TYPE LFA1-SORTL,
        END OF TY_VEN.
DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.

TYPES: BEGIN OF TY_BANK,
        LIFNR TYPE LFBK-LIFNR,
        BANKS TYPE LFBK-BANKS,
        BANKL TYPE LFBK-BANKL,
        BANKN TYPE LFBK-BANKN,
        END OF TY_BANK.
DATA: WA_BANK TYPE TY_BANK,
      IT_BANK TYPE TABLE OF TY_BANK.

DATA: BEGIN OF WA,
      ROW(100) TYPE C,
      END OF WA.
DATA IT LIKE TABLE OF WA.

START-OF-SELECTION.
  CALL FUNCTION 'UPLOAD'
    EXPORTING
      FILETYPE = 'DAT'
    TABLES
      DATA_TAB = IT.
  LOOP AT IT INTO WA.
    IF WA-ROW+0(1) = 'V'.
      SPLIT WA-ROW AT ',' INTO V1 WA_VEN-LIFNR WA_VEN-NAME1 WA_VEN-
      SORTL.
      APPEND WA_VEN TO IT_VEN.
      CLEAR WA_VEN.
    ELSE.
      SPLIT WA-ROW AT ',' INTO V1 WA_BANK-LIFNR WA_BANK-BANKS WA_BANK-
      BANKL WA_BANK-BANKN.
      APPEND WA_BANK TO IT_BANK.
      CLEAR WA_BANK.
    ENDIF.
  ENDLOOP.

* First screen
LOOP AT IT_VEN INTO WA_VEN.
  perform bdc_dynpro      using 'SAPMF02K' '0100'.
  perform bdc_field       using 'BDC_CURSOR'
```

```

                    'RF02K-KTOKK'.
perform bdc_field      using 'BDC_OKCODE'
                     '/00'.
perform bdc_field      using 'RF02K-LIFNR'
                     WA_VEN-LIFNR.
perform bdc_field      using 'RF02K-KTOKK'
                     '0004'.

* SECOND SCREEN
perform bdc_dynpro    using 'SAPMF02K' '0110'.
perform bdc_field      using 'BDC_CURSOR'
                     'LFA1-LAND1'.
perform bdc_field      using 'BDC_OKCODE'
                     '/00'.
perform bdc_field      using 'LFA1-NAME1'
                     WA_VEN-NAME1.
perform bdc_field      using 'LFA1-SORTL'
                     WA_VEN-SORTL.
perform bdc_field      using 'LFA1-LAND1'
                     'IN'.

*THIRD SCREEN
perform bdc_dynpro    using 'SAPMF02K' '0120'.
perform bdc_field      using 'BDC_CURSOR'
                     'LFA1-KUNNR'.
perform bdc_field      using 'BDC_OKCODE'
                     '/00'.

* FOURTH SCREEN
perform bdc_dynpro    using 'SAPMF02K' '0130'.
perform bdc_field      using 'BDC_CURSOR'
                     'LFBK-BANKN(02)'.
perform bdc_field      using 'BDC_OKCODE'
                     '=UPDA'.

LOOP AT IT_BANK INTO WA_BANK WHERE LIFNR = WA_VEN-LIFNR.
V2 = V2 + 1.
CONCATENATE 'LFBK-BANKS(' V2 ')' INTO V_FNAM.

perform bdc_field      using V_FNAM WA_BANK-BANKS.

CONCATENATE 'LFBK-BANKL(' V2 ')' INTO V_FNAM.

perform bdc_field      using V_FNAM WA_BANK-BANKL.

CONCATENATE 'LFBK-BANKN(' V2 ')' INTO V_FNAM.

perform bdc_field      using V_FNAM WA_BANK-BANKN.
ENDLOOP.
CLEAR V2.
CALL TRANSACTION 'XK01' USING BDCDATA MODE 'A'.
REFRESH BDCDATA.
ENDLOOP.

FORM BDC_DYNPRO USING PROGRAM DYNPRO.

```

```

CLEAR BDCDATA.
BDCDATA-PROGRAM = PROGRAM.
BDCDATA-DYNPRO = DYNPRO.
BDCDATA-DYNBEGIN = 'X'.
APPEND BDCDATA.
ENDFORM.

FORM BDC_FIELD USING FNAM FVAL.
CLEAR BDCDATA.
BDCDATA-FNAM = FNAM.
BDCDATA-FVAL = FVAL.
APPEND BDCDATA.
ENDFORM.

```

Over view:

Data v2(2) type N.

Data v_fnam(20) type c.

Loop at it_ven into wa_ven.

----- } 1st screen & field details
----- }

----- } 2nd screen & field details
----- }

----- } 3rd screen & field details
----- }

----- } 4th screen, OK_CODE & CURSOR details
----- }

Loop at it_bank into wa_bank where lifnr = wa_ven-lifnr.

V2 = V2 + 1.

Concatenate 'LFBK-BANKS(' V2 ')' into V_FNAM WA_BANK-BANKS.

Concatenate 'LFBK-BANKL(' V2 ')' into V_FNAM WA_BANK-BANKL.

Concatenate 'LFBK-BANKN(' V2 ')' into V_FNAM WA_BANK-BANKN.

	LFBK-BANKS	LFBK-BANKL	LFBK-BANKN
01	IN	121212	1010101010
02			
03			
04			

Endloop.

Clear V2.

Call transaction 'XK01' using BDCDATA mode 'A'.

Refresh BDCDATA.

Endloop.

V_FNAM

LFBK-BANKN(01)

➔ Develop a conversion program to upload the customer bank details flat file to SAP system by using 'XD01' transaction code. The flat file contains both customer & bank details with separation of C & B. In the flat file customer details are customer numbers, names, search term, street. In the flat file bank details are customer numbers, bank country key, bank key & account number.

Execute SHDB. Click on new recording. Provide recording name (SXD01_TBC), transaction code (XD01). Enter. Provide the customer number (65432), account group (0004). Enter. Provide the name (Coal India), search term (CI), street (Ameerpet), country (IN), language (EN). Enter. Third screen we no need to provide any details. Enter. 4th screen we no need to enter any details. Enter. Provide the bank details.

Ctry	Bank key	Bank account
IN	121213	15151515
IN	121212	2525252525

KUNNR	NAME1	SORTL	STRAS
65432	GMR	G	SR NAGAR
65433	GVK	GVK	BG

Save. Click on save.

Loop at It_cus into wa_cus.

-----} First screen & field details.

-----} Second screen & field details.

-----} Third screen & field details.

-----} Fourth screen & field details.

-----} Fifty screen & CURSOR, OK_CODE details.

KUNNR	NAME1	SORTL	STRAS

KUNN	BANKS	BANKL	BANKN
65432	IN	121212	1919191919
65433	IN	121212	2525151515
65433	IN	121213	1515152525

KUNNR	BANKS	BANKL	BANKN

Loop at it_bank into wa_bank where kunnr = wa_cus-kunrn.

V2 = V2 + 1.

Concatenate 'KNBK-BANKS(' V2 ')' into V_FNAM WA_BANK-BANKS.

Concatenate 'KNBK-BANKL(' V2 ')' into V_FNAM WA_BANK-BANKL

Concatenate 'KNBK-BANKN' V2 ')' into V_FNAM WA_BANK-BANKN

KNBK-BANKS	KNBK-BANKL	KNBK-BANKN
01 IN	121212	15151515
02 IN	121212	2525252525
03		

Endloop.

Clear V2.

Call transaction 'XD01' using BDCDATA mode 'A'.

Refresh BDCDATA.

Endloop.

C,65432,GMR,G,SR NAGAR
C,65433,GVK,GV,BG
B,65432,IN,12121,1919191919
B,65433,IN,121212,2525151515
B,65433,IN,121213,1515152525

Note: - At the time of session processing through SM35 the following commands are used.

'/n' – It skips the current transaction from session processing.

/BEND: - It skips the entire session processing.

/BDEL: - It deletes the current transaction from the session processing.

Reasons to choose call transaction method: -

1. My flat file contains fewer amounts of data (200 or 100)
2. My client requirement is immediate data base updation.
3. Call transaction method is faster.

Reasons to choose call Session method: -

1. My flat file contains huge amount of data (1000 of records)
2. My client wants to run the program in background (scheduling)
3. Session method generates an error log. That will be handle errors.

Steps to execute the session method in background: -

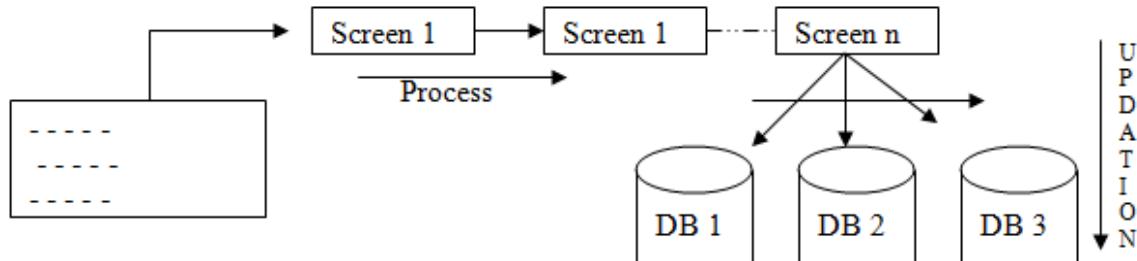
Method 1: -

Execute SM35. Select the session. Click on process. Select the radio button background. Click on process.

Method 2: -

By using **RSBDCSUSB** Standard program, we can run the session method in background.

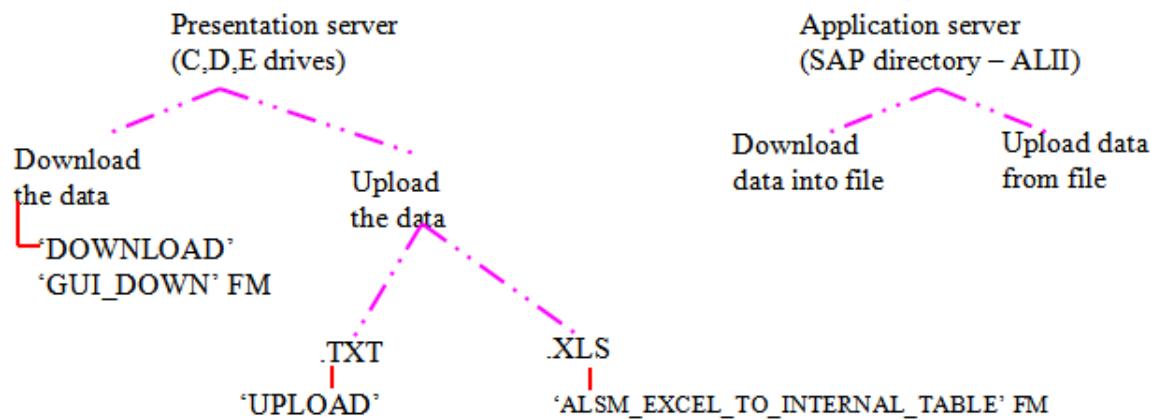
Note: - When ever we run the any conversion program in background then we must maintain the file in the application server directly (SAP directory AL11).



Syntax of call transaction: -

Call transaction '<TCODE>' using '<BDCDATA internal table>' mode 'A/N/E' messages into '<BDCDATA> update 'A/S'.

Working with files



UPLOAD: -

Upload is the function module which is used to browse the file as well as upload the data from file to internal table. The input for the above function module is

1. File type → ‘DAT’
2. Data internal table which is similar as file.

```

TYPES: BEGIN OF TY_T001,
       BUKRS TYPE T001-BUKRS,
       BUTXT TYPE T001-BUTXT,
       ORT01 TYPE T001-ORT01,
       END OF TY_T001.
DATA: WA_T001 TYPE TY_T001,
      IT_T001 TYPE TABLE OF TY_T001.
CALL FUNCTION 'UPLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_T001.
LOOP AT IT_T001 INTO WA_T001.
  WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
ENDLOOP.

```

GUI_UPLOAD: - It's the function module which is used to upload the data from file to internal table.
The input for the above function module is

1. File name with extension.
- 2 . Field separator = ‘X’.
- 3 . Data internal table which is similar as file

```

Include ziit001.
CALL FUNCTION 'GUI_UPLOAD'
  EXPORTING
    FILENAME          = 'C:\Users\Administrator\Desktop\Darling.txt'
    HAS_FIELD_SEPARATOR = 'X'
  TABLES
    DATA_TAB         = IT_T001.

LOOP AT IT_T001 INTO WA_T001.
  WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
ENDLOOP.

```

Note: - Now a day upload function module is obsolete. So we use ‘GUI_UPLOAD’ function module.
For the ‘GUI_UPLOAD’ function module file name is fixed. This isn’t allowed by client people and functional people.

Instead of UPLOAD function module we use F4_FILENAME & GUI_UPLOAD function module.
F4_FILENAME is the function module which is used to browse the file and GUI_UPLOAD function module is used to upload the data from file to internal table. The output for the F4_FILENAME is file path or file name.

```

DATA V_FILE TYPE STRING.
INCLUDE ZIIT001.
PARAMETER P_FILE LIKE IBIPPARMS-PATH.

AT SELECTION-SCREEN ON VALUE-REQUEST FOR P_FILE.
  CALL FUNCTION 'F4_FILENAME'

```

```

IMPORTING
  FILE_NAME = P_FILE.

START-OF-SELECTION.
  V_FILE = P_FILE.
  CALL FUNCTION 'GUI_UPLOAD'
    EXPORTING
      FILENAME          = V_FILE
      HAS_FIELD_SEPARATOR = 'X'
    TABLES
      DATA_TAB          = IT_T001.
LOOP AT IT_T001 INTO WA_T001.
  WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
ENDLOOP.

```

Download: - Download is the function module which is used to browse the file as well as download the data from internal table to file. The input for the above function module is

1. File type → 'DAT'
2. Data internal table

```

TABLES T001.
SELECT-OPTIONS S_BUKRS FOR T001-BUKRS.
INCLUDE ZIIT001.
SELECT BUKRS BUTXT ORT01 FROM T001 INTO TABLE IT_T001 WHERE BUKRS IN
S_BUKRS.
CALL FUNCTION 'DOWNLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_T001.

```

GUI_DOWNLOAD: - It's the function module which is used to download the data from internal table to file. The input for the above function module is

1. File name with extension.
2. Field separation
3. Data internal table which data we want to download

```

TABLES T001.
SELECT-OPTIONS S_BUKRS FOR T001-BUKRS.
INCLUDE ZIIT001.
SELECT BUKRS BUTXT ORT01 FROM T001 INTO TABLE IT_T001 WHERE BUKRS IN
S_BUKRS.
CALL FUNCTION 'GUI_DOWNLOAD'
  EXPORTING
    FILENAME          = 'C:\Users\Administrator\Desktop\T002.TXT'
    WRITE_FIELD_SEPARATOR = 'X'
  TABLES
    DATA_TAB          = IT_T001.

```

Note: - Now a day 'DOWNLOAD' function module is absolute. So we use 'GUI_DOWNLOAD' function module. In the 'GUI_DOWNLOAD' function module the file name is fixed. This isn't allowed by functional people.

Instead of ‘DOWNLOAD’ we use ‘F4_FILENAME’ function module with ‘GUI_DOWNLOAD’ function module.

```

INCLUDE ZIIT001.
PARAMETER P_FILE TYPE IBIPPARMS-PATH.
DATA V_FILE TYPE STRING.

AT SELECTION-SCREEN ON VALUE-REQUEST FOR P_FILE.
  CALL FUNCTION 'F4_FILENAME'
    IMPORTING
      FILE_NAME = P_FILE.
START-OF-SELECTION.
  SELECT BUKRS BUTXT ORT01 FROM T001 INTO TABLE IT_T001.
  V_FILE = P_FILE.
  CALL FUNCTION 'GUI_DOWNLOAD'
    EXPORTING
      FILENAME           = V_FILE
      WRITE_FIELD_SEPARATOR = 'X'
    TABLES
      DATA_TAB          = IT_T001.

```

‘ALSM_EXCEL_TO_INTERNAL_TABLE’ is the function module which is used to upload the data from XL Sheet to internal table. The input for the above function module is

1. File name with extension
2. Begin column
3. Begin row
4. End column
5. End row

The output for the above function module is an internal table which contains 3 fields (Row, Col, Value)

```

PARAMETER: P_BC TYPE I,
            P_BR TYPE I,
            P_EC TYPE I,
            P_ER TYPE I.

```

```
INCLUDE ZIIT001.
```

```
DATA: IT TYPE TABLE OF ALSMEX_TABLINE,
```

```
      WA LIKE LINE OF IT.
```

```
CALL FUNCTION 'ALSM_EXCEL_TO_INTERNAL_TABLE'
```

```
  EXPORTING
```

```
    FILENAME      = 'C:\Users\Administrator\Desktop\88.xls'
```

```
    I_BEGIN_COL = P_BC
```

```
    I_BEGIN_ROW = P_BR
```

```
    I_END_COL   = P_EC
```

```
    I_END_ROW   = P_ER
```

```
  TABLES
```

```
    INTERN      = IT.
```

```
LOOP AT IT INTO WA.
```

```
  WRITE:/ WA-ROW, WA-COL, WA-VALUE.
```

```
ENDLOOP.
```

```
ULINE.
```

```
LOOP AT IT INTO WA.
```

	Columns			
	0001	0002	0003	0004
Row	1000	TCS	HYD	
0001	2000	IBM	CHE	
0002	3000	HCL	MUM	
0003				
0004				

IT		
Row	Col	Value
0001	0001	1000
0001	0002	TCS
0001	0003	HYD
0002	0001	2000
0002	0002	IBM
0002	0003	CHE
0003	0001	3000
0003	0002	HCL
0003	0003	MUM

WA		
Row	Col	Value
0001	0003	HYD

```

IF WA-COL = '0001'.
  WA_T001-BUKRS = WA-VALUE.
ELSEIF WA-COL = '0002'.
  WA_T001-BUTXT = WA-VALUE.
ELSEIF WA-COL = '0003'.
  WA_T001-ORT01 = WA-VALUE.
ENDIF.
AT END OF ROW.
  APPEND WA_T001 TO IT_T001.
ENDAT.
ENDLOOP.
LOOP AT IT_T001 INTO WA_T001.
  WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
ENDLOOP.

```

WA_T001
BUKRS BUTXT ORT01
1000 TCS HYD
2000 IBM CHE
3000 HCL MUM

WA_T001
BUKRS BUTXT ORT01
3000 HCL MUM

Application Server: -

Application server is the SAP directory. The transaction code for application server is AL11. In the application server each file is called one data seg.

In the application server we can't create the file directly through program only we can create.

Note: - .Directory is the [.(DIR_TEMP)] is the default directory in the application server.

Steps to download the data into application server: -

1. Open the data set / file in write mode / output.
2. Loop at <data internal table> into <work area>.
Transfers the data from <work area> to data set / file.
Endloop.
3. Close the data set / file.

Syntax of open data set: -

Open data set '<file name>' in text / binary mode for output / input encoding default - - .

Steps to open the file in application server: -

Execute AL11. Double click on .(DIR_TEMP). Identify the file (SPT). Double click on it. And absorb the data.

INCLUDE ZIIT001.

```

SELECT BUKRS BUTXT ORT01 FROM T001 INTO TABLE IT_T001 UP TO 10 ROWS.
* Download the data to application server
OPEN DATASET 'SPT' IN TEXT MODE FOR OUTPUT ENCODING DEFAULT.
LOOP AT IT_T001 INTO WA_T001.
  TRANSFER WA_T001 TO 'SPT'.
ENDLOOP.
CLOSE DATASET 'SPT'.

```

Steps to upload the data from application server: -

1. Open the dataset / file in read mode
2. Do
 - Read the data set and placed into work area.
 - If sy-subrc = 0.
 - Append the data from work area to internal table.
 - Else.
 - Exit.

Endif.
Enddo.
3. Close the dataset / file

```
INCLUDE ZIIT001.  
OPEN DATASET 'SPT' IN TEXT MODE FOR INPUT ENCODING DEFAULT.  
DO.  
  READ DATASET 'SPT' INTO WA_T001.  
  IF SY-SUBRC = 0.  
    APPEND WA_T001 TO IT_T001.  
  ELSE.  
    EXIT.  
  ENDIF.  
ENDDO.  
CLOSE DATASET 'SPT'.  
* Display the output.  
LOOP AT IT_T001 INTO WA_T001.  
  WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.  
ENDLOOP.
```

Note: - When ever we develop the conversion program to schedule in background then file must be in the application server.

In this case we need to develop one more separate program to upload the data from presentation server & download into application server. In the conversion program instead of GUI upload we upload the data from application server by using open data set and read dataset.

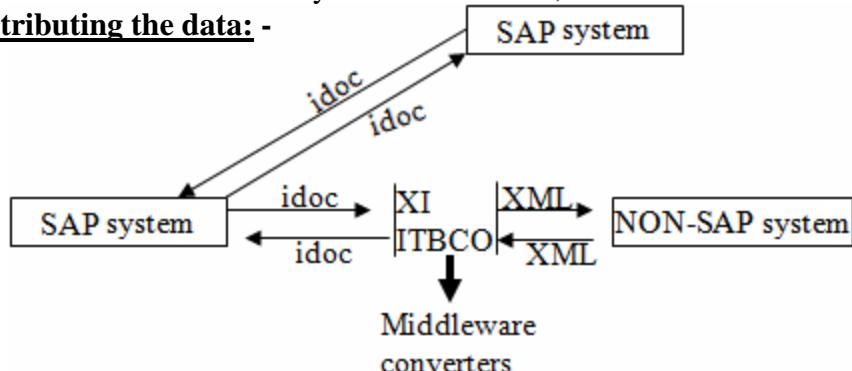
Interview questions on BDC: -

1. Why we go for BDC.
2. What are steps to work with BDC programming?
3. What are differences between DML commands & BDC?
4. What are differences between call transaction method & session method?
5. When we choose call transaction method.
6. When we choose Session method.
7. What are the types of update modes? (Synchronous & Asynchronous)
8. How we handle the errors in call transaction method
9. What are the function modules we used in session method?
10. How to process the session (SM35)
11. How we run the session in background (RSBDCSUB standard program).
12. How to do the recording (SHDB)
13. What is the last entry at screen? (BDC-OK_CODE)
14. What are the fields in BDC data structure / dynpro components?
15. What is the use '/N', '/BEND', '/BDEL'.
16. How we hold/lock the session until particular date.
17. Can we process multiple transactions at a time? (By using session)
18. When we maintain the file in application server.
19. What is transaction code for application server? (AL11)
20. What are components of BDCMSCOLL structure & what is the use (it hold the Success / failure information).
21. Can we use call transaction method & session method in the same program (yes)
22. What is the use of FORMAT_MESSAGE function module (handle the errors)

CROSS APPLICATIONS

- Cross application is the concept to exchange the data among the systems.
- ALE (Application Link Enabling) is an SAP technology to support cross application.
- ALE uses IDOC to support the cross applications.
- IDOC is the carrier to carry the data from one system to another system.
- SAP can understand only the IDOC format, when it communicates with any other system.

Distributing the data: -



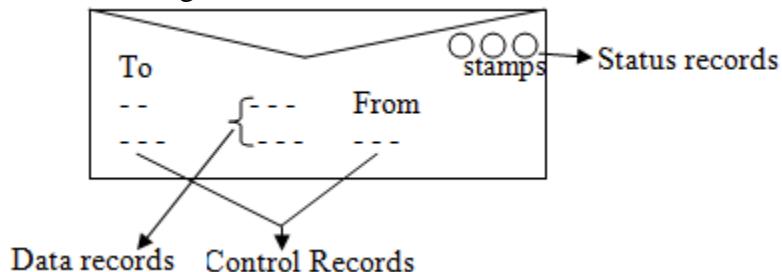
- Irrespective of the receivers, the ABAPER job in sender system is to generate the Idoc.
- The process of generating the Idoc is nothing but out bound process.
- Irrespective of the senders, the abaper job in receiver system is to collect the data from Idoc.
- The process of collecting the data from Idoc is nothing but in bound process.

Runtime components of Idoc: -

1. It generates a unique Idoc number, which is 16 digit.

2. It generates 3 types of records.

- i. Control records
- ii. Data records
- iii. Status records



1. Control record : -

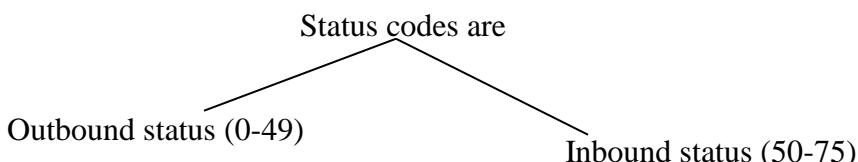
- i. Control record specifies the sender as well as receiver information.
- ii. It generates only one control record.
- iii. This information will be saved on EDIDC table

2. Data records: -

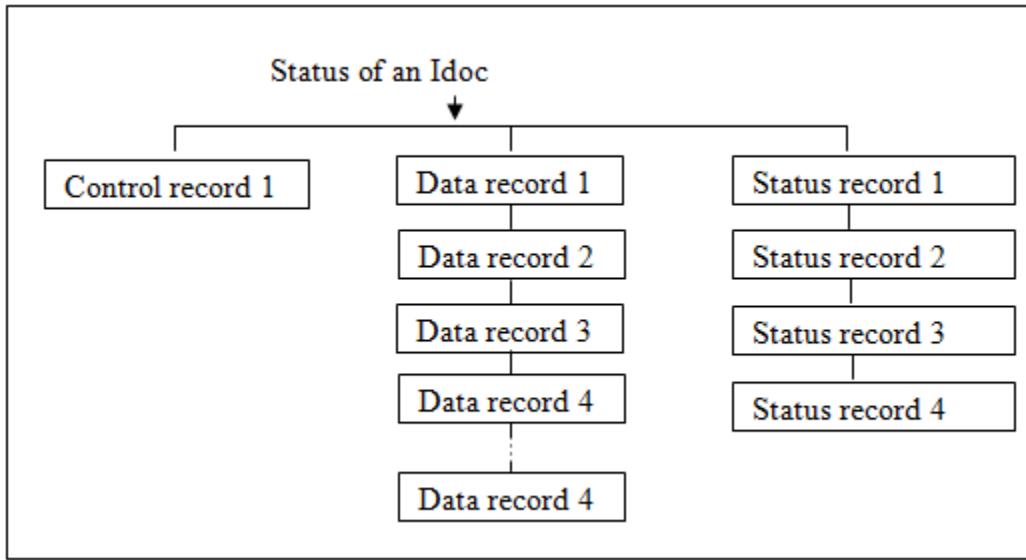
- i. It specify the data which is send by the senders system.
- ii. It generates any number of data records.
- iii. This information will be saved on EDIDD table.

3. Status records: -

- i. It generates status codes for each and every stage of transferring the data.
- ii. It generates any number of status records.
- iii. This information will be saved on EDIDS table.



Note: - The linking between EDIC, EDIDD and EDIDS is the IDOC number.



Types of IDOCs

1. BASIC type → Standard Idoc
2. Extension → Standard Idoc + Custom Idoc

Standard Idoc:

If you want to send as well as receives the standard data base table information then we go for standard idoc.

LFA1

LIFNR *Send*
NAME1 *Receive*
ORT01

Custom Idoc –

If you want to send as well as receives the custom table information then we go for custom item.

Zhai *Send*
EID *Receive*
ENAME
ESAL

Extension Idoc –

If you want to send as well as receives the additional fields information of standard data base table along with standard fields information then we go for extension Idoc.

LFA1

LIFNR
NAME1
ORT01

||

+

ZHAI
EID
ENAME
ESAL

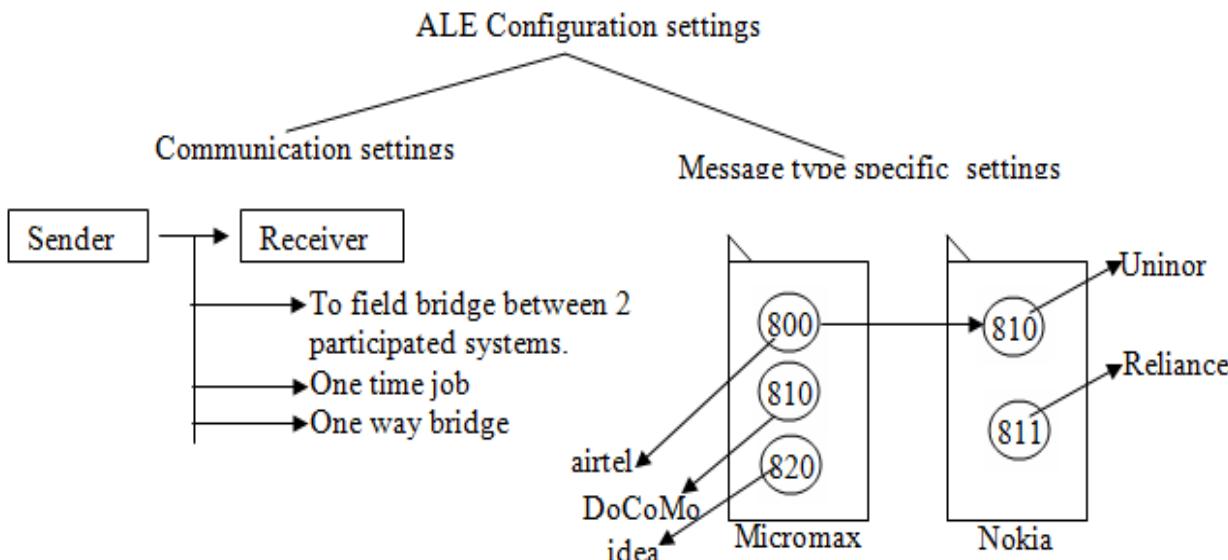
Note: - IDOC is the collection of segments. Each segment is the collection of fields.

Characteristics of an IDOC: -

1. Name of the IDOC.
2. List of the segment
3. Hierarchy of the segments in the IDOC.
4. Optional (vs) mandatory for the segments
5. Provide parent & child relationship of the segments.
6. Each segment can carry up to 1000 bytes.
7. Provide the minimum and maximum number of repetitions for the segment.

Seg 1	F1	F2	F3
Seg 2	F4		F5
Seg 3	F6	F7	F8 F9
Seg 4	F10		F11

IDOC



Communication between one system to another system is nothing but communication between one client of sender system to another client of receiving system. Each participated system is called one logical system.

Steps to establish the communication settings: -

1. Define logical system (SALE)
2. Assign client to logical system (SCC4)
3. Maintain RFC destination details (SM59)

Note: - In the real time communication settings are established by BASIS people.

If the receiver is available in following address & he wants vendor H7070 details.

Client	:	810
User	:	SAPUSER
Password	:	india123
Logical system:	:	SP810.

In this before sending the vendor details first we need to establish the communication settings from sender to receiver system.

Steps to define logical system: -

Execute SALE. Expand basic settings. Expand logical systems. Execute define logical system. Enter. Click on new entries in the application tool bar. Provide sender, receiver logical system name & short description. Save.

SP800	Sender logical system
SP810	Receiver logical system

Steps to assign client to logical system: -

Execute 'SCC4'. Click on change mode. Select the client. Click on details. Provide the logical system name SP800. Click on save.

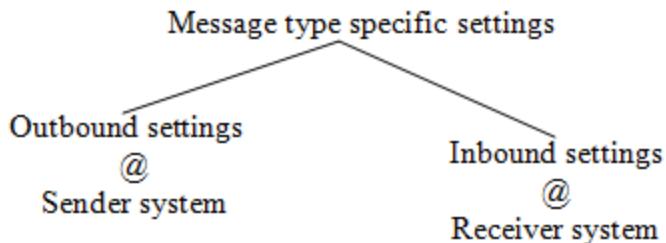
Steps to maintain RFC destination details: -

Execute ‘SM59’. Select the ABAP connections. Click on create. Provide RFC destination (SP810). Provide short description (Sender to receiver). Click on logon & security tab. Provide the receive log on details.

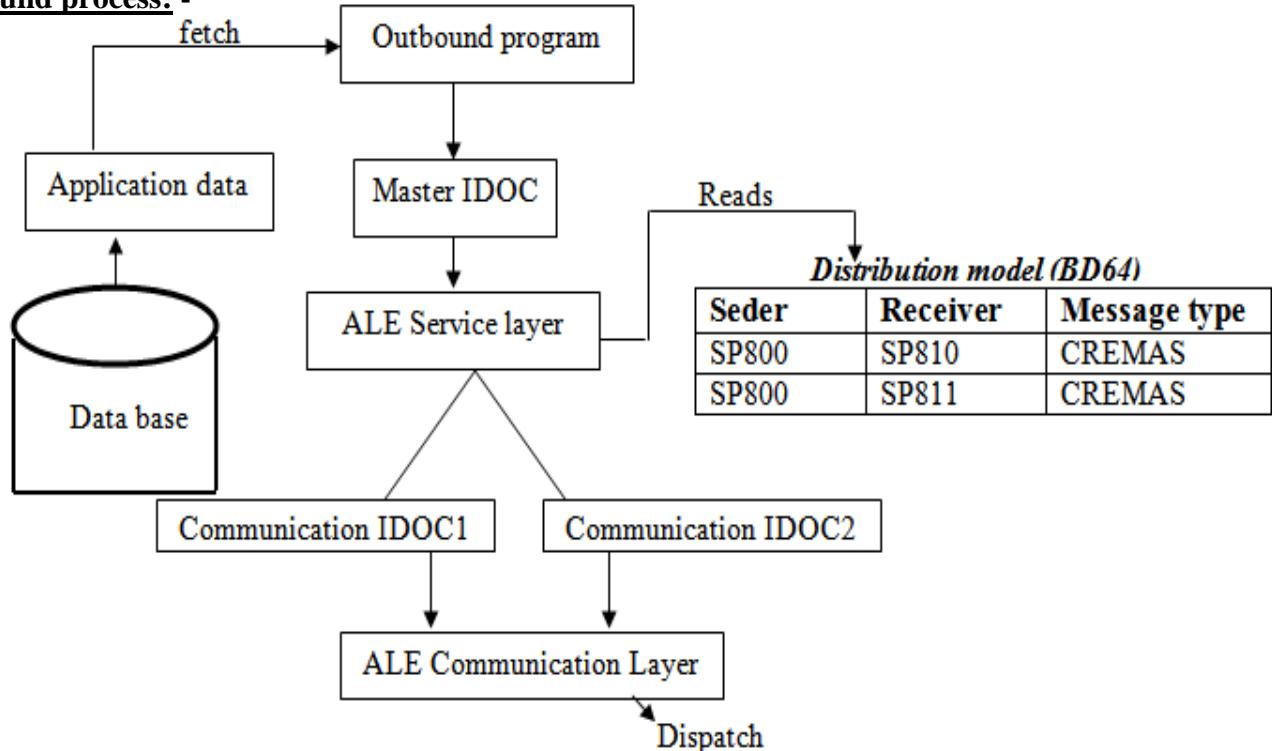
Client : 810
 User : SAPUSER
 PW Status : is initial
 Password : india123.

Click on save. Click on connection test. Click on back. Click on remote logon in the application tool bar.

Note: – The table is cross-client. It means what ever the changes are made in one client those are automatically reflected into all other clients in same server.



Outbound process: -



- Based on the given input one outbound program will triggered & fetch the application data from the data base & generate the master IDOC.
- Master IDOC is nothing but data in internal table. Master IDOC won't save anywhere in SAP.
- ALE service layer reads the distribution model & identifies the interested receivers. Based on the receivers it generates the communication IDOC.
- Distribution model is the collection of senders, receivers, message type.
- Message type is used to identify the type of the application (vendor, customer, material, . . .).
- Communication IDOC is the physical IDOC which is receiver specific.
- ALE communication layer dispatch these communication IDOC to their relevant receiver systems.

Note: - If you get the zero master IDOCs, the reason is the given input having no data in the data base.

Note: - If you get the zero communication IDOCs the reasons are

1. There is no interested receivers are available in distribution model.
2. Communication settings problem.

Steps to identify the transaction code based on short description: -

Execute 'SDMO'. Provide short description (Send vendor). Execute. Then we identify the transaction codes.

Some of the standard message types: -

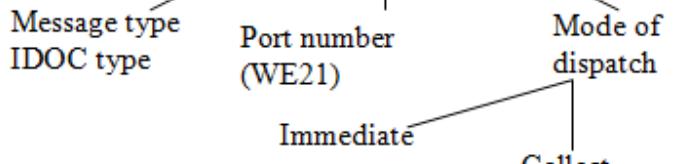
TCODE	MESSAGE TYPE	IDOC TYPE	SHORT DESCRIPTION
BD10	MATMAS	MATMAS01	
		MATMAS02	Send Material
		MATMAS05	
BD11	MATMAS		Get Material
BD12	DEBMAS	DEBMAS01	
		BEBMAS02	Send Customer
		BDEMAS06	
BD13	DEBMAS		Get customer
BD14	CREMAS	CREMAS01	
		CREMAS02	Send Vendor
		CREMAS05	
BD15	CREMAS		Get Vendor

ALE configuration steps for standard IDOC outbound

Create distribution mode (BD64)

Sender	Receiver	Message type

Create bound partner profile (WE20)



Steps to create distribution model: -

Execute 'BD64'. Click on change mode. Click on create model view in the application tool bar. Provide the short description (distribution), technical name (DBCM1). Enter. Select the description model which is in the last. Click on add message type in the application tool bar. Provide sender (SP800), receiver (SP810) and message type (CREMAS). Enter. Repeat the same step for all the receivers. Click on save.

Port number: -

Port number is used to specify the way of transferring the data. Types of ports are.

1. TRFC port → ALE/IDOC
2. File port → LSMW, EDI/IDOC
3. Internet port → Web Apps
4. XML port → Java

Steps to create the port number: -

Execute 'WE21'. Select the transactional RFC. Click on create (F7). Enter. The system automatically generates a port number (A000075). Provide short description (port number). Provide RFC destination (SP810). Click on save.

Steps to create outbound partner profile: -

Execute 'WE20'. Select the partner type LS. Click on create. Provide partner number (SP810). Click on save. Click on create out bound parameter plus (+) button. Provide the message type (CREMAS). Provide the port number (A000075). Select the radio button transfer IDOC immed. Select the basic type (CREMAS05). Click on save.

Steps to send the vendor details: -

Execute BD14. Provide the vendor number (H7070). Provide the message type (CREMAS), target system (SP810). Click on execute and absorb the master and communication IDOC s.

Steps to create vendor: -

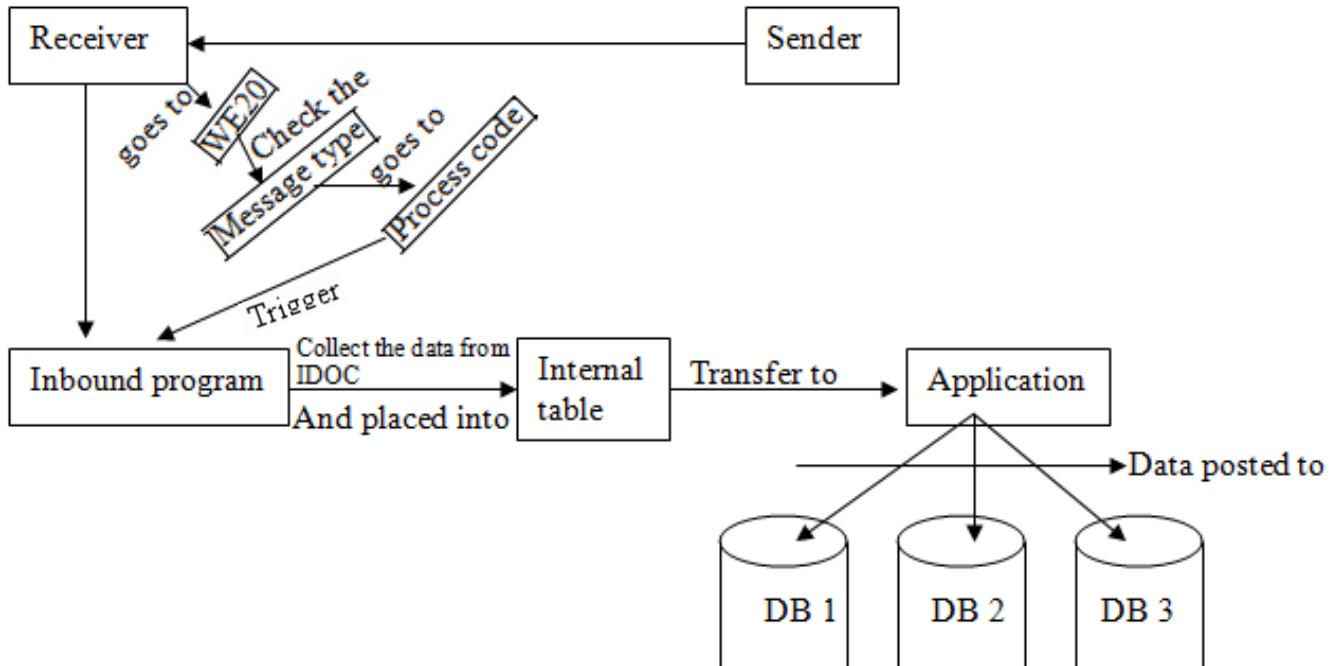
Execute 'XK01'. Provide the vendor number (H7070), Account group (0004). Enter. Provide the name (GMR COR), search term (GMR), country (IN). Click on save.

Steps to check or test the IDOC: -

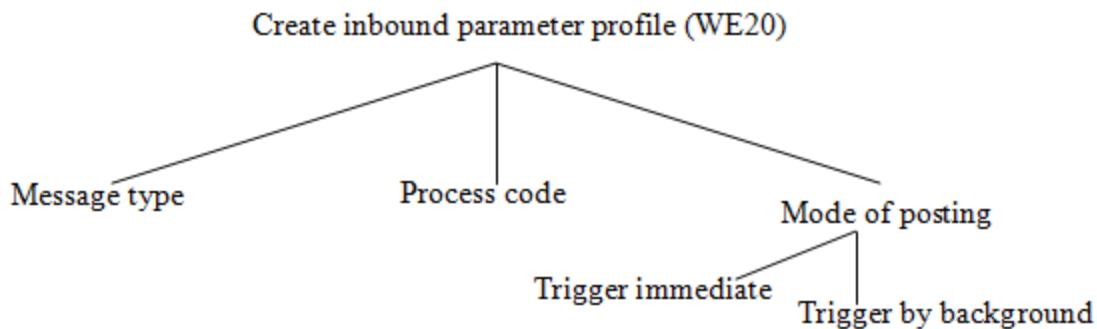
Execute 'WE02' or 'WE05'. Provide the logical message (CREMAS), partner number (SP810). Execute. & absorb the run time components (data control, status, data records).

Note: - After we get the status code 03, we execute 'RBDMOIND' standard program. If the status code 03 turn to 12 then the IDOC is successfully reached to destination. If the status code remains 03, then the IDOC is in the TRFC queue. If the status code turns to 11, then the IDOC is damaged in the queue.

Inbound process: -



Note: - Outbound program can be developed either through executable program or through function module where as inbound program must be developed through functional module only because the interface parameters are same for any message type (import, export, changing, ---).



At the first time, before creating the inbound partner profile we do following things.

1. Define logical systems (this isn't required, if we are working with the same server).
2. Assign client to logical system.

Note: - Process code is used to identify the function module.

In the receiver system 810 client: -

Steps to assign client to logical system: -

Execute SCC4. Click on change mode. Enter. Select the client (810). Click on details. Provide logical system (SP810). Save.

Steps to create inbound partner profile: -

Execute 'WE20'. Select the partner type LS. Click on create (F5). Provide partner number (SP800). Click on save. Click on create inbound parameter. Provide the message type (CREMAS). Select the process code (CRE1). Click on save.

Steps to test / check the idoc: -

Execute WE02/05. Provide the message type (CREMAS), partner number (SP800). Execute.

Steps to reprocess the idoc: -

Execute 'BD87'. Provide the idoc number (85001). Execute. select the error. Click on process.

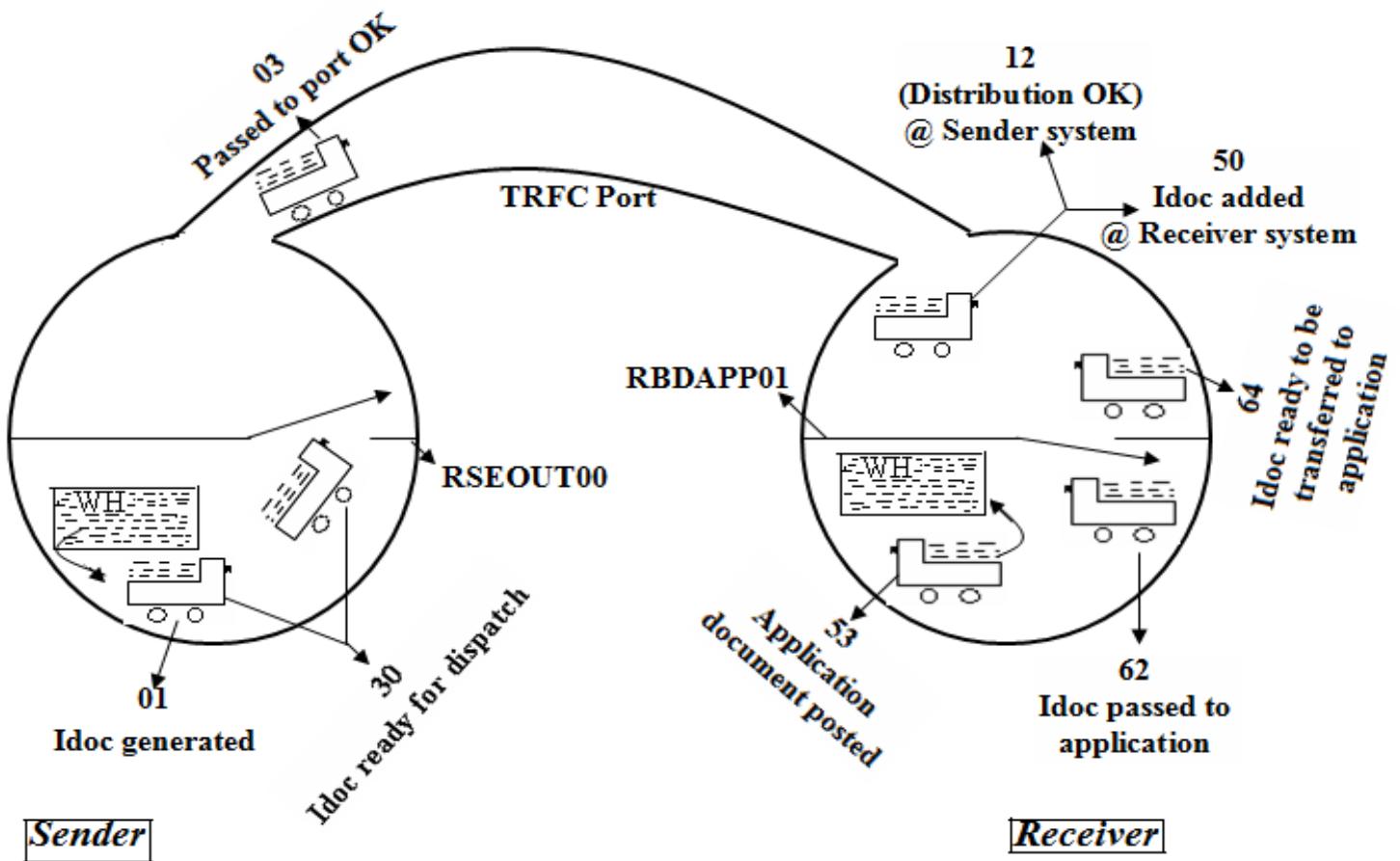
Inbound process: -

After idoc reached to receiver system, then it goes to WE20 inbound partner profile & check the message type. If the message type is available, then it goes to process code. Against the process code it triggers the inbound program (function module). The inbound program collects the data from idoc & placed into internal table. From the internal table the data is transferred to their application. From the application the data is posted to their relevant data base tables.

Note: - At the time of creating the outbound partner profile if we select the mode of dispatch is collect then we must execute '**RSEOUT00**' standard program then only the collect idocs will be dispatched to their relevant receiver system.

Note: - At the time of creating the inbound partner profile if you select the mode of posting is trigger by background (collect) then we must execute '**RBDAPP01**' standard program.

Then only the collect idocs will be posted to their relevant data base table.



Sender

Receiver

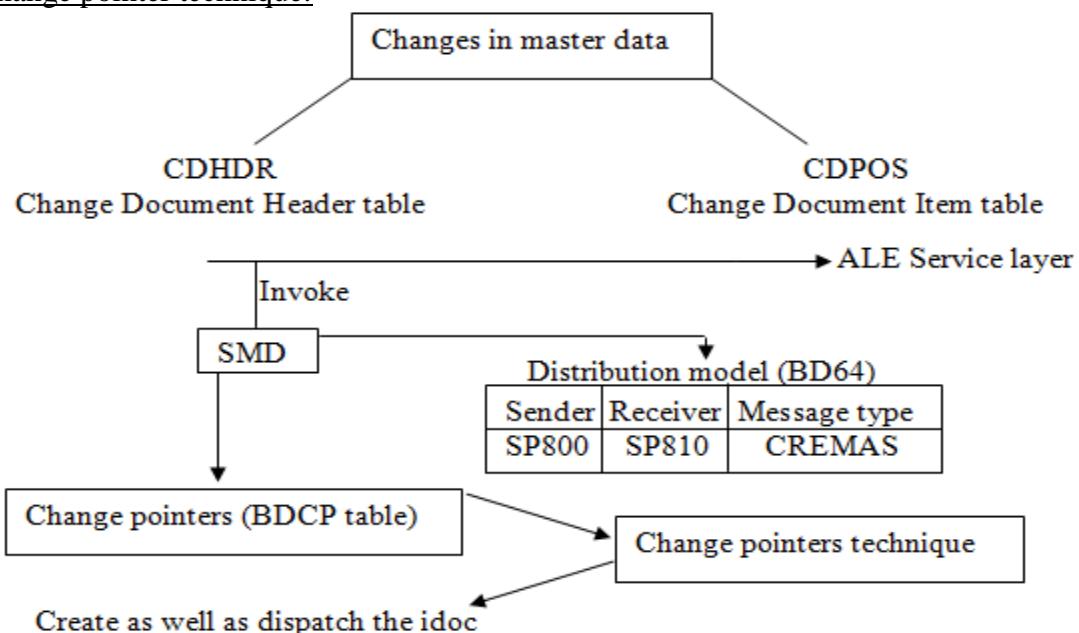
Types of distributing the data: -

1. Send entire information
2. Send changes only (change pointer technique)
3. Get entire information

Change pointer technique: -

Change pointer technique is used to send the changes of master data from sender to receiver system.

Process flow of change pointer technique: -



When ever the changes occurred in the master data the standard SAP itself prepare one change document. ALE service layer invokes the SMD (Shared Master Data) SMD reads the distribution model & identifies the interested receivers. If any receiver is available then it generates the change pointers for the change document. These change pointers are available in ‘BDCP’ table. The change pointer technique reads the change pointers & generates as well as dispatch the idoc to the receiver system.

ALE configuration steps for change pointer technique: -

1. ALE Configuration steps for Idoc outbound.

Create distribution model (BD64) Create outbound partner profile (WE20)

2. Activate the change pointer technique (BD61)
3. Active the message type (BD50)
4. Generate as well as dispatch the IDOC (BD21)

→ Configure the ALE to send the changes of vendor master data from sender to receiver system

Steps to activate change pointer technique: -

Execute BD61. Select the change box change points activated. Click on save.

Steps to activate message type: -

Execute ‘BD50’. Click on position. Provide the message type (CREMAS). Enter. Select the activate checkbox (CREMAS, CREMAS_SUSMM). Click on save.

Steps to change the vendor: -

Execute ‘XK02’. Provide vendor number (H7071). Select the address check box. Enter. Provide the title (Company) change search to BIG instead of ‘B’. Click on save.

Steps to generate as well as dispatch for IDOC for change pointers: -

Execute ‘BD21’. Provide the message type (CREMAS). Execute.

Check the idoc in WE02 / WE05.

Note: – Change pointer technique always at senders system only for master data.

Steps to identify the old & new changes of any document: -

Execute SE11. Open the table CDHDR in display mode. Click on contents. Provide the object ID as your document number (H7071). Execute. Identify the object class & changers.

Open the CDPOS table in SE11. Click on contents. Provide the object class (KRED) object ID (H7071) changenr (592227). Execute & identify the old & new values of the document.

Some of the standard requesting message type: -

<u>Application</u>	<u>Message type</u>	<u>Requesting Message type</u>
VENDOR	CREMAS	CREFET
CUSTOMER	DEBMAS	DEBFET
MATERIAL	MATMAS	MATFET

Note: – ‘ALEREQ01’ is the IDOC type for any requesting message type.

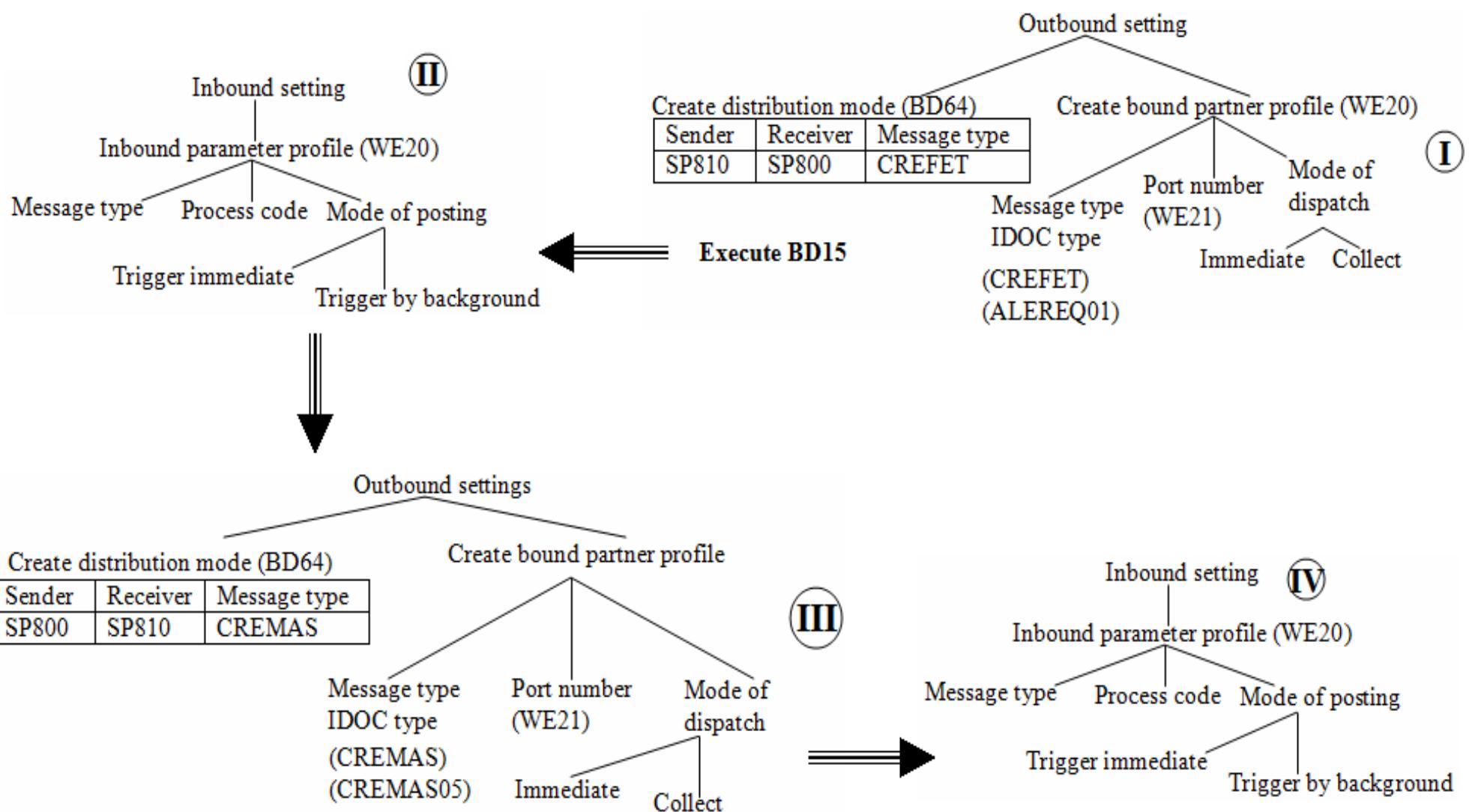
Note: – ‘EDIMSG’ is the standard data base table which contains all the message types, IDOC types and requesting message types.

Getting entire information

Note: – Before configure the get entire information we must establish the communication settings from receiver to sender.

Steps to Establish the communication settings from receiver to sender: -

1. Define the logical system → it does not require if we are working with same server.
2. Assign client to logical system.
3. Maintain RFC destination details



In receiver system 810: -

Steps to maintain RFC destination details: -

Execute SM59. Select the ABAP connections. Click on create. Provide RFC destination (SP800). Provide short description (Receiver to sender). Click on logon & security tab. Provide sender logon details.

Client : 800

User : sapuser

Password : india123.

Click on save. Click on connection text. Come back. Click on remote log on.

Steps to create distribution model: -

Execute BD64. Click on change mode. Click on create model view. Provide short description, technical name. Enter. Select the distribution model which is in last. Click on add message type in the application tool bar. Provide sender (SP810), Receiver (SP800), message type (CREFET). Enter. Click on save.

Steps to create port number: -

Execute WE21. Select the transactional RFC. Click on create. Enter. Provide short description, port number, RFC destination (SP800). Click on save.

Steps to create outbound partner profile: -

Execute WE20. Select partner (SP800). Click on create outbound parameter [(+) symbol]. Provide message type (CREFET), port number (A000018). Click on transfer IDOC immediate. Select the basic type (ALEREQ01). Save.

Steps to get the vendor: -

Execute BD15. Provide the vendor number which vendor you want (H8091). Message type (CREMAS). Execute.

Steps to check the IDOC: -

Execute WE02. Provide the message type (CREFET), partner number (SP800). Execute.

In sender system 800 client: -

Steps to create inbound partner profile: -

Execute WE20. Select the partner (SP810). Click on create inbound parameter. Provide the message type (CREFET). Select process code (CREF). Save.

Steps to check the idoc: -

Execute 'WE05'. Provide the message type (CREFET). Provide the partner number (SP810). Execute.

Note: - In the receiver requested data isn't available. Then we get the status 51. (No object for requested Idoc selected for sending).

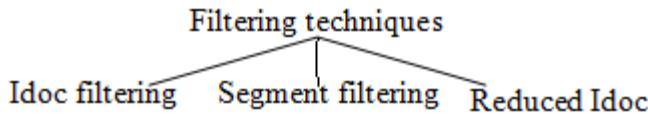
Note: - The name of the standard segment start with 'E'. The name of the custom segment starts with 'Z1'. The definition name of the standard segment starts with 'EZ'. The definition of custom segment starts with 'Z2'.

Note: - The segment definition is useful when we communicate with non-SAP system. Based on the segment definition only the middleware converters convert the sender's format to receiver's format.

Filtering technique: -

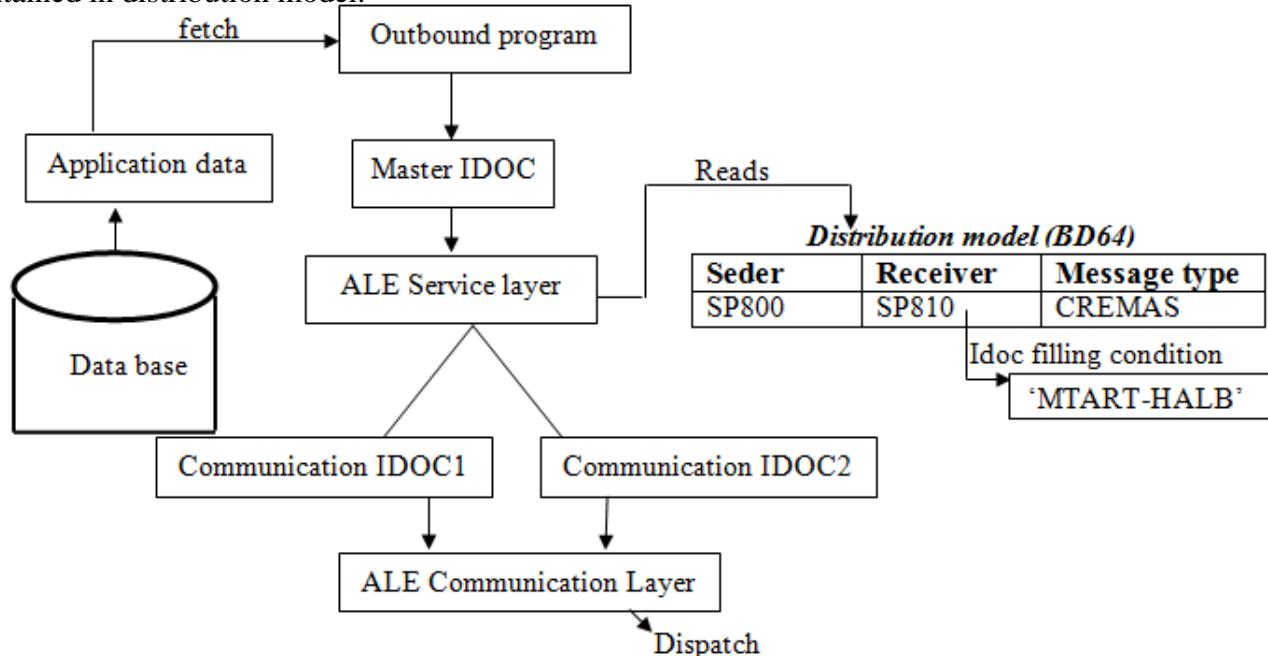
Filtering techniques are used to generate the idoc based on the conditions. Filtering techniques are always at sender system.

There are 3 types of filtering techniques.



Idoc filtering: -

Idoc filtering is used to drop the idoc at run time. Idoc filtering conditions are placed or maintained in distribution model.



Before generating the communication idocs ALE service layer reads the distribution model & identifies the interested receivers. If any receiver is available then it checks the given input satisfies the filtering conditions or not. If it satisfies the filtering condition then only it generates the communication idoc. Otherwise it won't generate any communication idoc.

→ Configure the ALE to send only semi finished products to the receiver system

In this object we provide the idoc filtering conditions in the distribution model.

Steps to create distribution model: -

Execute 'BD64'. Click on change mode. Click on create model view in the application tool bar. Provide the short description & technical name (DBMATMAS). Enter. Select the distribution model which is in last. Click on add message type. Provide sender, receiver, and message type (MATMAS). Enter. Expand the distribution model until 'No filter set'. Double click on it. Click on create filter group in the bottom. Expand the data filtering. Expand the filter group. Double click on our requirement (material type). Click on insert row button (+). Select the value (HALB). Enter. Click on ok. Save the distribution. Create outbound parameter profile WE20.

Steps to send the material: -

Execute 'BD10'. Provide the material number (100-110), message type (MATMAS), logical system (SA810). Execute. Here 100 – 110 is a raw material. So it won't generate any communication idoc.

Segment filtering: -

It's used to drop the segments permanently to the particular receiver system. The transaction code for segment filtering is 'BD56'.

Note: - ‘WE30’ is the transaction code to create as well as display the idoc.

Note: - ‘WE31’ is the transaction code to create as well as display the segment.

Note: - When ever we are working with segment filtering then we must create dummy partner profile for sender system itself.

Steps to create dummy partner profile for sender itself: -

Execute WE20. select the partner type LS. Click on create. Provide the partner number SP800. Save.

→ Configure the segment filtering to drop the ‘E1LFA1A’ segment information permanently to the SP810 receiver.

Steps to work with segment filtering: -

Execute BD56. Provide the message type. Click on new entries (F5) in the application tool bar. Provide the sender type (LS) sender (SP800). Receiver type (LS), Receiver (SP810) segment type (E1LFA1A). Repeat the same steps for all which are dropped. Click on save.

Reduced Idoc: -

Reduced idoc is used to drop the segments as well as fields permanently to the particular receiver system. We can't drop the mandatory segments as well as mandatory fields which are in green colour. The transaction code for reduced idoc is ‘BD53’.

In the reduced idoc we create the new message type based on the existing message type. Based on the new message type we configure the ALE. (Create distribution model, outbound partner profile).

Steps to work with reduced idoc: -

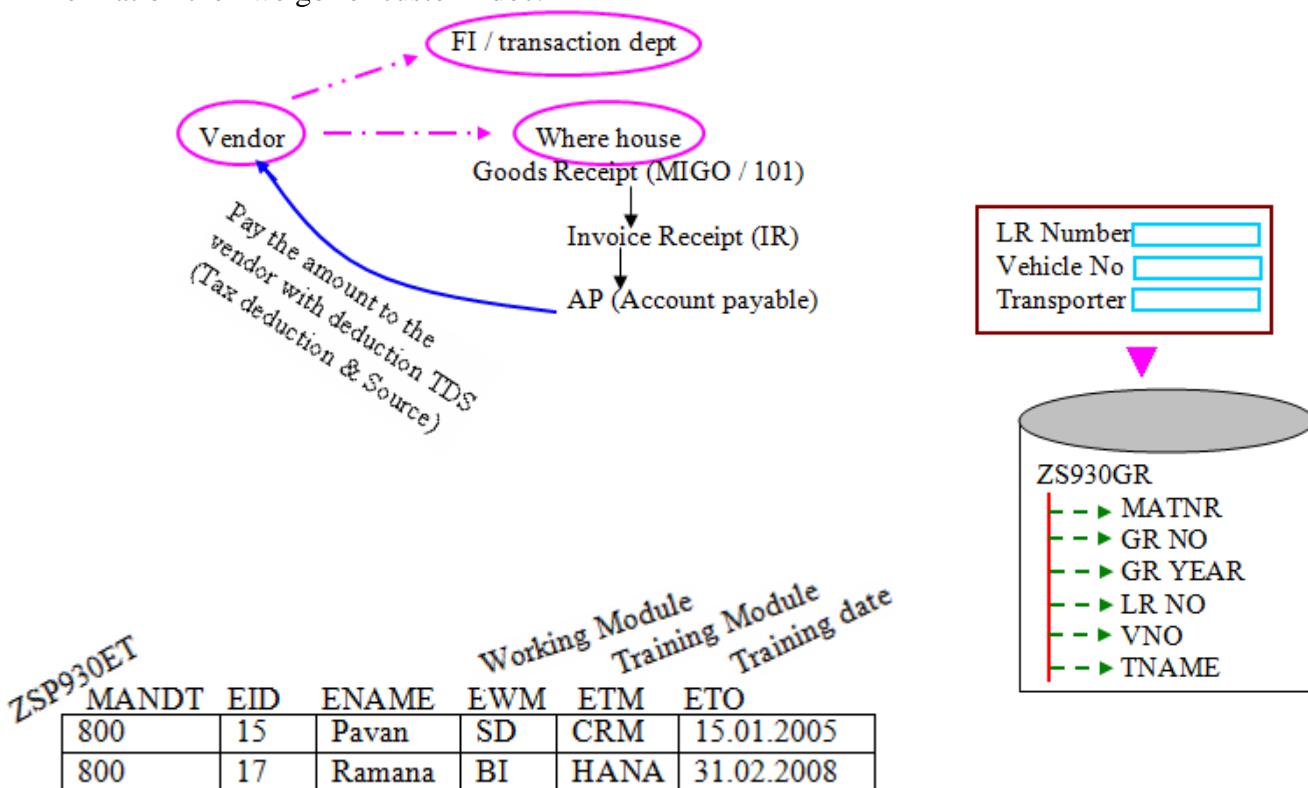
Execute BD53. Provide the reduced message type (DEBMAS). Click on create. Provide the reference message type (DEBMAS). Enter. Provide short description (Reduced message of customer). Select the required segments by placing the cursor on the segment. Click on select button in the application tool bar. Double click on the segment. Select the required fields. Click on select. Enter. Repeat the same steps for all other segments. Click on save. Based on this new message type (ZSDEBMAS) we create the distribution model & outbound partner profile.

Differences between segment filtering and reduced idoc: -

<u>Segment filtering</u>	<u>Reduced Idoc</u>
<ol style="list-style-type: none">1. Segment filtering is used to drop the segments permanently to the receiver system.2. In this the selected segment only dropped.3. The transaction code of this is BD56.4. We no need to configure the ALE once again	<ol style="list-style-type: none">1. Reduced idoc is used to drop the segments as well as fields information permanently to the particular receiver system.2. In this idoc the selected segments only send.3. The transaction for this is BD53.4. Based on the new message type we configure the ALE once again.

Against vendor supplies the where house department create a GR [Goods Receipt] with ‘MIGO’ transaction & 101 moment type. Against GR the Finance people physically verify the stock & prepare the invoice receipt (IR). Against IR document the account payable department pay the amount to the vendor with deducts of TDS amount. After few days the vendor asks the form 16 to the tax department of the company. When ever the tax department or Finance department generate the form 16 then need to enter the LR number, Vehicle number, transporter name etc. This information is not captured in the entire MM life cycle. Here design one screen with those fields & attached to ‘MIGO’ transaction by using ‘BADI’.

When ever the where house people create the GR then they also maintain these additional screen information. These information stored in separated 'Ztable'. If you want to send or receive this 'Ztable' information then we go for custom idoc.



Each batch has their own characteristics (Classification) that information is maintained in separate 'ZTABLE'. If you want to send as well as receive that 'ZTABLE' information then we go for custom idoc.

ZSP930BC	MANDT	MATNR	WERKS	CHARG	Mfg By	SUP BY	SLCON	DIA	ASSAY	WATER

If you want to open the batch classification details then execute 'MSC3N'. Provide the material, plant & batch. Click on enter. Click on classification tab. Identify the classification details. 'MCHA' is the standard data base table which contains material batch details.

→ Configure the ALE to send as well as receives the GR additional information which is stored in the following table.

Fieldname	Key	Data element	Domain	Data type	Length	Short description
MANDT	✓	As per SAP standard field MANDT				
GRNO	✓	As per SAP standard field MBLNR				
GRYEAR	✓	As per SAP standard field MJAHR				
LRNO		ZS930LRNO	YS930LRNO	CHAR	15	Lorry Receipt Number
VNO		ZS930VNO	YS930VNO	CHAR	15	Vendor Number
TNAME		As per SAP standard field NAME1				

ALE Configuration steps for custom idoc

outbound: -

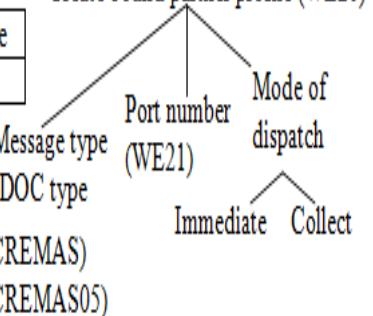
1. Create the segments (WE31).
2. Create the IDOC (WE30).
3. Create the Message type (WE81)
4. Link the message type to idoc type (WE82).
5. Create the port number (WE21).
6. Create the outbound partner profile (WE20)
7. Distribution model isn't required if we pass control record information in the program (Sender, Receiver, Message type - - -).

ALE Configuration steps for standard IDOC Outbound

Create distribution mode (BD64)

Sender	Receiver	Message type
SP800	SP810	CREMAS

Create bound partner profile (WE20)



Steps to create segment: -

Execute 'WE31'. Provide the segment name (Z1SGRS1). Click on create. Provide short description. Provide field names, data elements.

Save the segment. Repeat the steps for all the segments.

Note: - When ever we create the segment then automatically an equality structure is create in the data dictionary & also segment definition is create.

Steps to create the IDOC: -

Execute 'WE30'. Provide the IDOC name (ZS930GRI). Click on create. Provide short description. Enter. Select the IDOC name. Click on create segment. Provide the segment name. If the segment is mandatory then select the check box. Provide minimum & maximum number f repetitions (1 & 99). Enter. Repeat the same steps for all the segments in the IDOC. Click on save.

Steps to create Message type: -

Execute 'WE81'. Click on change mode. Enter. Click on new entries in the application tool bar. Provide message type (S930GRMAS), short description (GR ADDITIONAL INFORMATION MESSAGE TYPE). Save.

Steps to link the message type to idoc type: -

Execute 'WE82'. Click on change mode. Click on new entries. Provide the message type (S930GRMAS), basic type (ZS930GRI) & release (700). Save.

Steps to identify the release: -

Execute 'SE11'. Open the data base table 'EDIMSG'. Click on contents. Execute. Select the released file & click on sort descending order. Identify the latest released.

Steps to create port number: -

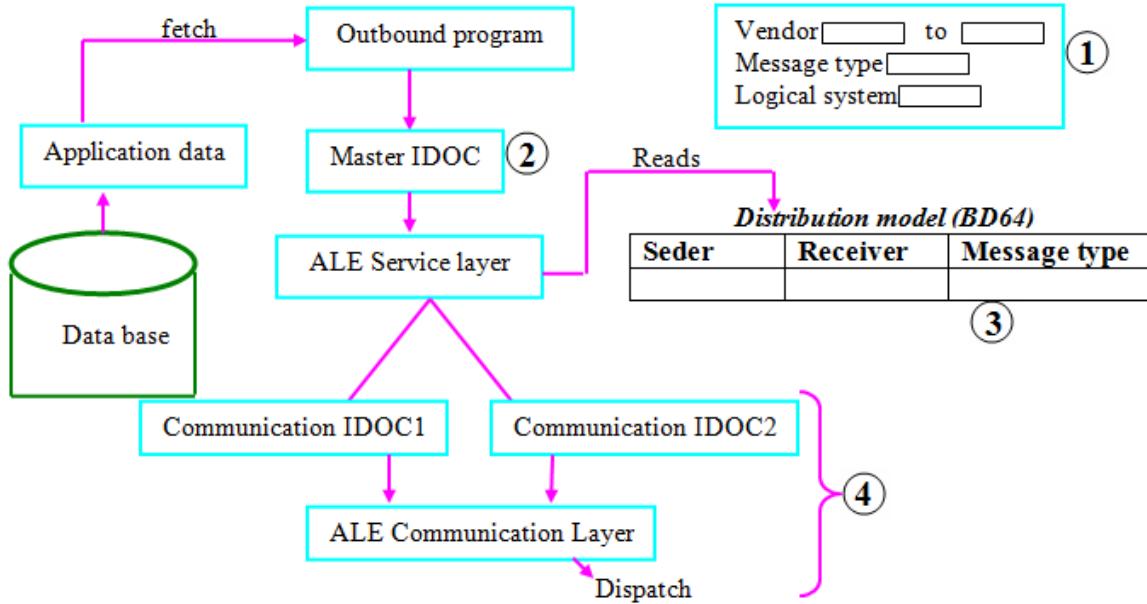
Execute 'WE21'. Select the transactional RFC. Click on create. Select the radio button own port name. Provide the name (S930GRP). Enter. Provide short description. Provide RFC destination (SP810).

Steps to create outbound partner profile: -

Execute 'WE20'. Select the partner if it's already exist. Click on create outbound parameter. Provide the message type (S930GRMAS), provide the port number (S930GRP). Select the radio button transfer immediate. Select basic type. Save.

Steps to develop the custom Idoc outbound program: -

1. Design the selection-screen as shown in the below.
2. Generate the master IDOC (Based on the given input, we fetch the application data from data base and placed into internal table).
3. Collect the control record information (Sender, Receiver, Message type, Idoc type, - -).
4. Generate as well as dispatch the communication Idoc.



Steps to identify the field name & data element of message type & logical system: -

Execute 'BD14' or any known transaction. Place the cursor on message type input field. Click on F1. Click o technical information. Identify the data element (EID_MESTYP) & field name (MSGTYP). Place the cursor on target system input field. Click on F1. Click on technical information. Identify the data element (LOGSYS) & field.

Step 1: -

Tables ZS930GR.

Selection-screen begin of block A with frame.

Select-options S_GRNO for ZS930GR-GRNO.

Parameter: P_MESTYP type EDI_MESTYPE obligatory,

P_LOGSYS type LOGSYS.

Selection-screen end of block A.

GR Number	[] to []
Message type	<input checked="" type="checkbox"/>
Logical system	[]

Step 2: -

Generate the master IDOC is nothing but fill an internal table which contains two fields.

Segment name Segment data
 (SEGNAM) (SDATA)

Note: - In the data dictionary we have one structure or a table I.e. EDIDD which contains the above fields. So we simply declare our internal table by referring EDIDD structure or table.

Note: - When ever we are working with custom idoc then we must declare 3 internal tables. One is for data. One is for control & one is for communication & also need to declare one work area & internal table for each segment in the idoc.

Procedure to fill master idoc: -

Based on the given input we'll fetch the data from data base & fill the each segment internal table. Loop the each segment internal data. Fill the master idoc.

Data: WA_DATA like EDIDD,

IT_DATA like table of WA_DATA.
 Data: WA_SEG1 like Z1SGRS1,
 IT_SEG1 like table of WA_SEG1.

Select GRNO GRYEAR LRNO VNO TNAME from ZS930GR into table IT_SEG1 where GRNO in S_GRNO.

Loop at IT_SEG1 into WA_SEG1.

WA_DATA-SEGNAM = 'Z1SGRS1'.

WA_DATA-SDATA = WA_SEG1.

Append WA_DATA to IT_DATA.

Clear WA_DATA.

Endloop.

GR Number 300000 to 300001

Message type

Logical system

GRNO	GRYEAR	LRNO	VNO	TNAME
300001	2014	LR98765	AP04 4304	SANDEEP

GRNO	GRYEAR	LRNO	VNO	TNAME
300001	2014	LR98765	AP04 4304	SANDEEP
300002	2014	LR12345	AP04 1234	KISHORE

SEGNAM	SDATA
Z1SGRS1	WA_SEG1
300002	2014

SEGNAM	SDATA
ZS1GRS1	WA_SEG1 300002 2014
ZS1SGRS2	WA_SEG2 300001 2014

Step 3: -

Collect the control record information is nothing but fill an internal table which contains following fields.

- SNDPRT → Sender Partner Type
- SNDPRN → Sender Partner Number
- RCVPRT → Receiver Partner Type
- RCVPRN → Receiver Partner Number
- RCVPOR → Receiver Port Number
- DOCTYP → IDOC Number
- MESTYP → Message type

In the dictionary we have one structure or a table that is EDIDC which contains above fields. So we simply declare our internal table by referring EDIDC structure.

Data: WA_CONT like EDIDC,

IT_CONT like table of WA_CONT.

- WA_CONT-SNDPRT = 'LS'.
- WA_CONT-SNDPRN = 'SP800'.
- WA_CONT-RCVPRT = 'LS'.
- WA_CONT-RCVPRN = 'SP810'.
- WA_CONT-RCVPOR = 'S930GRP'.
- WA_CONT-DOCTYP = 'ZS930GRI'.

WA_CONT-MESTYP = ‘S930GRMAS’.

Append WA_CONT to IT_CONT.

Repeat the same steps for all the receivers.

Step 4:-

For each receiver in the control record internal table we need to generate as well as dispatch the communication idoc.

Note: - ‘MASTER_IDOC_DISTRIBUTE’ is the function module which is used to generate as well as dispatch the communication idoc. The input for the above function module is control record work area, data internal table. The output for the above function module is communication idoc internal table.

*Declare communication idoc internal table

Data: WA_COMM like EDIDC,

IT_COMM like table of WA_COMM.

* For each receiver generate & dispatch communication idoc.

Loop at it_cont into wa_cont.

Call function ‘MASTER_IDOC_DISTRIBUTE’

EXPORTING

MASTER_IDOC_CONTROL = WA_CONT

TABLES

COMMUNICATION_IDOC_CONTROL = IT_COMM

MASTER_IDOC_DATA = IT_DATA.

Commit work.

Endloop.

* Release the idocs for queue.

Call function ‘DEQUEUE_ALL’.

*Display the communication idoc to know the status.

Call function ‘REUSE_ALV_GRID_DISPLAY’

EXPORTING

I_STRUCTURE_NAME = ‘EDIDC’.

TABLE

T_OUTTAB = IT_COMM.

Steps to create TCODE: -

Execute ‘SE93’. Provide transaction code (ZS930GRS). Click on create. Provide short description. Select the radio button program and selection screen. Enter. Provide the program name (ZSPRAO_930AM_CUS_IDOC_OB). Select the GUI checkboxes. Save.

ALE configuration steps for custom IDOC inbound: -

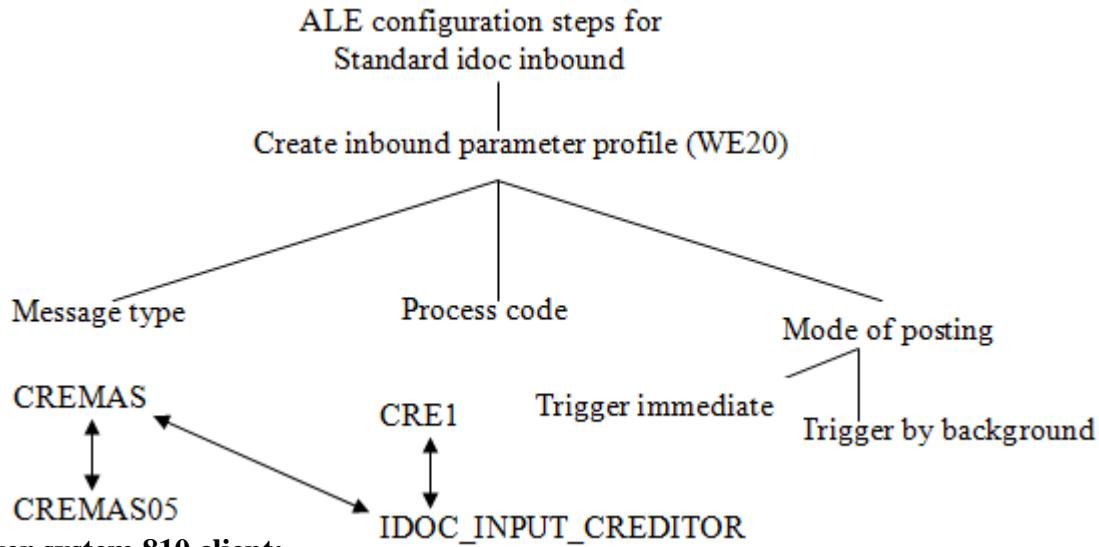
1. Create the segments (WE31).
2. Create the IDOC (WE30).
3. Create the message type (WE81).
4. Link the message type to idoc type (WE82).
5. Create the function module (SE37).

Note: - In the real time we never create our own function module. We always copy the existing function module because interface programs are same for any message type (import, export, - -).

6. Link the message type to function module & Idoc (WE57).
7. Create the mode of posting (BD51).
8. Create the process code (WE42).

9. Link the process code to function module (WE42).

10. Create inbound partner profile (WE20).



Against the process code it triggers the ZS930_IDOC_INPUT_GRTOR function module & stores the sender sending information in idoc data internal table. Here our business logic is read the segments & their information from IDOC_DATA internal table & posted to their respective data base tables.

Function module: ZS930_DOC_INPUT_GRTOR.

Data: wa_data like line of idoc_data,

Wa_reseg1 like z1sgrs1,

Wa like zs930gr,

Wa_stat like line of idoc_status.

Loop at idoc_data into wa_data.

If wa_data-segnam = 'Z1SGRS1'.

Wa_rseg1 = wa_data-sdata.

Move-corresponding wa_rseg1 to wa.

Insert zs930gr from wa.

If sy-subrc = 0.

Wa_stat-docnum = wa_data-docnum.

Wa_stat-status = '53'.

Append wa_stat to idoc_status.

Else.

Wa_stat-docnum = wa_data-docnum.

Wa_stat-status = '51'.

Append wa_stat to idoc_status.

Endif.

Endif.

Endloop.

SEGNAM	SDATA	DOCTYP	DOCNUM	GRNO	VNO	TNAME
Z1SGRS1	WA_SEG1	300002	2014	LR12345	AP04 1234	KISHORE
Z1SGRS2	WA_SEG1	300001	2014	LR98765	AP04 4304	SANDEEP

SEGNAM	SDATA	DOCTYP	DOCNUM	GRNO	VNO	TNAME
Z1SGRS1	WA_SEG1	300002	2014	LR12345	AP04 1234	KISHORE

GRNO	GRYEAR	LRNO	VNO	TNAME
300001	2014	LR98765	AP04 4304	SANDEEP

MANDT	GRNO	GRYEAR	LRNO	VNO	TNAME
	300001	2014	LR98765	AP04 4304	SANDEEP



Steps to test the inbound program by using inbound test tool: -

Execute 'WE19'. Select the radio button via message type. Provide message type (S930GRMAS). Click on execute. Double click on the segment. Provide the sample data (300001, 2014, LR98765, AP04 4304, SANDEEP). Enter. Click on inbound function module in the application tool bar. Select the check box call in debugging mode. Select the radio button in four ground. Enter. In the menu bar click on debugging → classic debugger. Continuously click on F5 button, absorb the process flow.

In sender system 800 client

Steps to send or generate IDOC through test transaction: -

Execute WE19, select the Radio button via message type. Provide the message type. Execute. Double click on the segment provide sample data. (60000, 2015, LR2222, AP20222, PAVAN). Enter. In the menu bar click on edit control record. Provide receiver port (S930GRP), partner number (SP810), port type (LS), sender partner number (SP800), partner type (LS). Enter. In the menu bar click on IDOC → test outbound idoc. Enter.

→ Configure the ALE to send as well as receives the employee training details as shown in the below.

Fieldname	Key	Data element	Domain	Data type	Length	Short description
MANDT	✓	As per SAP standard field MANDT				
EID	✓	ZS930EID	YS930EID	CHAR	10	EMPLOYEE ID
EWM	✓	ZS930EWM	YS930EWM	CHAR	15	EMPLOYEE WORKING MODULE
ETM	✓	ZS930ETM	YS930ETM	CHAR	15	EMPLOYEE TRAINING MODULE
ENAME		As per SAP standard field NAME1				
ETD		ZS930ETD	YS930ETD	CHAR	10	EMPLOYEE TRAINING DATE

Segment name: Z1ETS1

Idoc name : ZETI

Message type : SETMAS

Port number : ETPORT

* Design the selection screen

* Tables ZS930ET.

Selection-screen begin of block A with frame.

Select-options S_EID for ZS930ET-EID.

Parameter: P_MESTYP type EDI_MESTYP obligatory,
P_LOGSYS type LOGSYS.

Selection-screen end of block A.

Data: WA_DATA like EDIDD,

IT_DATA like table of WA_DATA.

Data: WA_SEG1 like Z1SGRS1,

IT_SEG1 like table of WA_SEG1.

Select EID EWM ETM ENAME ETD from ZS930ET into table IT_SEG1 where EID in S_EID.

Loop at IT_SEG1 into WA_SEG1.

WA_DATA-SEGNAM = 'Z1ETS1'.

WA_DATA-SDATA = WA_SEG1.

Append WA_DATA to IT_DATA.

Clear WA_DATA.

Endloop.

Data: WA_CONT like EDIDC,

IT_CONT like table of WA_CONT.

WA_SEG1		EID	EWM	ETM	ENAME	ETD
		SP001	MM	WM	PRADEEP	15.01.2015
IT_SEG1		EID	EWM	ETM	ENAME	ETD
		SP001	MM	WM	PRADEEP	15.01.2015
		SP002	SD	CRM	PAVAN	10.01.2014

WA DATA		SEGNAM	SDATA	SEGNAME	SDATA	SEGNAME	SDATA	SEGNAME	SDATA	SEGNAME	SDATA
		Z1ETS1	SP001	MM	WM	PRADEEP	15.01.2015	Z1ETS1	SP002	SD	CRM
											PAVAN

WA_CONT-SNDPRT = ‘LS’.
 WA_CONT-SNDPRN = ‘SP800’.
 WA_CONT-RCVPRT = ‘LS’.
 WA_CONT-RCVPRN = ‘SP810’.
 WA_CONT-RCVPOR = ‘ETPORT’.
 WA_CONT-DOCTYP = ‘ZETI’.
 WA_CONT-MESTYP = P_MESTYPE.

Append WA_CONT to IT_CONT.

*Declare communication idoc internal table

Data: WA_COMM like EDIDC,
IT_COMM like table of WA_COMM.

* For each receiver generate & dispatch communication idoc.

Loop at IT_CONT into WA_CONT.

Call function ‘MASTER_IDOC_DISTRIBUTE’

EXPORTING

MASTER_IDOC_CONTROL = WA_CONT

TABLES

COMMUNICATION_IDOC_CONTROL = IT_COMM

MASTER_IDOC_DATA = IT_DATA.

Commit work.

Endloop.

* Release the idocs for queue.

Call function ‘DEQUEUE_ALL’.

*Display the communication idoc to now the status.

Call function ‘REUSE_ALV_GRID_DISPLAY’

EXPORTING

I_STRUCTURE_NAME = ‘EDIDC’.

TABLE

T_OUTTAB = IT_COMM.

In receiver system 810 client: -

Function Module → ZS930_IDOC_INPUT_ETTOR.

Process code → ET1.

Process flow: -

After IDOC reached to receiver system then it goes inbound partner profile WE20 & check the message type ‘SETMAS’ is available or not. It’s available. So it goes to process code ET1. Against this process code it triggers the function module. In the function module tables tab we have IDOC_DATA internal table is available in that the sender data is stored.

Stored login: -

We read the data from IDOC_DATA internal table & posted the data into their data base tables.

Data: WA_DATA like line of IDOC_DATA,

WA_RSEG1 like Z1ETS1,

WA like ZS930ET,

WA_STAT like line of IDOC_STATUS.

Loop at IDOC_DATA into WA_DATA.

If WA_DATA-SEGNAM = ‘Z1ET1’.

WA_RSEG1 = WA_DATA-SDATA.

Move-corresponding WA_RSEG1 to WA.

Insert ZS930ET from WA.

If SY-SUBRC = 0.
 WA_STAT-DOCNUM = WA_DATA-DOCNUM.
 WA_STAT-STATUS = '53'.
 Append WA_STAT to IDOC_STATUS.
 Else.
 WA_STAT-DOCNUM = WA_DATA-DOCNUM.
 WA_STAT-STATUS = '51'.
 Append WA_STAT to IDOC_STATUS.

Endif.

Endif.

Endloop.

SEGNAM	SDATA	DOCNUM	WM	PRADEEP	15.01.2015
Z1ES1	WA_SEG1 SP001	MM			
Z1ES1	WA_SEG1 SP002	SD	CRM	PAVAN	10.05.2014

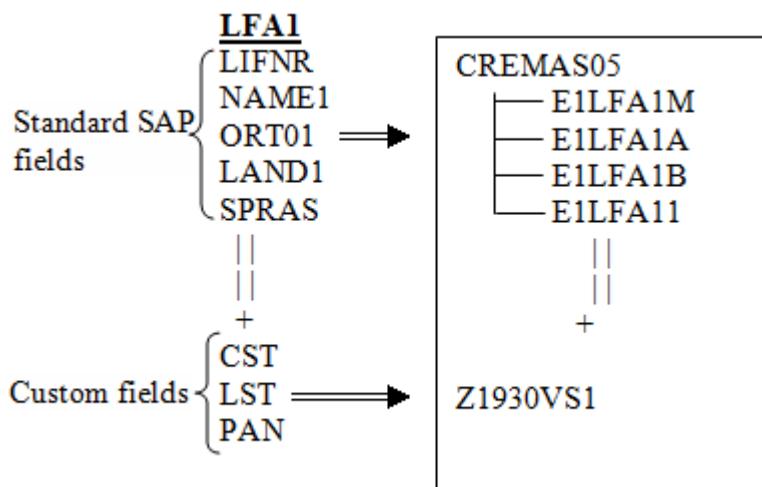
SEGNAM	SDATA	DOCNUM	WM	PRADEEP	15.01.2015
Z1ES1	WA_SEG1 SP001	MM	WM	PRADEEP	15.01.2015

EID	EUM	ETM	ENAME	ETD
SP001	MM	WM	PRADEEP	15.01.2015

MANDT	EID	EUM	ETM	ENAME	ETD
	SP001	MM	WM	PRADEEP	15.01.2015

Extension idoc: -

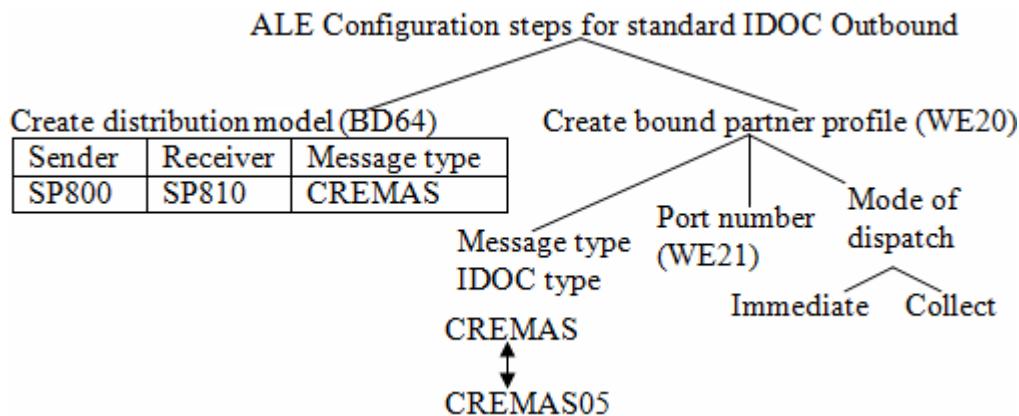
It's the collection of standard idoc + custom segment. As per client requirement if we add the CST number (Central Sales Tax), LST Number (Local Sales Tax), PAN Number to the LFA1table through append structure. If you want to send as well as receives the custom fields information along with standard field information then we go for extension IDOC.



ALE Configuration steps for extension IDOC outbound: -

1. Create the additional segments (WE31)
2. Create the extension IDOC (WE30)
3. Link the message type to extension IDOC (WE82)

4. Create the port number (WE21)
5. Create the outbound partner profile (WE20)
6. Create the distribution model (BD64)



Before configure the ALE the following fields are added to LFA1 table through append structure.

<u>Field</u>	<u>Data element</u>	<u>Data type</u>	<u>Length</u>
CSTNO	ZSPCSTNO	CHAR	10
LSTNO	ZSPLSTNO	CHAR	10
PANNO	ZSPPANNO	CHAR	10

Steps to create additional segments: -

Execute ‘WE31’. Provide the segment name (Z1930VS1). Click on create. Provide short description. Provide the field names as well as data elements.

1	CSTNO	ZSPLSTNO
2	LSTNO	ZSPLSTNO
3	PANNO	ZSPPANNO

Save, repeat the same steps for all segments.

Steps to create extension idoc: -

Execute ‘WE30’. Provide the extension idoc name (Z930EI). Select the radio button extension. Click on create. Provide the linked basic type (CREMAS05). Provide short description (Vendor extension idoc). Enter. Select the any one f the segment (E1LFA1M) (Reference segment), click on create segment. Enter. Provide the segment type (Z1930VS1). Provide minimum (1), maximum (99). Enter. Save.

Steps to link the message type to extension idoc: -

Execute WE82. Click on change mode. Enter. Click on new entries in the application tool bar. Provide the message type (CREMAS), basic type (CREMAS05), extension (Z930EI), release (700). Click on save. Create the port number.

Steps to create outbound partner profile:-

Execute WE20. Select the partner if the message type is already available then select message type. Click on detail. Provide the extension. Click on save.

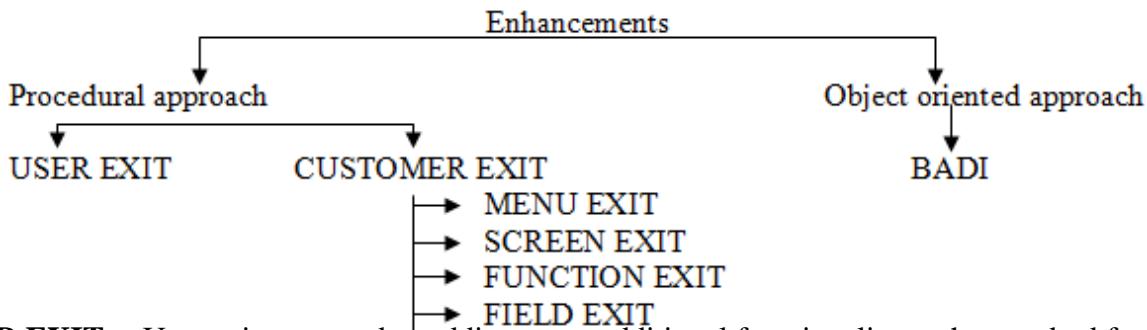
If the message type isn’t available then click on create outbound parameter. Provide the message type (CREMAS), port number (A000075). Select the radio button transfer idoc immediate. Provide the basic type (CREMAS05), extension (Z930EI). Save.

Create distribution model.

Note: - Developing a extension idoc outbound program is nothing but fill the additional segment information only. The standard segments are filled by standard program.

Here we add the filling of additional segments information to the standard program BD14.

Adding some additional functionality to the standard functionality without disturbing the standard functionality is always through enhancements.



USER EXIT: - User exits are used to adding some additional functionality to the standard functionality is always through sub routines (form, end form).

CUSTOMER EXIT: - It's used to adding some additional functionality to the standard functionality is always through function modules.

Note: - Customer exit is either menu exit or screen exit or function exit or field exit.

MENU EXIT: - It's used to adding some additional menus to the standard program.

SCREEN EXIT: - It's used to adding some additional sub screens to the standard program.

Working with Screen exit:-

Screen exit is used to adding some additional sub screens to the standard transaction code. Screen exit isn't possible for all the transaction codes. Some of the transaction codes which contains screen exit.

VX11:- Create financial document.

CO01:- Create production document.

CJ01:- Create work break down structure.

Note: - When ever we are working with screen exit first we add the screen fields to the standard data base table through append structure or create the 'Z' table with those fields. Based on the table fields we design the screen (screen number is provide by SAP people).

Steps to work with screen exit: -

Identify the package of the transaction. Based on the package we identify the customer exits. Identify the right customer exit which contains screen exit. Implement the customer exit through CMOD transaction.

→ Implement the screen exit for the VX11 transaction

Steps to identify the package of the transaction:-

Execute SE93. Provide the transaction code VX11. Click on display. Identify the package.

Steps to identify the customer exit based on the package:-

Execute SMOD transaction. Click on one find function key. Provide the package. Execute. Identify the all customer exits.

Steps to identify the right customer exit which contains screen exit: -

Double click on each customer exit. Identify the right customer exit which contains screen exit. (RVEEXAKK1).

Steps to implement the screen exit: -

Execute 'CMOD'. Provide the project name. click on create. Provide short description. Click on save. Click on enhancement assignments in the application tool bar. Provide the customer exit name. Enter. Click on save. Click on components. Click on back to initial screen. Select the radio button components. Double click on the first screen exit. Enter. Provide short description. Click on sub screen radio button. Click on save. Click on layout. Design the screen from table fields (AKKP). Save, check, activate the screen. Click on back. Activate the components. Back. Activate the project.

Steps to check the screen exit: -

Execute VX11. Provide the input. Enter.

FUNCTION EXIT: - Function exit play a major role in the real time. Because when ever we are working with menu exit & screen exit & their functionality is implemented through function exit.

FIELD EXIT: - It's used to perform the additional validations on the field. Now a days field exits are outdated.

In this extension idoc we identify the right function exit to add the filling of additional segments logic to the standard program 'BD14'. If you want to identify the function exit, first we need to identify the customer exit. Because function exit is key part of customer exit.

Note: - Customer exit always identified through package of the transaction code.

Steps to identify the package of transaction: -

Execute SE93. Provide the transaction code ('BD14') for which transaction function we need to identify the package. Click on display. Identify the package (CGV).

Steps to identify the customer exit based on the package: -

Execute 'SMOD'. Click on find function key. Provide the package (CGV). Click on execute. Identify the customer exits (VSV00002).

VSV00002 means VSV00001 as well as VSV00002.

Steps to identify the function exit based on the custom exit: -

Execute 'SMOD'. Provide the enhancement as customer exit name. Click on display. Click on components in the application tool bar. Read the short description of each & every function exit & identify the right function exit.

Note: - Some times we can't identify the right function exit based on the short description. So we always identify the right function exit through break points.

Note: - Outbound exit will be triggered after filling of each & every standard segment.

Note: - Customer exit is always implemented through project i.e. 'CMOD' transaction.

Steps to identify the right function ext based on the break point: -

Execute 'CMOD'. Provide the project name (Z930VE). Click on create. Provide short description. Click on save. Click on enhancement assignments in the application tool bar. Provide the enhancement as customer exit names. Enter. Save. Click on components in the application tool bar. Double click on each function exit. Place the cursor on include. Click on set / delete session break point. Activate. Back.

Click on change mode. Click on activate. Click on back. Activate the project. Now execute 'BD14'. Provide the input (S9090), message type, target system. Execute. Based on the given input outbound program will be triggered & fetch the application data from database & fill the first standard segment. After filling the each & every standard segment it goes to the right place then the cursor will stop at right place due to break point & identify the right ext.

FUNCTION EXIT_SAPLKD01_001.

Syntax rules of an IDOC: -

1. The data for the segment must exist, if it specified as mandatory.
2. We shouldn't exceed maximum number of repetitions for the segment.
3. The data for the segments must exist in the same physical sequence of the segments in the idoc.
4. The data for the child segment can't exist without having the data in parent segment.

Project: Z930VE

FUNCTION EXIT: EXIT_SAPLKD01_001

Data: wa_data like line of IDOC_DATA,

Wa_seg1 like Z1930VS1,

It_seg1 like table of wa_seg1,

Wa like E1LFA1M.

If segment-name = 'E1LFA1M'.

Read table idoc_data into wa_data index 1.

Wa = wa_data-sdata.

IDOC_DATA			
SEGNAM	SDATA	DOCNUM	
E1LFA1M	S9090 C123 L123 P123		
Z1930VS1	C123 L123 P123		
E1LFA1A			

Select CSTNO LSTNO PANNO from LFA1 into table it_seg1 where lifnr = wa-lifnr.

Loop at it_seg1 into wa_seg1.

Wa_data-segnam = 'Z1930VS1'.

Wa_data-sdata = wa_seg1.

Append wa_data to idoc_data.

Endloop.

Endif.

IDOC_CIMTYPE = 'Z930EI'.

WA					
LIFNR	NAME1	ORT01	SORTL	LAND1	---
S9090	COAL IN		COAL	DE	

WA DATA		
SEGNAM	SDATA	DOCNUM
Z1930VS1	C123 L123 P123	

IT SEG1		
CSTNO	LSTNO	PANNO
C123	L123	P123

WA SEG1		
CSTNO	LSTNO	PANNO
C123	L123	P123

Steps to send the vendor: -

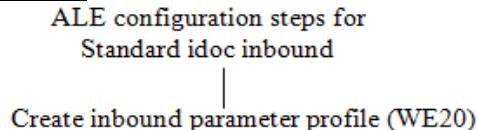
Execute BD14. Provide vendor number (S9090), message type (CREMAS), target system (SP810). Execute. Now it sends the standard segment information & custom segment information. Go to WE05/02 to absorb the all the segments.

Extend idoc inbound: -

Writing an extension idoc inbound is nothing but read & post the additional segment information only. The standard segments are read & posted by standard function module.

ALE configuration steps for extension IDOC inbound: -

1. Create the additional settings (WE31).
2. Create the extension idoc (WE30)
3. Link the message type to extension idoc (WE82)
5. Create inbound partner profile (WE20).



Steps to link the message type to function module and extension idoc: -

Execute 'WE57'. Click on change mode. Enter. Click on new entries in the application tool bar. Provide function module name IDOC_INPUT_CREDITOR. Select the function type as function module. Provide basic type as CREMAS05, extension as Z930EI, message type as CREMAS. Select the direction is inbound. Save.

Create inbound partner profile: -

Note: - Inbound exit will be triggered after it reaches the each & every custom segment. Outbound exit is '1'. Inbound exit is '2'.

Here inbound is '1' & inbound exit is '2'.

Procedure: -

After IDOC reached to receiver system then it goes to inbound partner profile WE20. & check the message type CREMAS is available or not. CREMAS message type is available. So it goes to process code CRE1. Against the process code, it identifies or triggers the inbound function module IDOC_INPUT_CREDITOR. This function module collects the first segment data E1LFA1M & Posted to data base. After it goes to 2nd segment Z1930VS1. This is the custom segment. So it goes to inbound ext. in this exit we develop the logic of custom segments data reading & posted to data base.

Project: Z930VE

EXIT NAME: EXIT_SAPLKD02_001.

Data: wa_data like line of idoc_data,

Wa_rseg1 like z1930vs1,

Rwa like e1lfa1m,

Wa_stat like line of idoc_status.

Loop at idoc_data into wa_data.

If wa_data-segnam = 'E1LFA1M'.

Rwa = wa_data-sdata.

Elseif wa_data-segnam = 'E1LFA1M'.

Wa_rseg1 = wa_data-sdata.

Update lfa1 set CSTNO = wa_rseg1-cstno

LSTNO = wa_rseg1-lstno

PANNO = wa_rseg1-panno

Where LIFNR = rwa-lifnr.

If sy-ucomm = 0.

Wa_stat-docnum = wa_data-docnum.

Wa_stat-status = '53'.

Append wa_stat to idoc_status.

Else.

Wa_stat-docnum = wa_data-docnum.

Wa_stat-status = '51'.

Append wa_stat to idoc_status.

Endif.

Endif.

Endloop.

IDOC_DATA

SEGNAM	SDATA	DOCNUM
E1LFA1M	S9090 C123 L123 P123	
Z1930VS1	C123 L123 P123	
E1LFA1A		

WA DATA

SEGNAM	SDATA	DOCNUM
Z1930VS1	C123 L123 P123	

WA_RSEG1

CSTNO	LSTNO	PANNO
C123	L123	P123

RWA

LIFNR	NAME1	ORT01	SORTL	LAND1	---
S9090	COAL IN		COAL	DE	

Serialization: -

Serialization is used to send as well as receive the collected message type information in a sequence.

EX: -

Material contains classification. I.e. first you need to send material & then classification.

If you send classification first then it waits until material is sent.

→ Create the serialization to send the material (MATMAS) & CLFMAS information.

Note: - CLFMAS → Material classification

ALE configuration steps for serialization outbound: -

1. Create the serialization group (SALE)

2. Create the distribution model with related message types and SERDAT message type.

3. Create the outbound partner profile with related message types & SERDAT message type.

Steps to create serialization group: -

Execute SALE. Expand modeling & implementing business process. Expand master data distribution. Expand serialization for sending & receiving data. Expand serialization using message type. Expand define serialization groups. Click on new entries in the application tool bar. Provide the serialization group (S930SG), short description. Click on save, (warning). Enter. Select the serialization group. Double click on assignment of logical message to serial group. Click on new entries. Provide the message type sequence number

MATMAS 1

CLFMAS 2

Click on save. Enter.

Create the distribution model with MATMAS CLFMAS and SERDAT: -

Execute BD64. Change, create model view.

Model view	DBMS
Sender	SP800
Receiver	SP810
Message	MATMAS

Click on filter model display.

SP800
SP810
MATMAS

Select that one delete.

Similar for CLFMAS, SERDAT.

Create the outbound partner profile with MATMAS CLFMAS SERDAT message type: -

Execute WE20 → LS → SP810 → Create outbound

CLFMAS	PORTNUMBER
--------	------------

Sender	Receiver	Message type
SP800	SP810	MATMAS
SP800	SP810	CLFMAS
SP800	SP810	SERDAT

BASIC type CLFMAS02
→ SERDAT, Port number, Basic type.

SDMO (for identifying the transaction based on short

description)

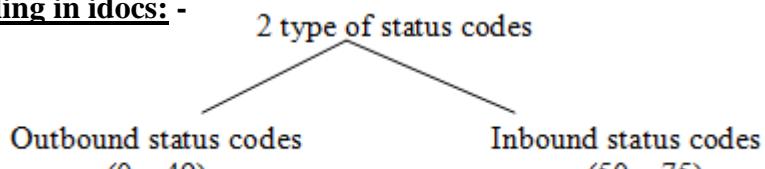
BD93 → send → classification.

Note: - Whenever we send the material details through BD10 & classification details through BD93 then the system check the serialization sequence & sent to the receiver system in same server.

ALE configuration steps for serialization inbound: -

1. Create the serialization group (SALE)
2. Create the inbound partner profile with related message types and SERDAT message type (WE20).

Working with status codes / error handling in idocs: -



Note: - WE47 is the transaction code which contains all the status codes & their short description.

Outbound status codes: -

Status code 03 (Data passed to port ok). After we get the status 03, we execute RBDMOIND standard program. If the status code 03 turns 12 then the idoc successfully reached to destination. If the status code 03 remains 03 same, then the idoc is in the TRFC (TRFC) port. If the status code 03 turned to 11 then the idoc is damaged in the TRFC port.

Status code 30 (Idoc ready for dispatch): -

If the status code remains 30 then must check mode of dispatch in the outbound partner profile (WE20). If the mode of dispatch is collect then we must execute RSEOUT00 standard program. Then only the collect idoc will be departed to their relevant receiver systems. If the mode of dispatch is immediate that is due to traffic. It'll reach with in 5 minutes.

Status code 29 (error in ALE server): -

→ An entry in the outbound table is missed (ABAPer job)

Outbound partner profile isn't available

→ Data miss matched (functional people job)

Ex: The given company 1000 isn't available

→ Synchronization and configuration program (BASIS people job)

Status code 26 (error during syntax check the idoc): -

When ever we aren't follow the syntax rules, then we get the syntax error i.e. 26.

Status code 42 (idoc was created by best transaction): -

When ever we generate the idoc through test transaction WE19 then we get the status code 42.

Status code 01 (idoc generated): -

When ever the communication idoc is generated then we get the status code '01'.

Note: - Status code 00 only used in R/2 system not in R/3 system.

Status code 64 (idoc ready to be transferred to application): -

If the status code remains 64 then must check the mode of posting in the inbound partner profile (WE20). If the mode of posting is trigger by background or collects then we must execute the RBDAPP01 standard program then only the collect IDOCS will be posted to their relevant data base tables. If the mode of posting is trigger immediate that's due to traffic.

Status code 51 (Application document not posted): -

→ Data mismatched (functional people)

Ex:- The given country 'IN' is not defined

→ Synchronization & Configuration problem (BASIS people job)

Status code 56 (idoc with error added): -

→ An ALE in the inbound table isn't found (ABAPer job)

→ (Inbound partner profile is not available)

Status code 53 (Application document posted): -

When ever the data is posted from the application to their relevant data base table successfully then we get the status code 53.

Status code 50 (idoc added): -

When ever the idoc reached to receiver system then we get the status code 50.

Status code 62(Idoc passed to application):-

After idoc reached to receiver system then the inbound function module collect the data from idoc & transferred to particular application if it's success then we get the status code 62.

Status code 74 (Idoc was created by test transaction): -

When ever we test the inbound program through inbound test tool WE19 then we get the status code 74 instead of 50.

Archiving idoc: -

Archiving idocs are used to move or transverse the idocs information from SAP system to temporary file in the presentation server. This is used to improve the performance of the system. Before archiving the idocs the BASIS people create the physical file path in the presentation server & logical file path in the SAP system & link the logical file path to physical file path through file transaction.

Note: - We can't archive the error idocs which status code is 29 & 51 directly. First we need to convert the error status code through some other status codes by using RC1_IDOC_SET_STATUS standard group. Later we archive the idoc.

Steps to convert the idoc status code: -

Execute SE38. Provide the program name. RC1_IDOC_SET_STATUS. Click on execute. Provide the idoc number. Old status code (51). New status code (68). Remove the check box test. Execute. 29 into 31

Steps to archive the idocs:-

Execute SARA. Provide the archive idoc is provide is ‘IDOC’. Click on enter. Click on write. Click on maintain. Provide the variant name (ZSV1). Click on create. Select the radio button for all selection view. Enter. Provide the inputs as per client requirement. Click on attributes. Provide the short description. Save. Click on back. Click on start data. Click on immediate or provide date & time save. Here the idocs are transferred or archived into physical file in the presentation server which is created by BASIS people.

Note: - ‘RSEXARCA’ is the standard program which is used to archive the IDOCS.

Note: - ‘RSEXARCD’ is the standard program which is used delete the archive idoc.

Note: - ‘RSEXARCL’ is the standard program which is used reload the archive idocs.

Note: - ‘WE11’ is the transaction code which is used to delete the idocs.

Steps to download the idoc information:-

Execute ‘IDOC’ transaction. Select the radio button analyse idoc field values. Execute (F8). Provide the idoc number (798746). Select the checkbox ‘Also output empty fields’. Execute. In the menu bar click on system → list → save → local file. Select the radio button spread sheet. Enter. Browse the file. Save. Generate.

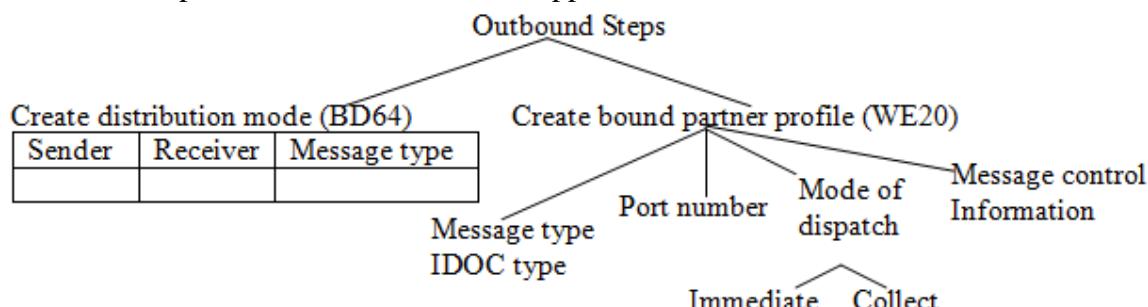
Working with transactional data: -

By using message control technique we can send the transactional data. When ever the functional people or end user create & save the transactional data then it automatically generate as well as dispatch the idoc.

ALE configuration steps for transactional data: -

1. Provide the output medium as ALE for the application

2.



→ Configure the ALE to send as well as receives the purchase order information

Steps to provide output medium as ALE for purchase order application: -

Execute ‘NACE’. Select the purchase order application (EF). Click on output types. Select the output type which is provided by functional people. Double click on processing routines in the left panel & absorb the medium. If the ALE medium isn’t available, click on change mode, select the EDI medium. Click on copy in the application toolbar. Select the transaction medium as ‘Distribution (ALE) instead of EDI. Click on enter.

Create the distribution model.

Sender	Receiver	Message type
SP800	SP810	ORDERS

Steps to create outbound partner profile with message control information:-

Execute WE20. Select the partner. Click on create outbound parameter. Provide the message type (ORDERS), port number (A000075). Select the radio button ‘Transfer IDOC immediate’, select the basic type (ORDERS05). Click on message control tab, click on insert row (+) button. Select the application (EF), select the message type (NEU). Select the process code (ME10).

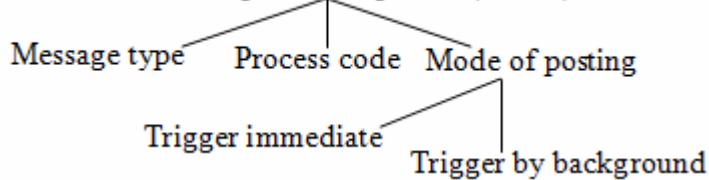
If you want to send the changes also then click on insert row (+) button once again. Provide the application, same message type, same process code. Select the check box change message. Click on

save. After completion of configuration the function people or end user perform the following activities.

Execute ME21N. Create the purchase order. Click on messages in the application tool bar. Provide the output type 'NEU', medium as 'ALE', partner type as 'LS' & provide partner number. Click on further data in the application tool bar. Enter & select the dispatch time is send immediately (when saving the application). Click on back. Save. Then automatically one idoc is generated & dispatched to receiver system.

ALE configuration steps for transactional data for inbound: -

1. Create **Inbound parameter profile (WE20)**



Steps to create inbound partner profile in receiver system: -

Execute WE20. Select the partner. Click on create inbound parameter. Select the message type 'ORDERSP'. Select the process code (ORDR). Click on save.

Note: - If you want to send the purchase order details to vendor then we must create outbound partner profile under partner type LI (in WE20). If you want to send the sales order details to the customer then you must create outbound partner profile under partner type KU. If you want to send the payment details to the bank then we must create outbound partner profile under partner type B.

OOABAP

Different types of programming structures

1. Unstructured Programming
2. Procedural Programming
3. Object Oriented Programming

1. Unstructured programming: -

- The entire program contains only one main.
- The same set of statements is placed in multiple locations of the same program.
- It's very difficult to maintain if the program becomes very large.

2. Procedural programming: -

- The entire program is splitted into smaller programs.
- The same set of statements is placed in a procedure (Subroutines or Function Module) & later we call the same procedure from different locations of the same program.
- All the subroutines & function modules can access the global declarations.
- It take little bit extra time to enhance the existing functionality.

3. Object Oriented Programming: -

- The entire program is visualized in terms of class & objects
- All the methods can't access the global declarations.
- It takes very less time to enhance the existing functionality.

Key features of object oriented programming: -

1. Better programming structure
2. Most stress on data security & access
3. Reduce the redundancy of code
4. Data abstraction & encapsulation.
5. Inheritance and polymorphism

Class and Object: -

Class is the blueprint or template of an object. Object is the real one.

EX: - If you want to build a form house then we take a plan from engineer to build the form house. It's nothing but class. Based on the plan constructed house is an object.

Note: - Based on one class we can create any number of objects.

There are two types of classes.

1. Local Class
2. Global class

Differences between Local & Global classes

Local

1. Local class name starts with any letter
2. It's created through SE38 transaction.
3. We can access the local class with in the program only.
4. Local class is stored in the memory of ABAP program.

Global

- 1) Global class name must start with 'Y' or 'Z'.
- 2) It's created through SE24 transaction.
- 3) We can access the global class from any where in the SAP.
- 4) Global class is stored in the class repository.

A class contains two sections.

1. Class Definition
2. Class implementation

Class definition: -

Class definition is nothing but declaring the all the components of the class & any one of the visibility section.

Components of a class: -

1. Attributes
2. Methods
3. Events
4. Interfaces

Attributes: - Attributes are used to declare the variables, work areas, internal tables which are needed to implement the logics.

Methods: - Method is the collection of statements which perform the particular activity.

Events: - Events are used to handle the methods of some other class.

Interface: - Interface is the collection of methods which are defined & not implemented.

There are three types of visibility sections.

1. Public Section
2. Protected Section
3. Private Section

1. Public Section: - We can access the public components within the class as well as outside the class.

2. Protected section: - We can access the protected components within the class as well as derived or child class.

3. Private section: - We can access the private components within the class only.

Note: - In ABAP we haven't default visibility section.

Syntax of class definition: -

Class <Class name> definition.

----- } components of class

Endclass.

Class Implementation: -

Class implementation is nothing but implementing the methods which are defined in the class definition.

Syntax of class implementation: -

Class <class name> implementation.

Method <method1>

Endmethod.

Method <method2>

Endmethod.

||

||

Endclass.

Note: - We can access the components of the class is always through class object.

Syntax of creating the object for the class: -

This is two step procedure.

1. Create the reference to the class

2. Create the object based on reference

Syntax of creating the reference to the class:-

Data <reference name> type ref to <class name>

Syntax of creating the object base on reference: -

Create object <reference name>.

Note: - Class object is always created under start-of-selection event only.

Syntax of declaring the method: -

Methods <method name> importing <IV1> type <DT>

<IV2> type <DT>

| |

Exporting <EV1> type <DT>

<EV2> type <DT>

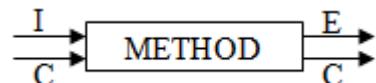
| |

| |

Changing <CV1> type <DT>

<CV2> type <DT>

| |



Syntax of implementing the method: -

If the method is declared in class

Syntax

Method <method name>.

```
-----  
----- logic  
-----  
Endmethod.
```

If the method is declared in interface.

Syntax

Method <interface>~<method>.

```
-----  
----- logic  
Endmethod.
```

Syntax of calling the method: -

Call method <object name of the class> -> <method name> exporting

<IV1> = <Value1>

<IV2> = <Value2>

Importing

<EV1> = <variable1>

<EV2> = <Variable2>

| |

| |

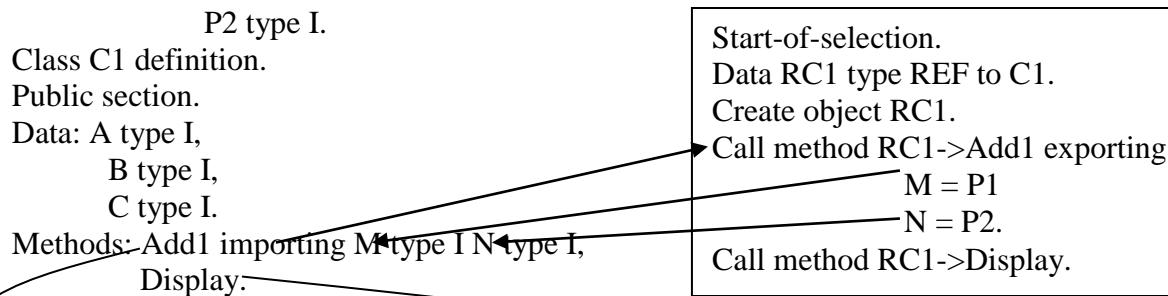
<object name of the class> -> <method name> (Exporting

Importing

-----)

→ Perform the addition of two numbers by using OOBAP.

Parameter: P1 type I,



→ Based on the given company code, display the comp code, comp name, city by using OOABAP.

PARAMETER P_BUKRS TYPE T001-BUKRS .

```

DATA: BEGIN OF WA_T001,
      BUKRS TYPE T001-BUKRS,
      BUTXT TYPE T001-BUTXT,
      ORT01 TYPE T001-ORT01,
      END OF WA_T001.

```

CLASS C1 DEFINITION.

PUBLIC SECTION.

```

METHODS: GET_DATA IMPORTING
         I_BUKRS TYPE T001-BUKRS,
         DISPLAY.

```

ENDCLASS.

CLASS C1 IMPLEMENTATION.

METHOD GET_DATA.

```

      SELECT SINGLE BUKRS BUTXT ORT01 FROM T001 INTO WA_T001 WHERE BUKRS
      = I_BUKRS .

```

ENDMETHOD.

METHOD DISPLAY.

```

      WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
      ENDMETHOD.

```

ENDCLASS.

START-OF-SELECTION.

DATA RC1 TYPE REF TO C1.

CREATE OBJECT RC1.

RC1->GET_DATA(EXPORTING I_BUKRS = P_BUKRS).

CALL METHOD RC1->DISPLAY.

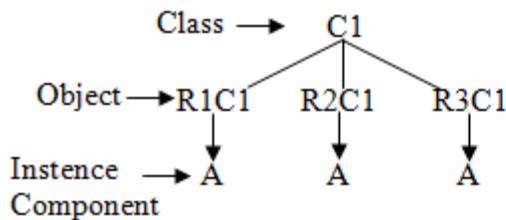
Each class contains two types of components

1. Instance components.
2. Static components

Differences between Instance & Static

Instance

- i. Instance components exists for each object of the class.



- ii. Instance components are declared with

- a) Data
- b) Methods
- c) Events
- d) Interfaces

- iii. Instance components always accessed through class objects.

CLASS C1 DEFINITION.

PUBLIC SECTION.

```

DATA A TYPE I VALUE '20'.
DATA B TYPE I VALUE '30'.
  
```

ENDCLASS.

START-OF-SELECTION.

```
DATA RC1 TYPE REF TO C1.
```

```
CREATE OBJECT RC1.
```

```
WRITE RC1->A.
```

```
WRITE RC1->B.
```

```
WRITE C1=>B.
```

→ Manually filling the company code, company name & city internal tables by using OOABAP.

TYPES: BEGIN OF TY_T001,

```
BUKRS TYPE T001-BUKRS,
```

```
BUTXT TYPE T001-BUTXT,
```

```
ORT01 TYPE T001-ORT01,
```

```
END OF TY_T001.
```

DATA: WA_T001 TYPE TY_T001,

```
IT_T001 TYPE TABLE OF TY_T001.
```

CLASS C1 DEFINITION.

PUBLIC SECTION.

```

METHODS: GET_DATA IMPORTING
         I_BUKRS TYPE BUKRS
         I_BUTXT TYPE BUTXT
         I_ORT01 TYPE ORT01.
  
```

ENDCLASS.

CLASS C1 IMPLEMENTATION.

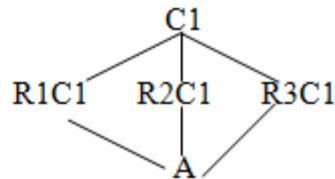
METHOD GET_DATA.

```

WA_T001-BUKRS = I_BUKRS.
WA_T001-BUTXT = I_BUTXT.
WA_T001-ORT01 = I_ORT01.
  
```

Static

- i. Static components exists for only once for all objects at class.



- ii. Static components are declared with

- a. Class-Data
- b. Class-Methods
- c. Class-Events
- d. Class-Interfaces

- iii. Static components always accessed through class object or class name.

```

APPEND WA_T001 TO IT_T001.
CLEAR WA_T001.
ENDMETHOD.
ENDCLASS.
START-OF-SELECTION.
DATA RC1 TYPE REF TO C1.
CREATE OBJECT RC1.
CALL METHOD RC1->GET_DATA
  EXPORTING
    I_BUKRS = '1000'
    I_BUTXT = 'HCL'
    I_ORT01 = 'HYD'.
CALL METHOD RC1->GET_DATA
  EXPORTING
    I_BUKRS = '2000'
    I_BUTXT = 'IBM'
    I_ORT01 = 'CHE'.
LOOP AT IT_T001 INTO WA_T001.
  WRITE:/ WA_T001-BUKRS,WA_T001-BUTXT,WA_T001-ORT01.
ENDLOOP.

```

Inheritance: - Inheritance is used to create a new class based on existing class. The new class is called child class / derived class / sub class. The existing class is called super class / parent class.

The sub class can access the all the components at super class which are defined under public or protection section only not under the private section. Through super class object we can access the components of the super class only. Through sub class object we can access the components of sub class as well as super class also.

Syntax of defining the subclass: -

Class <sub class name> definition inheriting from <super class name>.

Public / protected / private section.

----- }
----- } components.
----- }

Endclass.

→ Based on given company code display the company code, company name & cit by using OOABAP which inheritance concept.

```

PARAMETER P_BUKRS TYPE T001-BUKRS.
DATA: BEGIN OF WA_T001,
      BUKRS TYPE T001-BUKRS,
      BUTXT TYPE T001-BUTXT,
      ORT01 TYPE T001-ORT01,
      END OF WA_T001.

CLASS C1 DEFINITION.
  PUBLIC SECTION.
    METHODS GET_DATA IMPORTING
      I_BUKRS TYPE BUKRS.
  ENDCCLASS.

CLASS C1 IMPLEMENTATION.
  METHOD GET_DATA.

```

```

SELECT SINGLE BUKRS BUTXT ORT01 FROM T001 INTO WA_T001 WHERE BUKRS
= I_BUKRS.
ENDMETHOD.
ENDCLASS.
CLASS C2 DEFINITION INHERITING FROM C1.
PUBLIC SECTION.
METHODS DISPLAY.
ENDCLASS.
CLASS C2 IMPLEMENTATION.
METHOD DISPLAY.
WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
ENDMETHOD.
ENDCLASS.
START-OF-SELECTION.
DATA: RC1 TYPE REF TO C1,
      RC2 TYPE REF TO C2.
CREATE OBJECT: RC1, RC2.
CALL METHOD RC2->GET_DATA
EXPORTING
I_BUKRS = P_BUKRS.
CALL METHOD RC2->DISPLAY.

```

→ Develop a Global class & method to display the all purchasing document details based on the given purchasing document number.

Execute ‘SE24’. Provide the object type as class name (ZSPRAO_10AM_GC1). Click on create. Enter. Provide short description. Click on save click on local object. Provide the method name (GET_PO_DETAILS). Select the level (INSTANCE Method). Select the visibility as public, provide short description. Click on parameters.

<u>Parameter</u>	<u>Type</u>	<u>Typing message</u>	<u>Associated type</u>
I_EBELN	IMPORTING TYPE		EKKO-EBELN
E_WA	EXPORTING TYPE		EKKO

Click on save. Click on code icon beside exceptions. Click on signature in the application tool bar & identifies the input output parameters & implement the logic.

METHOD GET_PO_DETAILS.

SELECT SINGLE * FROM EKKO INTO E_WA WHERE EBELN = I_EBELN.

ENDMETHOD.

Save, check, activate the method. Click on back. Repeat the same steps for all other methods. Save, check, activate the class.

Steps to create the object for Global class: -

Place the cursor in the program where we want to create the object. Click on pattern in the application tool bar. Select the radio button ABAP objects patterns. Enter. Select the radio button create object. Provide the instance name as reference name (RGC). Provide the Global class name (ZSPRAO_10AM_GC1). Enter.

Note: – Constructer is the one special type of method I the class we no need to call the constructer extensity by using call method when ever we create the object for the class then automatically constructer will be triggered & asked the input output parameters.

Steps to call the Global method:

Place the cursor where we want to call the method in the program. Click on pattern in the application tool bar. Select the ABAP objects patterns. Enter. Select the radio button call method. Provide the instance

name as reference name (RGC). Provide the class name (ZSOPRAO_10AM_GC1), method name (GET_PO_DETAILS). Enter.

```
PARAMETER P_EBELN TYPE EKKO-EBELN.  
DATA: WA_EKKO LIKE EKKO,  
      IT_EKKO LIKE TABLE OF WA_EKKO.  
* CREATE THE REFERENCE TO THE GLOBAL CLASS.  
DATA RGC TYPE REF TO ZSPRAO_10AM_GC1.  
* CREATE THE OBJECT.  
START-OF-SELECTION.  
  CREATE OBJECT RGC.  
  CALL METHOD RGC->GET_PO_DETAILS  
    EXPORTING  
      I_EBELN = P_EBELN  
    IMPORTING  
      E_WA      = WA_EKKO.  
    APPEND WA_EKKO TO IT_EKKO.  
* Display the output.  
  CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'  
    EXPORTING  
      I_STRUCTURE_NAME = 'EKKO'  
    TABLES  
      T_OUTTAB          = IT_EKKO.
```

Note: - If you want to declare the WA with some of the fields in the global method & class then we must create one structure with those fields in the data dictionary & after we refer the structure in global method & class.

Note: - If you want to declare the IT with some of the fields in the global & method & class then in data dictionary & later we refer the table type in the global class & method.

Note: - If you want to declare the select-options in global class & method then we must create one table type with sign, option, low, high in the data dictionary & later we refer the table type in the global method & class.

→ Based on the given sales document number, display the sales document number, document date & customer number by using global class & method.

In this object we create one structure with VBELN, AUDAT, KUNNR & later we refer the structure in the global method.

Structure : ZSPRAO_10AM_GCS

<u>Component</u>	<u>Component type</u>
VBELN	VBELN_VA
AUDAT	AUDAT
KUNNR	KUNAG

Global class: ZSPRAO_10AM_GC2

Method : GET_SO_DETAILS

<u>Parameter</u>	<u>Type</u>	<u>Typing message</u>	<u>Associated type</u>
I_VBELN	IMPORTING	TYPE	VBAK-VBELN
E_WA	EXPORTING	TYPE	ZSPRAO_10AM_GCS

Code: -

```
SELECT SINGLE VBELN AUDAT KUNNR FROM VBAK INTO E_WA WHERE VBELN =  
I_VBELN.  
  
PARAMETER P_VBELN TYPE VBAK-VBELN.  
DATA WA_VBAK TYPE ZSPRAO_10AM_GCS.  
* Create the reference  
DATA RGC TYPE REF TO ZSPRAO_10AM_GC2.  
* Create the object  
START-OF-SELECTION.  
CREATE OBJECT RGC.  
* Call the method  
CALL METHOD RGC->GET_SO_DETAILS  
EXPORTING  
I_VBELN = P_VBELN  
IMPORTING  
E_WA = WA_VBAK.  
WRITE:/ WA_VBAK-VBELN, WA_VBAK-AUDAT, WA_VBAK-KUNNR.
```

→ Based on the given material numbers, display the material numbers, material types, plant numbers, plant descriptions by using global class & method.

In this object we create two table types one is for select-options, one is for display the output. Creation of table type is two step procedure.

1. Create the structure with those fields.
2. Based on the structure we create the table type.

Structure: ZSPRAO_10AM_GCSI

Sign	Char	1
Option	Char	2
Low	Char	18
High	Char	18

Table type name: ZSPRAO_10AM_TTI.

Line type : ZSPRAO_10AM_GCS0.

MATNR	MATNR
MTART	MTART
WERKS	WERKS_D
NAME1	NAME1

Table type: ZSPRAO_10AM_TTO

Line type: ZSPRAO_10AM_GCS0

Class name: ZSPRAO_10AM_GC3

Method : GET_MAT_DETAILS

I_SMATNR	Importing	type	ZSPRAO_10AM_TTI
E_IT	Exporting	type	ZSPRAO_10AM_TTO

Code: -

```
SELECT MARA~MATNR MARA~MTART MARC~WERKS T001W~NAME1 INTO TABLE E_IT  
FROM MARA INNER JOIN MARC ON MARA~MATNR = MARC~MATNR INNER JOIN T001W  
ON MARC~WERKS = T001W~WERKS WHERE MARA~MATNR IN I_SMATNR.
```

TABLES MARA.

SELECT-OPTIONS S_MATNR FOR MARA-MATNR.

DATA IT_FINAL TYPE ZSPRAO_10AM_TTO.

```

* Create the reference to the class
DATA RGC TYPE REF TO ZSPRAO_10AM_GC3.

* Create the object
START-OF-SELECTION.
  CREATE OBJECT RGC.

* Call the method
  CALL METHOD RGC->GET_MAT_DETAILS
    EXPORTING
      I_SMATNR = S_MATNR[]
    IMPORTING
      E_IT      = IT_FINAL.

* Display the output
  CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
    EXPORTING
      I_STRUCTURE_NAME = 'ZSPRAO_10AM_GCSO'
    TABLES
      T_OUTTAB        = IT_FINAL.

```

→ Based on the given company code, display the vendors, vendor company details (BUKRS, LIFNR, AKONT) by using global class and method

Steps to create the global class method: -

Execute SE24. Provide the class name (ZSPRAO_10AM_GC4). Click on create. Enter. Provide short description. Enter. Click on types tab. Provide the type name.

Type name : TY_LFB1

Visibility : Public

Select the visibility and click on back (against type). Click on yes. Remove the types. Declare the data types.

Types: Begin of ty_lfb1,

Bukrs type lfb1-bukrs,

Lifnr type lfb1-lifnr,

Akont type lfb1-akont,

End of ty_lfb1.

Types TY_T_LFB1 type table of ty_lfb1.

Save, check, activate. Click on back. Click on methods tab. Provide the method name (GET_VENDOR).

Select the level is (Instance method). Select the visibility is public. Provide description. Click on parameters tab.

<u>Parameter</u>	<u>Type</u>	<u>Typing message</u>	<u>Associated type</u>
I_bukrs	importing	type	lfb1-bukrs
E_it	exporting	type	ty_t_lfb1

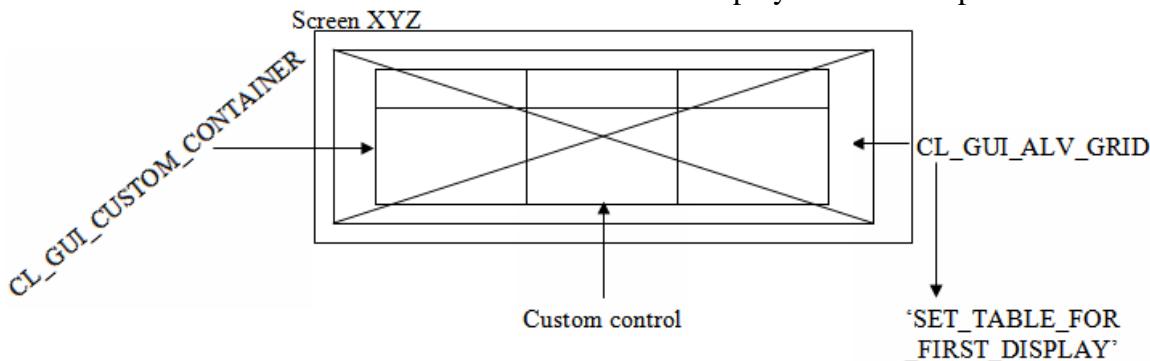
Click on save. Click on code.

Select bukrs lifnr akont from lfb1 into table e_it where bukrs = i_bukrs.

Save, check, activate the method. Click on back. Save, check, activate the class.

OOPS ALV

When ever we are working with OPPS ALV, then we must design one custom screen other than '1000' and draw the custom control screen element. In that we display the ALV output.



CL_GUI_CUSTOM_CONTAINER: - The Global class which refers the custom control screen element.

CL_GUI_ALV_GRID: - The global class which refers the ALV Grid.

SET_TABLE_FOR_FIRST_DISPLAY: - This is the Global method under grid class which is used to display the output in an OOPS ALV. The input for the above method is two internal tables.

1. Data internal table

2. Field catalog internal table

If you want to call this method then we must create object for gird class. When ever we create the object for gird class then automatically one constructor is triggered and asks the input as object name of container class.

When ever we create the object for container class then automatically one constructor is triggered and asks the input as container name.

Note: - When ever we are working with OOPS ALV then we must design one custom screen

Steps to work with OOPS ALV:-

1. Create the selection-screen / input fields.
2. Declare the data internal table and field internal table
3. Create the reference to the container and grid start-of-selection.

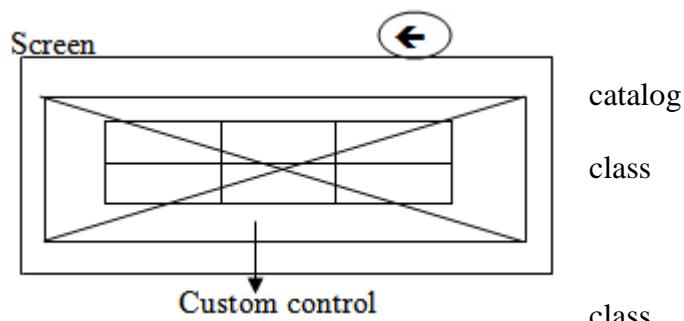
PBO of the screen:

1. Design the back button
2. Create the object to the container and gird
3. Fill the data internal table
4. Fill the field catalog

5. Call the SET_TABLE_FOR_FIRST_DISPLAY method

PAI of the screen

1. Logic of back button.



Filling the field catalog

If we are working with all the fields from any one of the data base table / structure, then we no need to prepare the filed catalog. We simply pass i_structure_name as data base table name / structure name.

Manually filling the field catalog

By using 'LVC_FIELDCATALOG_MERGE' function module

Some of the fields in field catalog:-

1. Field name → Name of the field
2. Col_pos → Column position
3. Coltext → Column heading
4. Emphasize → Color
5. Outputlen → Length of the displayed field
6. No-zero → Remove the leading zero's
7. No-sign → Remove the leading sign
8. No-out → Hide the displayed field
9. Hotspot → Handle symbol
10. Edit → Changeable mode
11. Do_sum → Calculate the total

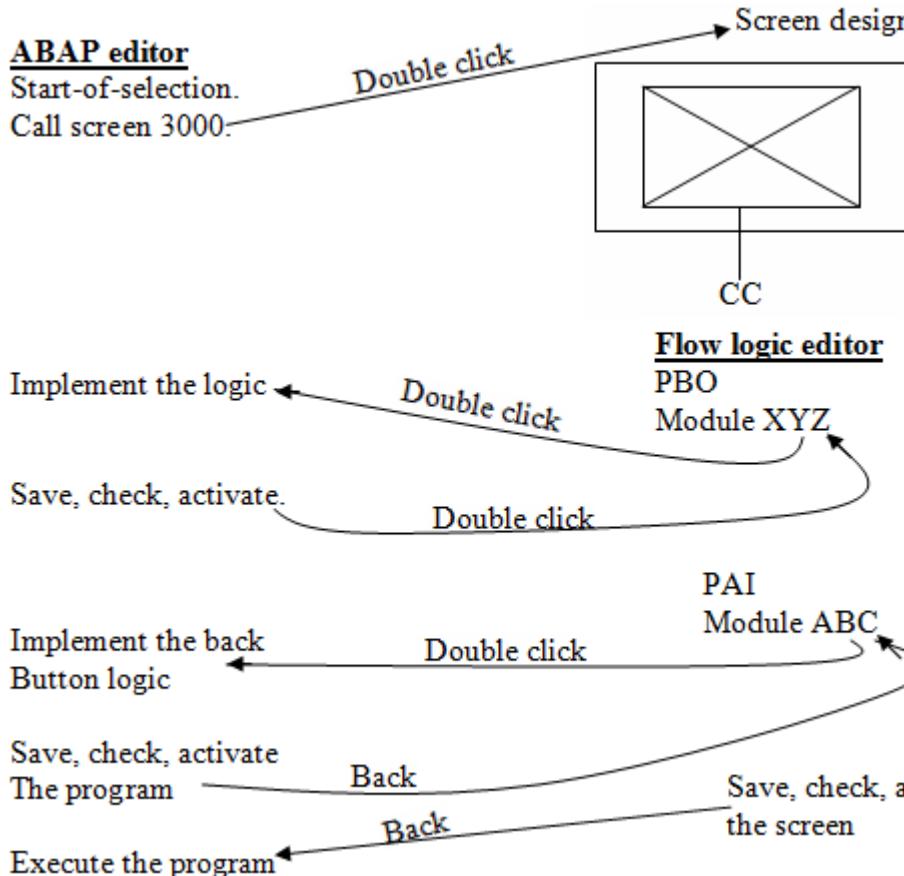
→ Based on the given purchasing document numbers to display the all the purchasing document header details by using OOPS ALV.

```
REPORT ZOOPS7.  
TABLES EKKO.  
SELECT-OPTIONS S_EBELN FOR EKKO-EBELN.  
* Declare the data internal table  
DATA IT LIKE TABLE OF EKKO.  
* Create the reference to the container and grid  
DATA RC TYPE REF TO CL_GUI_CUSTOM_CONTAINER.  
DATA RG TYPE REF TO CL_GUI_ALV_GRID.  
START-OF-SELECTION.  
  CALL SCREEN '2000'.  
MODULE STATUS_2000 OUTPUT.  
  SET PF-STATUS 'STATUS'.  
* Create the object for container and grid  
  CREATE OBJECT RC  
    EXPORTING  
      CONTAINER_NAME = 'CC'.  
  CREATE OBJECT RG  
    EXPORTING  
      I_PARENT = RC.  
* Filling the data internal table  
  SELECT * FROM EKKO INTO TABLE IT WHERE EBELN IN S_EBELN.  
* Display the output  
  CALL METHOD RG->SET_TABLE_FOR_FIRST_DISPLAY  
    EXPORTING  
      I_STRUCTURE_NAME = 'EKKO'  
    CHANGING  
      IT_OUTTAB      = IT.  
ENDMODULE.  
MODULE USER_COMMAND_2000 INPUT.  
  IF SY-UCOMM = 'BACK'.  
    LEAVE TO SCREEN 0.  
  ENDIF.  
ENDMODULE.
```

Flow logic of 2000 screen

```
PROCESS BEFORE OUTPUT.  
MODULE STATUS_2000.
```

PROCESS AFTER INPUT.
MODULE USER_COMMAND_2000.



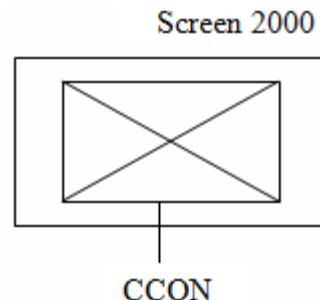
→ Based on the given customer numbers to display the customer numbers, names & cities by using OOPS ALV and also display the customer numbers with green color, name with hotspot, city with edit.

```

TABLES KNA1.
SELECT-OPTIONS S_KUNNR FOR KNA1-KUNNR.
* Declare the data internal table
TYPES: BEGIN OF TY_KNA1,
        KUNNR TYPE KNA1-KUNNR,
        NAME1 TYPE KNA1-NAME1,
        ORT01 TYPE KNA1-ORT01,
        END OF TY_KNA1.
DATA: WA_KNA1 TYPE TY_KNA1,
      IT_KNA1 TYPE TABLE OF TY_KNA1.
* Declare the field catalog
DATA: IT_FCAT TYPE LVC_T_FCAT,
      WA_FCAT LIKE LINE OF IT_FCAT.
* Create the references
DATA: RC TYPE REF TO CL_GUI_CUSTOM_CONTAINER,
      RG TYPE REF TO CL_GUI_ALV_GRID.
  
```

```

START-OF-SELECTION.
  CALL SCREEN '2000'.
MODULE STATUS_2000 OUTPUT.
  
```



```

SET PF-STATUS 'STAT'.
CREATE OBJECT RC
  EXPORTING
    CONTAINER_NAME = 'CC'.
CREATE OBJECT RG
  EXPORTING
    I_PARENT = RC.
* Filling the data internal table
SELECT KUNNR NAME1 ORT01 FROM KNA1 INTO TABLE IT_KNA1 WHERE KUNNR IN
S_KUNNR.
* Filling the field catalog
WA_FCAT-FIELDNAME = 'KUNNR'.
WA_FCAT-COL_POS = '1'.
WA_FCAT-COLTEXT = 'CUSTOMER'.
WA_FCAT-EMPHASIZE = 'C501'.
WA_FCAT-NO_ZERO = 'X'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'NAME1'.
WA_FCAT-COL_POS = '2'.
WA_FCAT-COLTEXT = 'CUST.NAME'.
WA_FCAT-HOTSPOT = 'X'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'ORT01'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-COLTEXT = 'CITY'.
WA_FCAT-EDIT = 'X'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
* Display the output
CALL METHOD RG->SET_TABLE_FOR_FIRST_DISPLAY
  CHANGING
    IT_OUTTAB      = IT_KNA1
    IT_FIELDCATALOG = IT_FCAT.
ENDMODULE.

```

MODULE USER_COMMAND_2000 INPUT.

IF SY-UCOMM = 'BACK'.

LEAVE TO SCREEN 0.

ENDIF.

ENDMODULE.

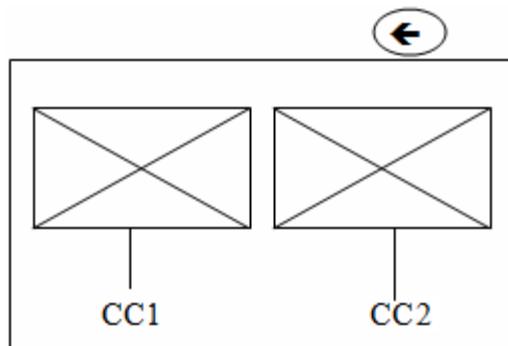
→ Based on the given sales order numbers, display the sales document header details (VBELN, AUDAT, KUNNR) & sales doc item details (VBELN, POSNR, KWMENG, MEINS, NETWR) side by side by using OOPS ALV.

TABLES VBAK.

SELECT-OPTIONS S_VBELN FOR VBAK-VBELN.

TYPES: BEGIN OF TY_VBAK,

VBELN TYPE VBAK-VBELN,
 AUDAT TYPE VBAK-AUDAT,



```

        KUNNR TYPE VBAK-KUNNR,
        END OF TY_VBAK.
DATA: WA_VBAK TYPE TY_VBAK,
      IT_VBAK TYPE TABLE OF TY_VBAK.
TYPES: BEGIN OF TY_VBAP,
        VBELN TYPE VBAP-VBELN,
        POSNR TYPE VBAP-POSNR,
        KWMENG TYPE VBAP-KWMENG,
        MEINS TYPE VBAP-MEINS,
        NETWR TYPE VBAP-NETWR,
        END OF TY_VBAP.
DATA: WA_VBAP TYPE TY_VBAP,
      IT_VBAP TYPE TABLE OF TY_VBAP.
* Declare the field catalogs
DATA: IT_FCAT1 TYPE LVC_T_FCAT,
      WA_FCAT1 LIKE LINE OF IT_FCAT1.
DATA: IT_FCAT2 TYPE LVC_T_FCAT,
      WA_FCAT2 LIKE LINE OF IT_FCAT2.
* Create the references
DATA: RC1 TYPE REF TO CL_GUI_CUSTOM_CONTAINER,
      RG1 TYPE REF TO CL_GUI_ALV_GRID.
DATA: RC2 TYPE REF TO CL_GUI_CUSTOM_CONTAINER,
      RG2 TYPE REF TO CL_GUI_ALV_GRID.

START-OF-SELECTION.
  CALL SCREEN '2000'.
MODULE STATUS_2000 OUTPUT.
  SET PF-STATUS 'STAT'.
  CREATE OBJECT RC1
    EXPORTING
      CONTAINER_NAME = 'CC1'.
  CREATE OBJECT RG1
    EXPORTING
      I_PARENT = RC1.
  CREATE OBJECT RC2
    EXPORTING
      CONTAINER_NAME = 'CC2'.
  CREATE OBJECT RG2
    EXPORTING
      I_PARENT = RC2.
* Filling the data internal tables
  SELECT VBELN AUDAT KUNNR FROM VBAK INTO TABLE IT_VBAK WHERE VBELN IN
S_VBELN.
  SELECT VBELN POSNR KWMENG MEINS NETWR FROM VBAP INTO TABLE IT_VBAP
WHERE VBELN IN S_VBELN.
* Filling the field catalogs
  WA_FCAT1-FIELDNAME = 'VBELN'.
  WA_FCAT1-COL_POS = '1'.
  WA_FCAT1-COLTEXT = 'SALES.DOC'.
  APPEND WA_FCAT1 TO IT_FCAT1.
  CLEAR WA_FCAT1.

```

```

WA_FCAT1-FIELDNAME = 'AUDAT'.
WA_FCAT1-COL_POS = '2'.
WA_FCAT1-COLTEXT = 'DOC.DATE'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.
WA_FCAT1-FIELDNAME = 'KUNNR'.
WA_FCAT1-COL_POS = '3'.
WA_FCAT1-COLTEXT = 'CUSTOMER'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.

WA_FCAT2-FIELDNAME = 'VBELN'.
WA_FCAT2-COL_POS = '1'.
WA_FCAT2-COLTEXT = 'SALES.DOC'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.
WA_FCAT2-FIELDNAME = 'POSNR'.
WA_FCAT2-COL_POS = '2'.
WA_FCAT2-COLTEXT = 'ITEM'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.
WA_FCAT2-FIELDNAME = 'KWMENG'.
WA_FCAT2-COL_POS = '3'.
WA_FCAT2-COLTEXT = 'QTY'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.
WA_FCAT2-FIELDNAME = 'MEINS'.
WA_FCAT2-COL_POS = '4'.
WA_FCAT2-COLTEXT = 'UOM'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.
WA_FCAT2-FIELDNAME = 'NETWR'.
WA_FCAT2-COL_POS = '5'.
WA_FCAT2-COLTEXT = 'PRICE'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.

CALL METHOD RG1->SET_TABLE_FOR_FIRST_DISPLAY
  CHANGING
    IT_OUTTAB      = IT_VBAK
    IT_FIELDCATALOG = IT_FCAT1.

CALL METHOD RG2->SET_TABLE_FOR_FIRST_DISPLAY
  CHANGING
    IT_OUTTAB      = IT_VBAP
    IT_FIELDCATALOG = IT_FCAT2.

ENDMODULE.

MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'BACK'.
    LEAVE TO SCREEN 0.
  ENDIF.
ENDMODULE.

```

Some of the fields in layout work area: -

1. CWIDTH_OPT → Compress the displayed fields.
2. ZEBRA → Stripped pattern
3. INFO_FNAME → color field

Note: - In the DDIC we have one structure. That is ‘LVC_S_LAYO’ which contains above fields. So we simply declare our layout work area by referring ‘LVC_S_LAYO’.

→ Based on the given purchasing document numbers, display the document numbers, item numbers, quantity, UOM & net price & also display the item details in a yellow color if the amount is more than ‘1000’ by using OOPS ALV.

Steps to work with row color:

1. Declare the additional color field in the data internal table, which is char & length is 4.
2. Fill the data internal table based on given input
3. Modify the color field based on client requirement
4. pass the color field name into layout work area (INFO, FNAME field)
5. Fill the field catalog
6. Display the output by using SET_TABLE_FOR_FIRST_DISPLAY method by passing data internal table, field catalog internal table, layout work area.

TABLES EKPO.

SELECT-OPTIONS S_EBELN FOR EKPO-EBELN.

* Declare the data internal table

TYPES: BEGIN OF TY_EKPO,

```

    EBELN TYPE EKPO-EBELN,
    EBELP TYPE EKPO-EBELP,
    MENGE TYPE EKPO-MENGE,
    MEINS TYPE EKPO-MEINS,
    NETPR TYPE EKPO-NETPR,
    CF(4) TYPE C,
  END OF TY_EKPO.
```

DATA: WA_EKPO TYPE TY_EKPO,
 IT_EKPO TYPE TABLE OF TY_EKPO.

* Declare the field catalog

DATA: IT_FCAT TYPE LVC_T_FCAT,
 WA_FCAT LIKE LINE OF IT_FCAT.

* Declare the layout work area

DATA WA_LAYOUT TYPE LVC_S_LAYO.

* Create the reference

DATA: RC TYPE REF TO CL_GUI_CUSTOM_CONTAINER,
 RG TYPE REF TO CL_GUI_ALV_GRID.

START-OF-SELECTION.

CALL SCREEN '2000'.

MODULE STATUS_2000 OUTPUT.

SET PF-STATUS 'STAT'.

* Create the object

CREATE OBJECT RC

EXPORTING

CONTAINER_NAME = 'CC'.

CREATE OBJECT RG

C 4
IT_EKKO

EBELN	EBELP	MENGE	MEINS	NETPR	CF
30004	01	10	KG	570.00	
30004	02	2	PCS	1130.00	
30005	01	5	LT	1500.00	
30005	02	7	BOX	250.00	

WA_EKKO-CF =

‘C310’.

Modify it_ekpo from

WA_EKKO

EBELN	EBELP	MENGE	MEINS	NETPR	CF
30004	01	10	KG	570.00	

```

EXPORTING
  I_PARENT = RC.
* Filling the data internal table
  SELECT EBELN EBELP MENGE MEINS NETPR FROM EKPO INTO TABLE IT_EKPO
  WHERE EBELN IN S_EBELN.
* Modify the color field.
  WA_EKPO-CF = 'C310'.
  MODIFY IT_EKPO FROM WA_EKPO TRANSPORTING CF WHERE NETPR > 1000.
* Pass the color field into layout work area.
  WA_LAYOUT-INFO_FNAME = 'CF'.
* Filling the field catalog
  WA_FCAT-FIELDNAME = 'EBELN'.
  WA_FCAT-COL_POS = '1'.
  WA_FCAT-COLTEXT = 'PUR.DOC'.
  APPEND WA_FCAT TO IT_FCAT.
  CLEAR WA_FCAT.
  WA_FCAT-FIELDNAME = 'EBELP'.
  WA_FCAT-COL_POS = '2'.
  WA_FCAT-COLTEXT = 'ITEM'.
  APPEND WA_FCAT TO IT_FCAT.
  CLEAR WA_FCAT.
  WA_FCAT-FIELDNAME = 'MENGE'.
  WA_FCAT-COL_POS = '3'.
  WA_FCAT-COLTEXT = 'QTY'.
  APPEND WA_FCAT TO IT_FCAT.
  CLEAR WA_FCAT.
  WA_FCAT-FIELDNAME = 'MEINS'.
  WA_FCAT-COL_POS = '4'.
  WA_FCAT-COLTEXT = 'UNITS'.
  APPEND WA_FCAT TO IT_FCAT.
  CLEAR WA_FCAT.
  WA_FCAT-FIELDNAME = 'NETPR'.
  WA_FCAT-COL_POS = '5'.
  WA_FCAT-COLTEXT = 'PRICE'.
  APPEND WA_FCAT TO IT_FCAT.
  CLEAR WA_FCAT.

  CALL METHOD RG->SET_TABLE_FOR_FIRST_DISPLAY
    EXPORTING
      IS_LAYOUT      = WA_LAYOUT
    CHANGING
      IT_OUTTAB     = IT_EKPO
      IT_FIELDCATALOG = IT_FCAT.

ENDMODULE.

MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'BACK'.
    LEAVE TO SCREEN 0.
  ENDIF.
ENDMODULE.

```

Working with events: -

Events are raised as well as handled within the class & also handle through some other class by using methods. Events have only exporting parameters. It doesn't contain importing parameters.

Note: - When ever we are working with events then we must register the events before call the methods.

Syntax of declaring the events: -

Events <event name> exporting <EP1> <EP2> - - -

Syntax of raise the event:-

Raise <event name>

Syntax of declaring event handler method: -

Methods <event handler method name> for event <event name> of <class name>.

Which class contains events

Syntax of register the events: -

SET handler <object name of class>-><event handler method> for <object name of class>

Which class contains event declaration

Which class contains event handler method

→ Based on the given customer number, display the customer number, name, city by using OOABAP & also print the error if the input is invalid by using events.

```
PARAMETER P_KUNNR TYPE KNA1-KUNNR.  
DATA: BEGIN OF WA_KNA1,  
      KUNNR TYPE KNA1-KUNNR,  
      NAME1 TYPE KNA1-NAME1,  
      ORT01 TYPE KNA1-ORT01,  
      END OF WA_KNA1.
```

```
CLASS C1 DEFINITION.  
  PUBLIC SECTION.  
    METHODS: GET_DATA IMPORTING I_KUNNR TYPE KNA1-KUNNR,  
             DISPLAY.  
    EVENTS NODATA.  
  ENDMETHODS.  
CLASS C1 IMPLEMENTATION.  
  METHOD GET_DATA.  
    SELECT SINGLE KUNNR NAME1 ORT01 FROM KNA1 INTO WA_KNA1 WHERE KUNNR  
    = P_KUNNR.  
    IF SY-SUBRC <> 0.  
      RAISE EVENT NODATA.  
    ENDIF.  
  ENDMETHOD.  
  METHOD DISPLAY.  
    WRITE:/ WA_KNA1-KUNNR, WA_KNA1-NAME1, WA_KNA1-ORT01.  
  ENDMETHOD.  
ENDCLASS.  
CLASS C2 DEFINITION.  
  PUBLIC SECTION.  
    METHODS EHM FOR EVENT NODATA OF C1.  
  ENDMETHODS.  
CLASS C2 IMPLEMENTATION.  
  METHOD EHM.
```

```

MESSAGE E000(ZHAI11) WITH 'INVALID CUSTOMER'.
ENDMETHOD.
ENDCLASS.

```

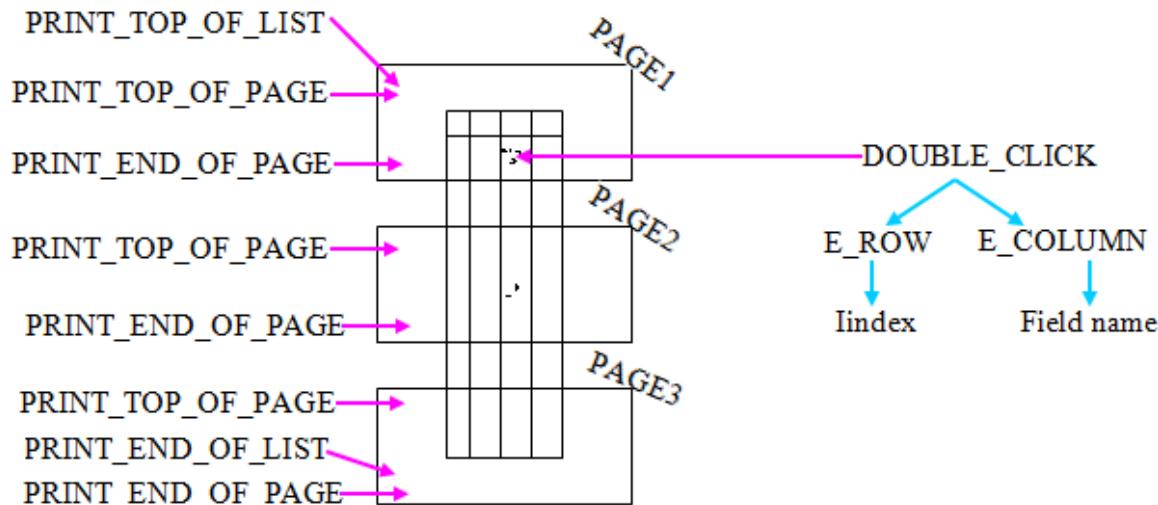
```

START-OF-SELECTION.
DATA: RC1 TYPE REF TO C1,
      RC2 TYPE REF TO C2.
CREATE OBJECT: RC1, RC2.
SET HANDLER RC2->EHM FOR RC1.
CALL METHOD RC1->GET _ DATA
  EXPORTING
    I_KUNNR = P_KUNNR.
CALL METHOD RC1->DISPLAY.

```

Some of the events in OOPS ALV: -

1. PRINT_TOP_OF_PAGE
2. PRINT_TOP_OF_LIST
3. PRINT_END_OF_PAGE
4. PRINT_END_OF_LIST
5. DOUBLE_CLICK



PRINT_TOP_OF_PAGE: - It's an event which is triggered at the top of each page.

PRINT_TOP_OF_LIST: - It's an event which is triggered at the end of the displayed output list.

PRINT_END_OF_PAGE: - It's an event which is triggered at the end of each page.

PRINT_END_OF_LIST: - It's an event which is triggered at the end of displayed output list.

DOUBLE_CLICK: - It's an event which is triggered at the time of user clicks on any record of any list. It exports two parameters (**E_ROW**, **E_COLUMN**).

E_ROW contains index number of selected record.

E_COLUMN contains field name which is clicked by the user.

→ Based on the given sales document numbers & dates, display the sales document numbers, document dates & customer numbers by using OOPS ALV& also display the TOP_OF_PAGE as 'These are sales order details'. TOP_OF_LIST as 'SPRAO Technologies'.

TABLES VBAK.

SELECT-OPTIONS: S_VBELN FOR VBAK-VBELN,
S_AUDAT FOR VBAK-AUDAT NO-EXTENSION.

```

* Declare the data internal table
TYPES: BEGIN OF TY_VBAK,
    VBELN TYPE VBAK-VBELN,
    AUDAT TYPE VBAK-AUDAT,
    KUNNR TYPE VBAK-KUNNR,
    END OF TY_VBAK.

DATA: WA_VBAK TYPE TY_VBAK,
      IT_VBAK TYPE TABLE OF TY_VBAK.

* Declare the field catalog
DATA: IT_FCAT TYPE LVC_T_FCAT,
      WA_FCAT LIKE LINE OF IT_FCAT.

DATA: RC TYPE REF TO CL_GUI_CUSTOM_CONTAINER,
      RG TYPE REF TO CL_GUI_ALV_GRID.

CLASS C2 DEFINITION.
PUBLIC SECTION.
METHODS: EHTL FOR EVENT PRINT_TOP_OF_LIST OF CL_GUI_ALV_GRID,
          EHTP FOR EVENT PRINT_TOP_OF_PAGE OF CL_GUI_ALV_GRID.
ENDCLASS.

CLASS C2 IMPLEMENTATION.

METHOD EHTL.
  WRITE:/ 'SPRAO TEHCNOLOGIES'.
ENDMETHOD.

METHOD EHTP.
  WRITE:/ 'THESE ARE SO DETAILS'.
ENDMETHOD.

ENDCLASS.

* Create the reference to the container & grid
START-OF-SELECTION.
MODULE STATUS_2000 OUTPUT.
  SET PF-STATUS 'STAT'.

CREATE OBJECT RC
  EXPORTING
    CONTAINER_NAME = 'CC'.

CREATE OBJECT RG
  EXPORTING
    I_PARENT = RC.

* Filling the data internal table
SELECT VBELN AUDAT KUNNR FROM VBAK INTO TABLE IT_VBAK WHERE VBELN IN
S_VBELN AND AUDAT IN S_AUDAT.

* Fill the field catalog
WA_FCAT-FIELDNAME = 'VBELN'.
WA_FCAT-COL_POS   = '1'.
WA_FCAT-COLTEXT   = 'SALES.DOC'.
APPEND WA_FCAT TO IT_FCAT.

CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'AUDAT'.
WA_FCAT-COL_POS   = '2'.
WA_FCAT-COLTEXT   = 'DOC.DATE'.
APPEND WA_FCAT TO IT_FCAT.

```

```

CLEAR WA_FCAT.
WA_FCAT-FIELDNAME = 'KUNNR'.
WA_FCAT-COL_POS = '3'.
WA_FCAT-COLTEXT = 'CUSTOMER'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
* Create the reference & object for local class
DATA RC2 TYPE REF TO C2.
CREATE OBJECT RC2.
* Register the events.
SET HANDLER RC2->EHTL FOR RG.
SET HANDLER RC2->EHTP FOR RG.
* Display the output.
CALL METHOD RG->SET_TABLE_FOR_FIRST_DISPLAY
    CHANGING
        IT_OUTTAB = IT_VBAK
        IT_FIELDCATALOG = IT_FCAT.
ENDMODULE.
MODULE USER_COMMAND_2000 INPUT.
IF SY-UCOMM = 'BACK'.
    LEAVE TO SCREEN 0.
ENDIF.
ENDMODULE.

```

Note: - LVC_FIELDCATALOG_MERGE is the function module which is used to fill the field catalog internal table. The input for the above function module is data structure which data we want to display (Based on the displayed fields we create structure in SE11). The output for the above function module is field catalog internal table. Instead of passing the structure to the merge function module we can directly pass the structure to SET_TABLE_FOR_FIRST_DISPLAY method. So we can't use merge function module to prepare the field data

Syntax of call transaction: -

Call transaction '<TCODE>'.

Syntax of set the value before calling the transaction: -

Set parameter id '<idname>' field '<value>'.

Steps to identify the parameter id: -

Execute required transaction (XK03). Place the cursor on input field. Click on F1. clickon technical information. Identify the parameter id.

Parameter p_lifnr type lfa1-lifnr,

Set parameter id 'LIF' field p_lifnr.

Call transaction 'XK03'.

Syntax of get the current document which is opened: -

Get parameter id <ID NAME> field variable.

EX: -

Data V type EKKO, EBELN.

Get parameter id 'BES' field V.

Write V.

GET & SET are called SAP memory. IMPORT, EXPORT, CHANGING, -- are called ABAP memory.

→ Based on the given sales document numbers, display the sales document numbers, document dates & customer numbers by using OOPS ALV. If the user clicks on any sales document number

only then we display the sales order details through VA03 transaction. If the user clicks on any customer number only then we display the customers details through XD03 transaction.

```
TABLES VBAK.  
SELECT-OPTIONS S_VBELN FOR VBAK-VBELN.  
TYPES: BEGIN OF TY_VBAK,  
        VBELN TYPE VBAK-VBELN,  
        AUDAT TYPE VBAK-AUDAT,  
        KUNNR TYPE VBAK-KUNNR,  
        END OF TY_VBAK.  
DATA: WA_VBAK TYPE TY_VBAK,  
      IT_VBAK TYPE TABLE OF TY_VBAK.  
DATA: IT_FCAT TYPE LVC_T_FCAT,  
      WA_FCAT LIKE LINE OF IT_FCAT.  
  
DATA: RC TYPE REF TO CL_GUI_CUSTOM_CONTAINER,  
      RG TYPE REF TO CL_GUI_ALV_GRID.  
  
CLASS C2 DEFINITION.  
  PUBLIC SECTION.  
    METHODS EHDC FOR EVENT DOUBLE_CLICK OF CL_GUI_ALV_GRID  
          IMPORTING E_ROW E_COLUMN.  
ENDCLASS.  
CLASS C2 IMPLEMENTATION.  
  METHOD EHDC.  
    READ TABLE IT_VBAK INTO WA_VBAK INDEX E_ROW-INDEX.  
    IF E_COLUMN-FIELDNAME = 'VBELN'.  
      SET PARAMETER ID 'AUN' FIELD WA_VBAK-VBELN.  
      CALL TRANSACTION 'VA03'.  
    ELSEIF E_COLUMN-FIELDNAME = 'KUNNR'.  
      SET PARAMETER ID 'KUN' FIELD WA_VBAK-KUNNR.  
      CALL TRANSACTION 'XD03'.  
    ENDIF.  
  ENDMETHOD.  
ENDCLASS.  
  
START-OF-SELECTION.  
  CALL SCREEN 2000.  
  
MODULE STATUS_2000 OUTPUT.  
  SET PF-STATUS 'HAI'.  
  CREATE OBJECT RC  
    EXPORTING  
      CONTAINER_NAME = 'CC'.  
  CREATE OBJECT RG  
    EXPORTING  
      I_PARENT = RC.  
  
  SELECT VBELN AUDAT KUNNR FROM VBAK INTO TABLE IT_VBAK WHERE VBELN IN  
  S_VBELN.  
  WA_FCAT-FIELDNAME = 'VBELN'.
```

```

WA_FCAT-COL_POS      = '1'.
WA_FCAT-COLTEXT     = 'SALES.DOC'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME   = 'AUDAT'.
WA_FCAT-COL_POS     = '2'.
WA_FCAT-COLTEXT     = 'DATE'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
WA_FCAT-FIELDNAME   = 'KUNNR'.
WA_FCAT-COL_POS     = '3'.
WA_FCAT-COLTEXT     = 'CUSTOMER'.
APPEND WA_FCAT TO IT_FCAT.
CLEAR WA_FCAT.
DATA RC2 TYPE REF TO C2.
CREATE OBJECT RC2.
SET HANDLER RC2->EHDC FOR RG.

CALL METHOD RG->SET_TABLE_FOR_FIRST_DISPLAY
  CHANGING
    IT_OUTTAB      = IT_VBAK
    IT_FIELDCATALOG = IT_FCAT.
ENDMODULE.

MODULE USER_COMMAND_2000 INPUT.
  IF SY-UCOMM = 'BACK'.
    LEAVE TO SCREEN 0.
  ENDIF.
ENDMODULE.

```

Working with OOPS BDC

1. Do the recording
2. Prepare the file
3. Upload the data from file to internal table / BDC program
4. For each record in the internal table collect the screen and field details.
5. For each record in internal table, call the transaction.

Note: - In this OOPS BDC we need to declare 3 methods.

1. Upload data.
2. Fill screen details
3. Fill field details

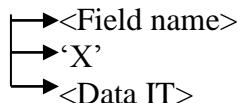
Syntax of declaring the method for upload data: -

Methods <method name> importing <file name> type string.

Syntax of implementation: -

Method <method name>

Call function 'GUI_UPLOAD'



Endmethod.

Declaring the fill screen method: -

Methods fill_screen importing

```
I_prog type bdc_prog  
I_dynpro type bdc_dynr  
I_dynbegin type bdc_start.
```

Implementation

Method fill_screen.

```
Wa_bdcdata-program =      i_prog.  
Wa_bdcdata-dynpro =      i_dynpro.  
Wa_bdcdata-dynbegin =    i_dynbegin
```

Append wa_bdcdata to it_bdcdata.

Clear wa_bdcdata.

Declaring the fill field method: -

Method fill_field importing

```
I_fnam type fnam____4  
I_fval type c.
```

Implementation

Method fill_field.

```
Wa_bdcdata-fam =      i_fnam.  
Wa_bdcdata-fval =      i_fval.
```

Append wa_bdcdata to it_bdcdata.

Clear wa_bdcdata.

Endmethod.

→ Develop a conversion program to upload the bank details from flat file to SAP system by using BDC call transaction method by using OOPS ABAP.

The flat file contains bank country key, bank key & bank name.

Steps to do the recording:

Execute SHDB. Click on new recording in the application tool bar. Provide the recording name, transaction code (FI01). Enter. Provide country (IN), bank key (554141). Enter. Provide the bank name (HDFC Bank). Save.

```

REPORT ZOOABAPBDC.

TYPES: BEGIN OF TY_BANK,
        BANKS TYPE BNKA-BANKS,
        BANKL TYPE BNKA-BANKL,
        BANKA TYPE BNKA-BANKA,
      END OF TY_BANK.

DATA: WA_BANK TYPE TY_BANK,
      IT_BANK TYPE TABLE OF TY_BANK.

DATA: WA_BDCDATA LIKE BDCDATA,
      IT_BDCDATA LIKE TABLE OF WA_BDCDATA.

CLASS C1 DEFINITION.

PUBLIC SECTION.

METHODS: UPLOAD_DATA IMPORTING I_FILE TYPE STRING,
          FILL_SCREEN IMPORTING
                  I_PROG TYPE BDC_PROG
                  I_DYNPRO TYPE BDC_DYNR
                  I_DYNBEGIN TYPE BDC_START,
          FILL_FIELD IMPORTING
                  I_FNAM TYPE FNAM_____4
                  I_FVAL TYPE C.

ENDCLASS.

CLASS C1 IMPLEMENTATION.

METHOD UPLOAD_DATA.
CALL FUNCTION 'GUI_UPLOAD'
  EXPORTING
    FILENAME           = I_FILE
    HAS_FIELD_SEPARATOR = 'X'
  TABLES
    DATA_TAB          = IT_BANK.
ENDMETHOD.

METHOD FILL_SCREEN.
  WA_BDCDATA-PROGRAM = I_PROG.
  WA_BDCDATA-DYNPRO   = I_DYNPRO.
  WA_BDCDATA-DYNBEGIN = I_DYNBEGIN.
  APPEND WA_BDCDATA TO IT_BDCDATA.
  CLEAR WA_BDCDATA.
ENDMETHOD.

METHOD FILL_FIELD.
  WA_BDCDATA-FNAM = I_FNAM.
  WA_BDCDATA-FVAL = I_FVAL.
  APPEND WA_BDCDATA TO IT_BDCDATA.
  CLEAR WA_BDCDATA.
ENDMETHOD.

```

```

ENDCLASS.

START-OF-SELECTION.
  DATA RC1 TYPE REF TO C1.
  CREATE OBJECT RC1.
  CALL METHOD RC1->UPLOAD_DATA
    EXPORTING
      I_FILE = 'C:\Users\Administrator\Desktop\22.TXT'.

  LOOP AT IT_BANK INTO WA_BANK.

    CALL METHOD RC1->FILL_SCREEN
      EXPORTING
        I_PROG      = 'SAPMF02B'
        I_DYNPRO    = '0100'
        I_DYNBEGIN = 'X'.

    CALL METHOD RC1->FILL_FIELD
      EXPORTING
        I_FNAM = 'BDC_CURSOR'
        I_FVAL = 'BNKA-BANKL'.

    CALL METHOD RC1->FILL_FIELD
      EXPORTING
        I_FNAM = 'BDC_OKCODE'
        I_FVAL = '/00'.

    CALL METHOD RC1->FILL_FIELD
      EXPORTING
        I_FNAM = 'BNKA-BANKS'
        I_FVAL = WA_BANK-BANKS.

    CALL METHOD RC1->FILL_FIELD
      EXPORTING
        I_FNAM = 'BNKA-BANKL'
        I_FVAL = WA_BANK-BANKL.

    CALL METHOD RC1->FILL_SCREEN
      EXPORTING
        I_PROG      = 'SAPMF02B'
        I_DYNPRO    = '0110'
        I_DYNBEGIN = 'X'.

    CALL METHOD RC1->FILL_FIELD
      EXPORTING
        I_FNAM = 'BDC_CURSOR'
        I_FVAL = 'BNKA-BANKA'.

    CALL METHOD RC1->FILL_FIELD
      EXPORTING

```

```

I_FNAM = 'BDC_OKCODE'
I_FVAL = '=UPDA'.

CALL METHOD RC1->FILL_FIELD
EXPORTING
I_FNAM = 'BNKA-BANKA'
I_FVAL = WA_BANK-BANKA.

CALL TRANSACTION 'FI01' USING IT_BDCDATA MODE 'A'.
REFRESH IT_BDCDATA.

ENDLOOP.

```

Interface: -Interface is the collection of methods which are defined not implemented. These are implemented through class implementation. Interfaces are reusable components. We can declare the same interface in any number of classes under public section only. Interface components are always access through object.

We can't create the interface object directly. First we create the interface reference & later assign the class object to interface reference. Then automatically interface object is created.

Syntax of declaring the interface: -

Interface <interface name>

-----} method declaration
-----}-----}
-----}

Endinterface.

Syntax of access the interface in class definition: -

Interfaces <interface name>.

→ Based on the given company code, display the customers under company details (BUKRS KUNNR AKONT) by using OOABAP with interface concept.

```

REPORT ZOOPS1199.
PARAMETER P_BUKRS TYPE KNB1-BUKRS .
INTERFACE IF1.
  METHODS DISPLAY.
ENDINTERFACE.
CLASS C1 definition.
  PUBLIC SECTION.
    TYPES: BEGIN OF TY_KNB1,
      BUKRS TYPE KNB1-BUKRS ,
      KUNNR TYPE KNB1-KUNNR ,
      AKONT TYPE KNB1-AKONT ,
      END OF TY_KNB1 .
    DATA: WA_KNB1 TYPE TY_KNB1 ,
      IT_KNB1 TYPE TABLE OF TY_KNB1 .
    METHODS: GET_DATA IMPORTING I_BUKRS TYPE BUKRS .
      INTERFACES IF1 .
ENDCLASS .
CLASS C1 IMPLEMENTATION .
  METHOD GET_DATA .
    SELECT BUKRS KUNNR AKONT FROM KNB1 INTO TABLE IT_KNB1 WHERE BUKRS =
I_BUKRS .
  ENDMETHOD .

```

```

METHOD IF1~DISPLAY.
LOOP AT IT_KNB1 INTO WA_KNB1.
  WRITE:/ WA_KNB1-BUKRS, WA_KNB1-KUNNR, WA_KNB1-AKONT.
ENDLOOP.
ENDMETHOD.
ENDCLASS.

START-OF-SELECTION.
DATA RC1 TYPE REF TO C1.
DATA RFC1 TYPE REF TO IF1.
CREATE OBJECT RC1.
RFC1 = RC1.
CALL METHOD RC1->GET_DATA
  EXPORTING
    I_BUKRS = P_BUKRS.
CALL METHOD RFC1->DISPLAY.

```

There are two types of interfaces like a class.

1. Local class
2. Global class

Abstract class: -

If the class isn't fully implemented then the class is called abstract class or if the class contains at least one abstract method then the class is called abstract class. These abstract methods are implemented through derived class or child class.

We can't create the object for abstract class.

→ Based on the given company code, display the company code, company name, city by using OOABAP with abstract class concept.

```

REPORT ZOOPS1100.
PARAMETER P_BUKRS TYPE T001-BUKRS.
INCLUDE ZIIT001.
CLASS C1 DEFINITION ABSTRACT.
  PUBLIC SECTION.
    METHODS: GET_DATA IMPORTING I_BUKRS TYPE BUKRS,
              DISPLAY ABSTRACT.
  ENDCLASS.
  CLASS C1 IMPLEMENTATION.
    METHOD GET_DATA.
      SELECT SINGLE BUKRS BUTXT ORT01 FROM T001 INTO WA_T001 WHERE BUKRS
      = I_BUKRS.
    ENDMETHOD.
  ENDCLASS.
  CLASS C2 DEFINITION INHERITING FROM C1.
    PUBLIC SECTION.
      METHODS DISPLAY REDEFINITION.
    ENDCLASS.
    CLASS C2 IMPLEMENTATION.
      METHOD DISPLAY.
        WRITE:/ WA_T001-BUKRS, WA_T001-BUTXT, WA_T001-ORT01.
      ENDMETHOD.
    ENDCLASS.
  ENDCLASS.

```

```

ENDCLASS.

START-OF-SELECTION.
  DATA RC2 TYPE REF TO C2.
  CREATE OBJECT RC2.
  CALL METHOD RC2->GET_DATA
    EXPORTING
      I_BUKRS = P_BUKRS.
  CALL METHOD RC2->DISPLAY.

```

Deferred class: -

If you want to access the class before declaring & implementing the class then we must specify the class as deferred.

Syntax –

Class <class name> definition deferred.

Ex: - class c1 definition deferred.

Friend class:-

Through friends class we can access the private components of some other class.

```

REPORT ZOOABAP1111.
class c2 definition deferred.
class c1 definition friends c2.
  public section.
    methods M1.
  private section.
    methods M2.
endclass.
class c1 implementation.
  method M1.
    write 'SPRAO Technologies'.
  endmethod.
  method M2.
    write:/ 'S.R Nagar, Hyderabad'.
  endmethod.
endclass.
class c2 definition.
  public section.
    methods M3.
endclass.
class c2 implementation.
  method M3.
    data rc1 type ref to c1.
    CREATE OBJECT rc1.
    CALL METHOD rc1->M1.
    CALL METHOD rc1->M2.
  endmethod.
endclass.

start-of-selection.
  data rc2 type ref to c2.
  CREATE OBJECT rc2.
  CALL METHOD rc2->M3.

```

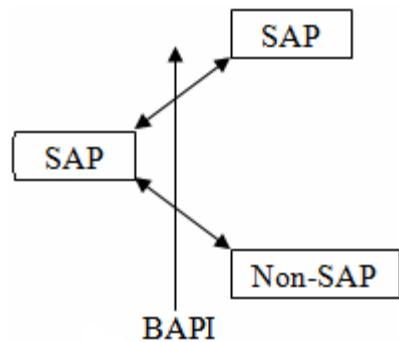
BAPI

(Business Application Programming Interface)

BAPI's are used to connecting from SAP to SAP as well as SAP to NON-SAP.

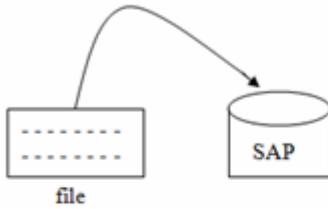
BAPI's are defined as an API method (Application Programming Interface) of SAP objects. These methods & their objects are stored as well maintained in BOR (Business Object Repository). BOR taking care about version change management (when ever the version is changed if any changes required in BAPI those changes is done by BOR).

BAPI's are also called as one of the remote enable function module.



BAPI

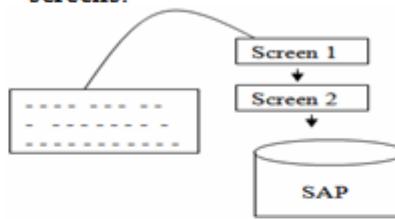
- 1) BAPI is used to upload the data from file to SAP system directly.



- 2) BAPI is faster
- 3) BAPI never cause to terminate the program when ever error occur in the BAPI it simply written those errors through written parameters.
- 4) BAPI perform their own authorization checks to validate the user.
- 5) In the BAPI the flat file fields are varying
- 6) When ever the version is changed we no need to change the code.

BDC

- 1) BDC is used to upload the data from file to SAP system through screens.



- 2) BDC is slower
- 3) Some times BDC open group BDC insert BDC close group may cause to terminates the program
- 4) In BDC we provide the authority check to validate the user.
Authority - check <object name> id
<name> active <value>.
- 5) In BDC the flat files fields are fixed.
- 6) When ever the version is changed some times we need to change the code.

Some of the important points related to BAPI: -

- 1) BAPI mustn't contain call transaction.
- 2) BAPI mustn't invoke commit work instead of commit work we call the BAPI- TRANSACTION_COMMIT function module.
- 3) BAPI structure mustn't contains includes.
- 4) There is o functional dependences between any two BAPI's.
- 5) BAPI never calls to terminate the program. Whenever an error occurred in BAPI it written those errors through written parameter.
- 6) BAPI must not contain dialogue programs.
- 7) BAPI mustn't contain Submit reports.

Steps to create our own custom BAPI

1. Create the BAPI structure (SE11)

2. Create the BAPI function module (SE37)

1. Which is remote enable.
2. Must contains RETURN parameter
3. All parameters are pass by value

3. Create the object and methods for BAPI function module (SW01)

4. Release the object and method (SW01).

→ Develop a custom BAPI to display the purchasing doc number, doc date & vendor number based on the given purchasing doc number.

Steps to create the BAPI structure: -

Execute SE11. Select the radio button data type. Provide the BAPI structure name (ZBAPI_10AM_STR). Click on create. Select the radio button structure. Enter. Provide short description (BAPI Structure). Provide the component & component type.

EBELN EBELN

BEDAT BEDAT

LIFNR LIFNR

Save in own package. Check, activate.

Steps to create function group: -

Execute SE37. In the menu bar click on goto → function groups → create group. Provide the function group name (ZBAPI_10AM_FG), short description. Save in our own package.

Steps to activate the function group: -

In the menu bar click on environment → inactive objects. Expand the function group under transportable objects. Select the function group. Right click → activate. Enter.

Steps to create function module: -

Execute 'SE37'. Provide the function module name. Click on create. Provide the function group (ZBAPI_10AM_FG), short description. Enter. Click on attributes tab. Select the radio button remote-enabled module. Click on import tab.

Import

Parameter	type	associated type	pass by value
I_EBELN	TYPE	ZBAPI_10AM_STR-EBELN	<input checked="" type="checkbox"/>

Export

Parameter	type	associated type	pass by value
E_WA	TYPE	ZBAPI_10AM_STR	<input checked="" type="checkbox"/>
RETURN	TYPE	BAPI_RET2	<input checked="" type="checkbox"/>

Source code

Select single ebeln bedat lifnr from ekko into wa_ekko where ebeln = i_ebeln.

Save, check, activate. Click on back. In the menu bar click on function module. Release -> Release.

Function module is released.

Steps to release the object & method for BAPI function module: -

Execute SW01. Provide the object name (ZBAPI_10AM). Click on create. Provide the object name (ZBAPI_10AM). Click on create. Provide the same to all. Select the application (M). Enter. Click on enter. Save in our package. Place the cursor on methods. In the menu bar click on utilities. API methods → Add method. Provide function module name (ZBAPI_10AM_FM). Click on enter. Click on next step (CTRL + SHIFT + F11). Click on next. Click on yes. Click on save.

Steps to release the object & method: -

Place the cursor on object (ZBAPI_10AM). In the menu bar click on edit → change release status → object type → to modeled (to implemented, to release also). Select the method. In the menu bar, click on edit → change release status → object type component → to modeled (to implemented, to released also). Click on generate (CTRL + F3).

Steps to check BAPI is available or not in BOR:

Execute BAPI transaction. Click on alphabetical tab & absorb our BAPI.

Note: - In the real time we never create our own custom BAPIs. We always use existing BAPIs.

Note: - In the real time we always use the BAPIs like conversion program or report.

Steps to identify the standard BAPIs: -

Method 1:-

Execute 'SE93'. Provide the related transaction code (ME23N). Click on display. Click on display object list (CTRL + SHIFT + F5) in the application tool bar. Expand the package. Expand the business engineering. Expand the business object types. Double click on our required business object. Expand the method. Double click on our required method (Get details). Click on ABAP tab. Identify the BAPI name (BAPI_PO_GETDETAIL).

Method 2:-

Execute BAPI transaction. Click on hierarchical tab. Expand the module. Expand the application (sales). Expand the object. Double click on method. Identify the BAPI in right side.

Method 3:-

By using BAPI methods we can identify the standard BAPI.

Some of the BAPI methods are

1. Get list ()
2. Get details ()
3. Get status ()
4. Existence check ()
5. Create ()
6. Change ()
7. Delete ()

Steps to identify the BAPI based on BAPI method name: -

Execute 'SE37'. Provide BAPI <Method name>. Click on F4. We get the list of BAPIs related to that method & identify our required method.

Note: - When ever we are working with crate, change, delete BAPIs, then we must committed the data base by using 'BAPI_TRANSACTION_COMMIT' function module. Other wise the data base isn't updated.

Steps to create cost center group manually: -

Execute 'KSH1'. Provide the Controlling area (6000). Enter. Provide the cost center group name (ZSPG). Enter. Provide short description. Click on cost center in the application tool bar. Provide the from to (1000 – 3000), (5000 – 7000) cost centers. Enter. Click on save.

→ Create the cost center group by using BAPI.

```
BAPI: - BAPI_COSTCENTERGROUP_CREATE
PARAMETER P_CAREA LIKE BAPICO_GROUP-CO_AREA.
DATA WA_RETURN LIKE BAPIRET2.
DATA: IT_HNODE LIKE TABLE OF BAPISET_HIER,
      WA_HNODE LIKE LINE OF IT_HNODE.
DATA: IT_HVAL LIKE TABLE OF BAPI1112_VALUES,
      WA_HVAL LIKE LINE OF IT_HVAL.
WA_HNODE-GROUPNAME = 'ZSPG'.
WA_HNODE-HIERLEVEL = '0'.
WA_HNODE-VALCOUNT = '2'.
WA_HNODE-DESCRIPT = 'COSTCENTER GROUP1'.
APPEND WA_HNODE TO IT_HNODE.
WA_HVAL-VALFROM = '0000001000'.
WA_HVAL-VALTO = '0000002000'.
APPEND WA_HVAL TO IT_HVAL.
```

```

WA_HVAL-VALFROM = '0000003000'.
WA_HVAL-VALTO   = '0000004000'.
APPEND WA_HVAL TO IT_HVAL.
CALL FUNCTION 'BAPI_COSTCENTERGROUP_CREATE'
  EXPORTING
    CONTROLLINGAREAIMP = P_CAREA
  IMPORTING
    RETURN             = WA_RETURN
  TABLES
    HIERARCHYNODES    = IT_HNODE
    HIERARCHYVALUES   = IT_HVAL.

CALL FUNCTION 'BAPI_TRANSACTION_COMMIT'.
IF WA_RETURN IS INITIAL.
  WRITE 'COSTCENTER GROUP CREATED'.
ELSE.
  WRITE WA_RETURN-MESSAGE.
ENDIF.

```

Steps to create the bank details manually: -

Execute 'FI01'. Provide bank country key (IN). Bank key (15151619). Enter. Provide the bank name (HDFC Bank). Save.

→ Create the bank details by using BAPI.

BAPI NAME: BAPI_BANK_CREATE

```

PARAMETER P_CTRY LIKE BAPI1011_KEY-BANK_CTRY.
DATA WA_RETURN LIKE BAPIRET2.
DATA WA_ADD LIKE BAPI1011_ADDRESS.
WA_ADD-BANK_NAME = 'PANJAB BANK'.
WA_ADD-REGION   = '01'.
WA_ADD-STREET   = 'AMMEERPET'.
WA_ADD-CITY     = 'HYD'.
CALL FUNCTION 'BAPI_BANK_CREATE'
  EXPORTING
    BANK_CTRY      = P_CTRY
    BANK_KEY       = '15161718'
    BANK_ADDRESS  = WA_ADD
  IMPORTING
    RETURN         = WA_RETURN.

```

CALL FUNCTION 'BAPI_TRANSACTION_COMMIT'.

IF WA_RETURN IS INITIAL.

WRITE 'BANK CREATED'.

ELSE.

WRITE WA_RETURN-MESSAGE.

ENDIF.

→ Update the bank city & street using BAPI.

Steps to update the bank details manually: -

Execute FI02. provide bank country key (IN), bank key (112233). Enter. Provide the street (SR Nagar), city (HYD). Save.

PARAMETER: P_CTRY LIKE BAPI1011_KEY-BANK_CTRY,

```

        P_BKEY LIKE BAPI1011_KEY-BANK_KEY.
DATA: WA_ADD LIKE BAPI1011_ADDRESS,
      WA_ADDX LIKE BAPI1011_ADDRESSSX.
DATA WA_RETURN LIKE BAPIRET2.
WA_ADD-STREET = 'MOOSAPET'.
WA_ADD-CITY = 'HYD'.
WA_ADDX-STREET = 'X'.
WA_ADDX-CITY = 'X'.
CALL FUNCTION 'BAPI_BANK_CHANGE'
  EXPORTING
    BANKCOUNTRY = P_CTRY
    BANKKEY = P_BKEY
    BANK_ADDRESS = WA_ADD
    BANK_ADDRESSSX = WA_ADDX
  IMPORTING
    RETURN = WA_RETURN.

CALL FUNCTION 'BAPI_TRANSACTION_COMMIT'.
IF WA_RETURN IS INITIAL.
  WRITE / 'BANK UPDATED'.
ELSE.
  WRITE WA_RETURN-MESSAGE.
ENDIF.

```

→ Develop a conversion program to update the bank city & street from flat file to sap system by using BAPI. The flat file contains bank country key, bank key, street & city.

```

DATA: BEGIN OF WA_BANK,
      BCTRY LIKE BAPI1011_KEY-BANK_CTRY,
      BKEY LIKE BAPI1011_KEY-BANK_KEY,
      STREET TYPE STRAS_GP,
      CITY TYPE ORT01_GP,
      END OF WA_BANK.
DATA IT_BANK LIKE TABLE OF WA_BANK.
DATA: WA_ADD LIKE BAPI1011_ADDRESS,
      WA_ADDX LIKE BAPI1011_ADDRESSSX,
      WA_RETURN LIKE BAPIRET2.

```

```

CALL FUNCTION 'UPLOAD'
  EXPORTING
    FILETYPE = 'DAT'
  TABLES
    DATA_TAB = IT_BANK.
LOOP AT IT_BANK INTO WA_BANK.
  WA_ADD-STREET = WA_BANK-STREET.
  WA_ADD-CITY = WA_BANK-CITY.
  WA_ADDX-STREET = 'X'.
  WA_ADDX-CITY = 'X'.
CALL FUNCTION 'BAPI_BANK_CHANGE'
  EXPORTING
    BANKCOUNTRY = WA_BANK-BCTRY
    BANKKEY = WA_BANK-BKEY
    BANK_ADDRESS = WA_ADD

```

IT_BANK	BCTRY	BKEY	STREET	CITY
IN	111111	SR NAGAR	HYD	
IN	111112	KOTI	HYD	
IN	111113	BEGUMPET	HYD	
IN	111114	KPHB	HYD	

WA_BANK	BCTRY	BKEY	STREET	CITY

WA_ADD	WA_BANK_NAME	REGION	STREET	CITY

WA_ADDX	BANK_NAME	REGION	STREET	CITY

```

BANK_ADDRESSX = WA_ADDX
IMPORTING
  RETURN      = WA_RETURN.
CALL FUNCTION 'BAPI_TRANSACTION_COMMIT'.
IF WA_RETURN IS INITIAL.
  WRITE / 'BANK UPDATED'.
ELSE.
  WRITE WA_RETURN-MESSAGE.
ENDIF.
ENDLOOP.

```

Application of BAPI

- BAPIs are used to connect with R/3 to new SAP components BI/BW, APO, CRM, SCM etc.
- BAPIs are used to connect with R/3 to internet by using IACS (Internet Application Components).
- BAPIs are used to connect with distributed system with help of ALE.
- BAPIs are used to connect with VB as a front end to R/3 system.
- BAPIs are used to connect with R/3 to business partners own developments that is vendor portals, customer portals etc.
- BAPIs are used to connect with SAP to legacy system.
- BAPIs are used to connect with SAP to non-sap system.

→ Upload the Bank details from flat file to SAP system by using BAPI

```

DATA: BEGIN OF WA_BANK,
      BCTRY LIKE BAPI1011_KEY-BANK_CTRY,
      BKEY LIKE BAPI1011_KEY-BANK_KEY.
      INCLUDE STRUCTURE BAPI1011_ADDRESS.
DATA END OF WA_BANK.

```

```
DATA IT_BANK LIKE TABLE OF WA_BANK.
```

```
DATA WA_ADD LIKE BAPI1011_ADDRESS.
```

```
DATA WA_RETURN LIKE BAPIRET2.
```

```
CALL FUNCTION 'UPLOAD'
```

EXPORTING

```
  FILETYPE = 'DAT'
```

TABLES

```
  DATA_TAB = IT_BANK.
```

```
LOOP AT IT_BANK INTO WA_BANK.
```

```
MOVE-CORRESPONDING WA_BANK TO WA_ADD.
```

```
CALL FUNCTION 'BAPI_BANK_CREATE'
```

EXPORTING

```
  BANK_CTRY    = WA_BANK-BCTRY
```

```
  BANK_KEY     = WA_BANK-BKEY
```

```
  BANK_ADDRESS = WA_ADD
```

IMPORTING

```
  RETURN       = WA_RETURN.
```

```
CALL FUNCTION 'BAPI_TRANSACTION_COMMIT'.
```

```
IF WA_RETURN IS INITIAL.
```

```
  WRITE / 'BANK CREATED'.
```

```
ELSE.
```

```
  WRITE / WA_RETURN-MESSAGE.
```

```
ENDIF.
```

```
ENDLOOP.
```

WA_BANK

MCTRY BKEY bank name Reginon Street city					
IN	54520	CITY Bank	1	KOTI	HYD
IN	54522	AXIS Bank			BAN
IN	54523			D.NA	HYD

IT_BANK

MCTRY BKEY bank name Reginon Street city					
IN	54520	CITY Bank	1	KOTI	HYD
IN	54522	AXIS Bank			BAN
IN	54523			D.NA	HYD

WA_ADD

Bank name Reginon Street City			
CITY Bank	1	KOTI	HYD

→ Based on the given comp code vendor number & date, display the vendor open item details by using BAPI.

```
PARAMETER: P_BUKRS LIKE BAPI3008_1-COMP_CODE,
            P_KUNNR LIKE BAPI3008_1-VENDOR,
            P_DAT LIKE BAPI3008-KEY_DATE.

DATA WA_RETURN LIKE BAPIRETURN.

DATA T_OT LIKE TABLE OF BAPI3008_2.

CALL FUNCTION 'BAPI_AP_ACC_GETOPENITEMS'
    EXPORTING
        COMPANYCODE = P_BUKRS
        VENDOR      = P_KUNNR
        KEYDATE     = P_DAT
    IMPORTING
        RETURN      = WA_RETURN
    TABLES
        LINEITEMS   = T_OT.

IF WA_RETURN IS INITIAL.
    CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
        EXPORTING
            I_STRUCTURE_NAME = 'BAPI3008_2'
        TABLES
            T_OUTTAB       = T_OT.
ELSE.
    WRITE WA_RETURN-MESSAGE.
ENDIF.
```

→ Based on the given company code, customer number, from date & to date display the customer cleared items by using BAPI.

```
PARAMETER: P_BUKRS LIKE BAPI3007_1-COMP_CODE,
            P_KUNNR LIKE BAPI3007_1-CUSTOMER,
            P_FD LIKE BAPI3007-FROM_DATE,
            P_TD LIKE BAPI3007-TO_DATE.

DATA WA_RETURN LIKE BAPIRETURN.

DATA T_CI LIKE TABLE OF BAPI3007_2.

CALL FUNCTION 'BAPI_AR_ACC_GETBALANCEDITEMS'
    EXPORTING
        COMPANYCODE = P_BUKRS
        CUSTOMER    = P_KUNNR
        DATE_FROM   = P_FD
        DATE_TO     = P_TD
    IMPORTING
        RETURN      = WA_RETURN
    TABLES
        LINEITEMS   = T_CI.

IF WA_RETURN IS INITIAL.
    CALL FUNCTION 'REUSE_ALV_GRID_DISPLAY'
        EXPORTING
            I_STRUCTURE_NAME = 'BAPI3007_2'
        TABLES
            T_OUTTAB       = T_CI.
ELSE.
    WRITE WA_RETURN-MESSAGE.
```

```
ENDIF.
```

→ Based on the given purchasing document number display the purchasing document item details & history details by using BAPI.

```
BAPI: BAPI_PO_GETDETAIL
PARAMETER P_EBELN LIKE BAPIEKKO-PO_NUMBER.
DATA: IT_ITEMS LIKE TABLE OF BAPIEKPO,
      WA_ITEMS LIKE LINE OF IT_ITEMS.
DATA: IT_HIS LIKE TABLE OF BAPIEKBE,
      WA_HIS LIKE LINE OF IT_HIS.
DATA: IT_RETURN LIKE TABLE OF BAPIRETURN,
      WA_RETURN LIKE LINE OF IT_RETURN.
CALL FUNCTION 'BAPI_PO_GETDETAIL'
  EXPORTING
    PURCHASEORDER = P_EBELN
    ITEMS        = 'X'
    HISTORY       = 'X'
  TABLES
    PO_ITEMS      = IT_ITEMS
    PO_ITEM_HISTORY = IT_HIS
    RETURN        = IT_RETURN.
```

```
IF IT_RETURN IS INITIAL.
```

```
  LOOP AT IT_ITEMS INTO WA_ITEMS.
    WRITE:/ WA_ITEMS-PO_NUMBER, WA_ITEMS-PO_ITEM.
```

```
ENDLOOP.
```

```
ULINE.
```

```
  LOOP AT IT_HIS INTO WA_HIS.
```

```
    WRITE:/ WA_HIS-MAT_DOC, WA_HIS-DOC_YEAR.
  ENDLOOP.
```

```
ELSE.
```

```
  LOOP AT IT_RETURN INTO WA_RETURN.
```

```
    WRITE:/ WA_RETURN-MESSAGE.
  ENDLOOP.
```

```
ENDIF.
```

→ Based on the given purchasing document numbers, display the purchasing document item, service & history details by using BAPI.

```
REPORT ZBAPI993.
TYPE-POOLS SLIS.
DATA V1 LIKE BAPIEKKO-PO_NUMBER.
SELECT-OPTIONS S_EBELN FOR V1.
DATA: BEGIN OF WA,
      EBELN TYPE EKKO-EBELN,
      END OF WA.
DATA IT LIKE TABLE OF WA.

DATA: IT_ITEMS LIKE TABLE OF BAPIEKPO,
      WA_ITEMS LIKE LINE OF IT_ITEMS,
      IT_ITEMS1 LIKE IT_ITEMS.
DATA: IT_HIS LIKE TABLE OF BAPIEKBE,
```

```

        WA_HIS LIKE LINE OF IT_HIS,
        IT_HIS1 LIKE IT_HIS.
DATA: IT_SER LIKE TABLE OF BAPIESLL,
      WA_SER LIKE LINE OF IT_SER,
      IT_SER1 LIKE IT_SER.
DATA: IT_RETURN LIKE TABLE OF BAPIRETURN,
      WA_RETURN LIKE LINE OF IT_RETURN,
      IT_RETURN1 LIKE IT_RETURN,
      WA_RETURN1 LIKE LINE OF IT_RETURN1.

DATA: IT_FCAT1 TYPE SLIS_T_FIELDCAT_ALV,
      WA_FCAT1 LIKE LINE OF IT_FCAT1.
DATA: IT_FCAT2 TYPE SLIS_T_FIELDCAT_ALV,
      WA_FCAT2 LIKE LINE OF IT_FCAT2.
DATA: IT_FCAT3 TYPE SLIS_T_FIELDCAT_ALV,
      WA_FCAT3 LIKE LINE OF IT_FCAT3.

DATA: IT_EVENT1 TYPE SLIS_T_EVENT,
      IT_EVENT2 TYPE SLIS_T_EVENT,
      IT_EVENT3 TYPE SLIS_T_EVENT.

DATA: WA_LAYOUT1 TYPE SLIS_LAYOUT_ALV,
      WA_LAYOUT2 TYPE SLIS_LAYOUT_ALV,
      WA_LAYOUT3 TYPE SLIS_LAYOUT_ALV.

```

SELECT EBELN FROM EKKO INTO TABLE IT WHERE EBELN IN S_EBELN.

```

LOOP AT IT INTO WA.
  CALL FUNCTION 'BAPI_PO_GETDETAIL'
    EXPORTING
      PURCHASEORDER      = WA_EBELN
      ITEMS              = 'X'
      HISTORY            = 'X'
      SERVICES           = 'X'
    TABLES
      PO_ITEMS           = IT_ITEMS
      PO_ITEM_HISTORY    = IT_HIS
      PO_ITEM_SERVICES   = IT_SER.
APPEND LINES OF IT_ITEMS TO IT_ITEMS1.
APPEND LINES OF IT_HIS TO IT_HIS1.
APPEND LINES OF IT_SER TO IT_SER1.
APPEND LINES OF IT_RETURN TO IT_RETURN1.
ENDLOOP.
```

```

IF IT_RETURN IS INITIAL.
  WA_FCAT1-FIELDNAME = 'PO_NUMBER'.
  WA_FCAT1-COL_POS   = '1'.
  WA_FCAT1-SELTEXT_M = 'PO NUMBER'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.
WA_FCAT1-FIELDNAME = 'PO_ITEM'.
```

```

WA_FCAT1-COL_POS      = '2'.
WA_FCAT1-SELTEXT_M    = 'ITEM NUMBER'.
APPEND WA_FCAT1 TO IT_FCAT1.
CLEAR WA_FCAT1.

WA_FCAT2-FIELDNAME   = 'MAT_DOC'.
WA_FCAT2-COL_POS     = '1'.
WA_FCAT2-SELTEXT_M   = 'MATERIAL DOCUMENT'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.
WA_FCAT2-FIELDNAME   = 'DOC_YEAR'.
WA_FCAT2-COL_POS     = '2'.
WA_FCAT2-SELTEXT_M   = 'DOCUMENT YEAR'.
APPEND WA_FCAT2 TO IT_FCAT2.
CLEAR WA_FCAT2.

WA_FCAT3-FIELDNAME   = 'PCKG_NO'.
WA_FCAT3-COL_POS     = '1'.
WA_FCAT3-SELTEXT_M   = 'PACKAGE NUMBER'.
APPEND WA_FCAT3 TO IT_FCAT3.
CLEAR WA_FCAT3.
WA_FCAT3-FIELDNAME   = 'SUBPCKG_NO'.
WA_FCAT3-COL_POS     = '2'.
WA_FCAT3-SELTEXT_M   = 'SUB PACKAGE NUMBER'.
APPEND WA_FCAT3 TO IT_FCAT3.
CLEAR WA_FCAT3.

CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_INIT'
  EXPORTING
    I_CALLBACK_PROGRAM = SY-CPROG.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_APPEND'
  EXPORTING
    IS_LAYOUT      = WA_LAYOUT1
    IT_FIELDCAT   = IT_FCAT1
    I_TABNAME     = 'IT_ITEMS1'
    IT_EVENTS      = IT_EVENT1
  TABLES
    T_OUTTAB      = IT_ITEMS1.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_APPEND'
  EXPORTING
    IS_LAYOUT      = WA_LAYOUT2
    IT_FIELDCAT   = IT_FCAT2
    I_TABNAME     = 'IT_HIS1'
    IT_EVENTS      = IT_EVENT2
  TABLES
    T_OUTTAB      = IT_HIS1.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_APPEND'
  EXPORTING
    IS_LAYOUT      = WA_LAYOUT3
    IT_FIELDCAT   = IT_FCAT3
    I_TABNAME     = 'IT_SER1'

```

```

IT_EVENTS      = IT_EVENT3
TABLES
T_OUTTAB      = IT_SER1.
CALL FUNCTION 'REUSE_ALV_BLOCK_LIST_DISPLAY'.

ELSE.
LOOP AT IT_RETURN1 INTO WA_RETURN1.
  WRITE:/ WA_RETURN1-MESSAGE.
ENDLOOP.
ENDIF.

```

Enhanced BAPIs: -

Based on the client requirement if you add additional fields to the standard data base table. If you want to update these fields information by using BAPI then we go for BAPI enhanced.

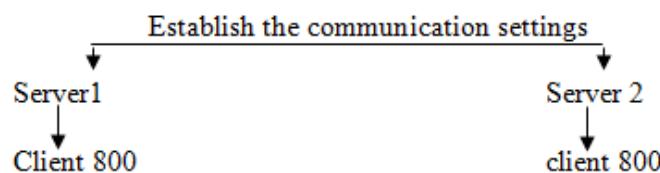
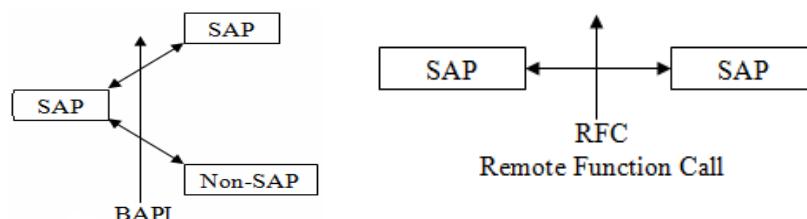
Steps to work with enhanced BAPI: -

Open the BPI n SE37 & identify the extension in parameter & double click on their associated type & add our additional fields to the structure by using append structure.

At the time of calling the BAPI we need to pass the additional fields information. Those information is automatically updated into standard data base table.

If you want get the additional fields information through BAPI then we add these additional fields to the extension out parameter in the BAPI.

Note: - BAPI is used to connecting from SAP to SAP as well as SAP to NON – SAP. Where as RFC is used to connecting from SAP-SAP only.



Function module definition ‘ZSPRAO_10AM_ADD’

Call function ‘ZSPRAO_10AM_ADD’ destination LS1-800

IMPORT

A type I

Logical system name of the server client where the definition is available.

EXPORT

C type I

EXPORTING

A =

B =

IMPORTING

C =

C = A + B

BADI (Business ADD-INS)

BADIs are used to adding some additional functionality to standard functionality without disturbing the standard functionality. BADIs are introduced from 4.6C version onwards. BADI contains 2 sections.

1. BADI Definition
2. BADI Implementation

Each BADI definition contains one adapter class and interface. Adapter class taking care the version change management (When ever the version is changed if any changes required in the BADI those are done by adapter class). Interface is the collection of methods which are defined not implemented. Those are implemented through BADI implementation based on client requirement.

The transaction code for BADI definition is **SE18**.

BADI Implementation: - BADI Implementation is nothing but implementing the methods which are defined in BADI definition. The transaction code for BADI implementation is **SE19**.

Differences between Customer exit (Enhancement) and BADI.

Customer Exit (Enhancement)

1. We can implement the customer exit only once.
2. Customer exit is the procedural approach. So it takes some extra time to enhancing.
3. In the screen exit the screen number is fixed which is provide by SAP.
4. By using CMOD transaction we can implement the customer exit.

BADI

1. We can implement the same BADI any number of times.
2. BADIs are object oriented approach. So it takes very less time to enhancing.
3. In the screen BADI we provide our own screen number.
4. By using **SE19** transaction we can implement the BADI.

Note: - In the real time we never create our own BADI. We always use existing BADIs.

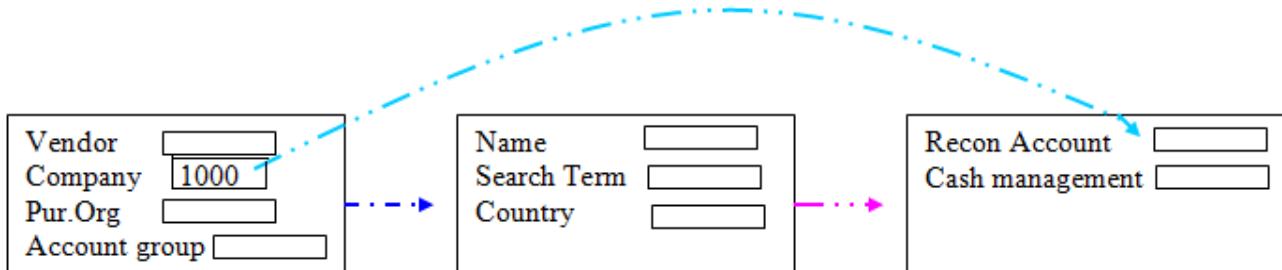
Some of the scenario: -

Scenario 1: -

In the real time MDM (Master Data Management) people create the vendor and customer 'XK01' & 'XD01' & later they maintain the key information in a excel sheet at end of the month they take a printout. They put a sign & their respective people also put a sign. This is required for audit companies. We implement a BADI to maintain the key information in a excel sheet at the time of create & save the vendor & customer.

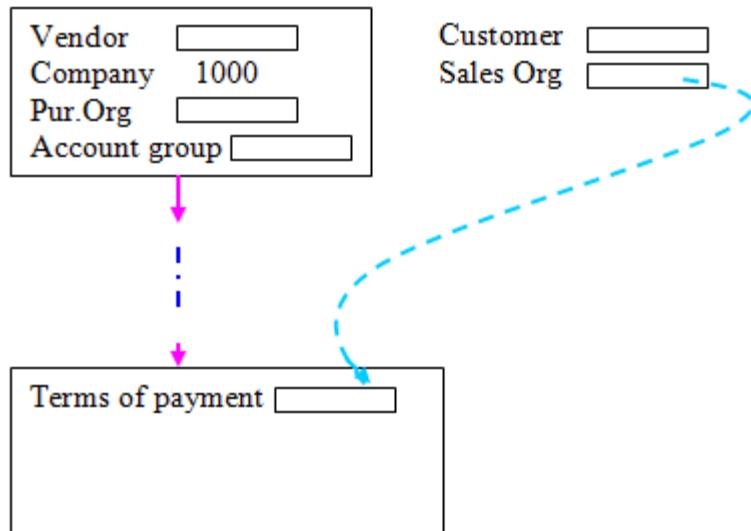
Scenario 2: -

At the time of creating the vendor and customer some times MDM people provide the incorrect recon account and cash management group. To avoid this we implement the BADI to preset the recon account and cash management group based on given company code.



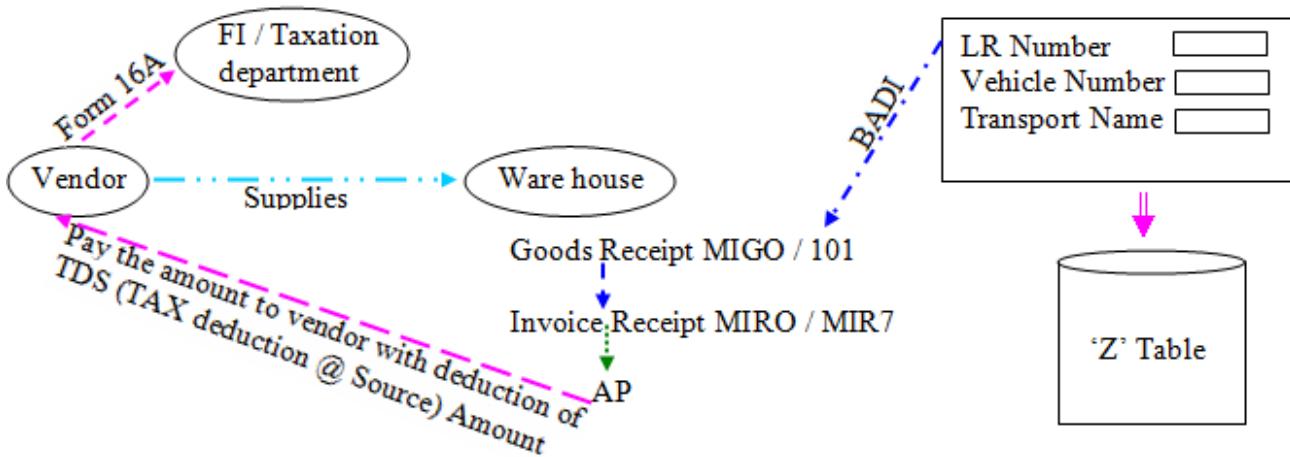
Scenario 3: -

At the time of creating the vendor and customer some times MDM people provide the invalid terms of payment to avoid this we implement the BADI to preset the terms of payment based on the purchase organization or sales organization.



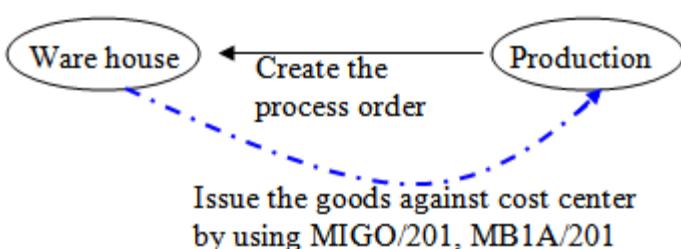
Scenario 4: -

Against the vendor supplies, the warehouse department create a goods receipt with MIGO transaction 101 movement type. Against GR the finance people physically verify the stock & prepares the IR document. Against IR document the account payable department pay the amount to the vendor with declaration of previous amount. After few days the vendor asks the Form 16A to finance people at the time of generating form 16. The finance department must provide LR Number, Vehicle number, Transport name. These information isn't captured in the entire MM life cycle. Here we implement the BADI to attach additional subscreen which contains above fields to MIGO transaction.



Scenario 5: -

The warehouse people issue the goods against cost center by using MIGO or MB1A transaction code with 201 movement type. Some times they entered invalid cost center. To avoid this we implement the BADI to thrown an error message if they pass invalid cost center or cost center not belongs to that plant.



Steps to identify the standard BAPIs: -

Method 1: -

Execute ‘SE24’. Provide the object type as ‘CL_EXITHANDLER’. Click on display. Double click on GET_INSTANCE method. Place the break-point on first call method. Now we execute our required transaction (which transaction BADIs we want) in a separate session. Execute XK01. Enter. In the menu

bar click on debugger → switch to classic debugger. Provide the field name as EXIT_NAME. Enter. Identify the BADI (VENDOR_ADD_DATA). Continuously click on F8 button. Identify the all the BADIs & maintained in Excel sheet. After delete the break point. Now open the each & every BADI in 'SE18'. (BADI Name: VENDOR_ADD_DATA). Click on display. Click on interface tab. Double click on each & every method. Identify the input, output parameters. In the menu bar click on goto → documentation → to component. Read the documentation if it satisfies our requirement then we implement this method through SE19.

Note: - In the real time we always identify the BADIs with the help of functional people.

Method 2: -

Execute 'SE93'. Provide transaction code (XK01). Click on display. Click on display object list (Ctrl + Shift + F5). Expand the package in the left panel (FBK). Expand the enhancements. Expand the classic BADIs definition. Identify the all the BADIs. Open the each and every BADI in SE18. Click on interface tab. Double click on each method. Identify the input, output parameters. In the menu bar click on goto → documentation → to component. Read the documentation. If it satisfies client requirement then we implement this method through SE19.

Method 3: -

Execute SPRO. Click on SAP Reference IMG. Expand the Logics-General (If we want to customer or vendor BADIs). Expand the business partners. Expand the vendors. Expand the control. Expand the adoption of customers own master data fields. Identify the BADIs. OR click on find function key. Provide the search term as BADI. Enter. Identify the all BADIs.

→ Implement the BADI to maintain the key information in an excel sheet at the time of create & save the vendor. The key information is vendor number, company code, account group, name, search term, street, city, postal code, country, created by, created date.

BADI Name : VENDOR_ADD_DATA

Method Name: CHECK_ALL_DATA

Steps to implement the BADI: -

Execute SE19. Select the Classic BADI Radio button in the implementation block. Provide BADI name (VENDOR_ADD_DATA). Click on create implementation. Provide implementation name (ZS10AM_VEN_IMP). Enter. Provide short description (Maintain key info in excel sheet). Click on save. Enter. Click on create enhancement implementation. Provide the same implementation name (ZS10AM_VEN_IMP). Provide short description (Maintain key info in an excel sheet). Enter. Save in local object. Select the implementation name. Enter. Click on interface tab. Double click on CHECK_ALL_DATA method. Click on signature. Identify the input output parameters & implement the logic. Save, check, activate the method. Click on back. Save, check, activate the BADI.

```

TYPES : BEGIN OF TY_VEN,
         LIFNR TYPE LFA1-LIFNR,
         BUKRS TYPE LFB1-BUKRS,
         KTOKK TYPE LFA1-KTOKK,
         NAME1 TYPE LFA1-NAME1,
         SORTL TYPE LFA1-SORTL,
         STRAS TYPE LFA1-STRAS,
         ORT01 TYPE LFA1-ORT01,
         PSTLZ TYPE LFA1-PSTLZ,
         LAND1 TYPE LFA1-LAND1,
         CBY TYPE SYUNAME,
         CDT(10) TYPE C,
         END OF TY_VEN.

DATA: WA_VEN TYPE TY_VEN,
      IT_VEN TYPE TABLE OF TY_VEN.

WA_VEN-LIFNR = I_LFA1-LIFNR.

```

```

WA_VEN-BUKRS = I_LFB1-BUKRS.
WA_VEN-KTOKK = I_LFA1-KTOKK.
WA_VEN-NAME1 = I_LFA1-NAME1.
WA_VEN-SORTL = I_LFA1-SORTL.
WA_VEN-STRAS = I_LFA1-STRAS.
WA_VEN-ORT01 = I_LFA1-ORT01.
WA_VEN-PSTLZ = I_LFA1-PSTLZ.
WA_VEN-LAND1 = I_LFA1-LAND1.
WA_VEN-CBY = SY-UNAME.
WA_VEN-CDT = SY-DATUM.
APPEND WA_VEN TO IT_VEN.
CLEAR WA_VEN.
CALL FUNCTION 'GUI_DOWNLOAD'
  EXPORTING
    FILENAME = 'C:\Users\Administrator\Desktop\HAI.XLS'
    APPEND    = 'X'
  TABLES
    DATA_TAB = IT_VEN.
REFRESH IT_VEN.

```

→ Implement the BADI to preset the Recon Account & cash management group based on the given company code

AKONT → Recon Account

FDGRV → Cash Management Group

When ever we are working with Preset BADIs then we must create one 'Z' table with preset fields and based on which we want to preset the values and later the table data is updated by functional people. Based on this table data we preset the values. In this object we must create one 'Z' table with the following fields.

1. MANDT → Client
2. BUKRS → Company code ← Input field
(Based on this, we preset the values)
3. AKONT → Recon Account
4. FDGRV → Cash Management

And later this table data is provide by functional people based on this data we preset the values.

Table name: ZS10AM_PCV

MANDT	BUKRS	AKONT	FDGRV
800	1000	0000031000	A1
800	2000	0000160000	A6
800	3000	0000031000	A6

BADI Name: VENDOR_ADD_DATA

Method: PRESET_VALUES_CCODE

Implement the BADI through SE19.

```

DATA WA TYPE ZS10AM_PCV.
SELECT SINGLE * FROM ZS10AM_PCV INTO WA WHERE BUKRS = E_LFB1-
BUKRS.
IF SY-SUBRC = 0.
  E_LFB1-AKONT = WA-AKONT.
  E_LFB1-FDGRV = WA-FDGRV.
ENDIF.

```

Steps to identify the all the implementations of BADI: -

Execute ‘SE18’. Provide the BADI name (VENDOR_ADD_DATA). Click on display. In the menu bar click on implementation → Display. Identify the all the implementations of BADI. Yellow color Badis are active and Blue color Badis are inactive.

→ Implement the BADI to preset terms of payment based o purchase organization.

In this object we must create one ‘Z’ table with the following fields.

1. MANDT → Client
2. EKORG → Purchase organization (Input field)
3. ZTERM → Terms of Payment (Preset field)

Table Name: (ZS10AM_PPV)

MANDT	EKORG	ZTERM
800	0001	0001
800	0005	0003
800	1000	0002

BADI Name: VENDOR_ADD_DATA

Method : PRESET_VALUES_PORG

Implement the BADI through SE19.

DATA WA TYPE ZS10AM_PPV.

```
SELECT SINGLE * FROM ZS10AM_PPV INTO WA WHERE EKORG = E_LFM1-EKORG.
IF SY-SUBRC = 0.
E_LFM1-ZTERM = WA-ZTERM.
ENDIF.
```

Steps to work with Screen BADI: -

1. The Screen fields are added to standard data base table through standard data base table through Append structure or create a table with screen fields.
2. Based on this table fields we create the Module Pool program & sub screen.
3. This module pool program and sub screen is attached to standard transaction code by using Badi.

→ Add the following subscreen to the MIGO transaction by using BADI

Here we add the above fields to EKBE table through Append structure or we create the ‘Z’ table with these fields based on this table fields. We create the module pool program and subscreen.

This screen and program is attached to MIGO transaction by using BADI.

SCREEN 2222

LR Number	<input type="text"/>
Vehicle Number	<input type="text"/>
Trans. Name	<input type="text"/>

Steps to create module pool program & screen: -

Execute ‘SE38’. Provide the program name (ZS10AM_MIGO_SCREEN). Click on create. Provide title. Select type as module pool. Save. Click on local object. Click on display object list. Select the program in left panel. Right click → create → screen. Provide screen number (2222). Provide short description. Select the radio button sub screen. Click on save. Click on layout. Click on dictionary or program fields (F6). Provide the table name which table contains these fields. Select the required fields. Enter. Save, check, activate the screen. Click on back. Double click on the program. Right click → activate.

BADI Name: MB_MIGO_BADI

Method Name: PBO_BETAIL

Badi is implemented through SE19.

```
E_CPROG = 'ZSCREEN990'.
E_DYNNR = '2222'.
E_HEADING = 'GR ADITIONAL SCREEN'.
```

Now we execute MIGO transaction and absorb the additional screen in the tab.

Filter BADI: -

Filter Badi is used to implement the same BADI multiple times with different conditions. If we want to implement the BADI based on country specific then we go for filter BADI.

When ever we are working with cost center and profit center related BADIS then we must provide filter type as controlling area.

When ever we are working with GL Account related BADIs then we must provide filter type as chart-of-accounts.

When ever we are working with vendor & customer screen BADIs then we must provide filter type as screen group.

Steps to attach the additional subscreen to the vendor and customer: -

1. Create the screen-group
2. Activate the screen group
3. Attach the program & subscreen to the screen group.

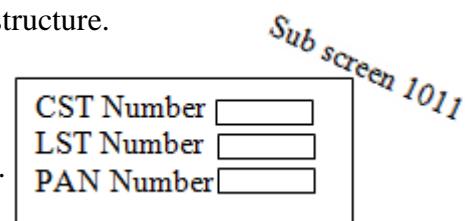
→ Steps to attach the additional subscreen to the vendor and customer

In this object the above screen fields are added to LFA1 table through append structure or create a 'Z' table with these fields. Based on these table fields we create a Module Pool Program & design a subscreen. This program & subscreen is attached to screen group.

The following fields are added to LFA1 table through append structure.

CSTNO	ZSPCSTNO	CHAR 10
LSTNO	ZSPCSTNO	CHAR 10
PANNO	ZSPPANNO	CHAR 10

Based on these fields we create the module pool program & subscreen.



Module Pool Program: ZS10AM_XK01_SCREEN.

Screen: 1011

Steps to create screen group: -

Execute 'SPRO'. Click on SAP reference IMG. Expand logistics – General. Expand business partner. Expand vendors. Expand control. Expand adoption of customers own master data fields. Execute prepare modification – free enhancement of vendor master data. Enter. Click on new entries. Provide the screen group (SP, short description (Screen group). Save. Select the screen group. Double click on label tab pages. Click on new entries and application tool bar. Provide the number (111), function code (SPF), description (Tax details). Save, back to initial group.

Steps to activate the screen group: -

Execute processing at Master data enhancement. Select any one of the implementation. Click on create (F5). Provide implementation name (ZS10AM_ASGROUP). Enter. Provide short description. Save. Click on create enhancement implementation. Provide the same implementation name (ZS10AM_ASGROUP). Short description. Enter. Select the implementation name. Enter. Click on interface tab. Double click on check_add_on_activate method. Click on signature in the application tool bar. Identify the input output parameters and implement the logic.

```
If I_SCREEN_GROUP = 'SP'.
E_ADD_ON_ACTIVE = 'X'.
Endif.
```

Save, check, activate the method. Click on back. Save, check, activate the BADI.

Steps to attach program & subscreen to screen group: -

Execute customer subscreens. Select any one of the implementation. Click on create. Provide the implementation name (ZS10AM_ASCREEN). Enter. Provide short description. Click on attributes tab. Click on insert row (Plus button +). Provide the screen group (SP). Click on save. Click on create. Enhancement implementation. Provide the same implementation name (ZS10AM_ASCREEN), short

description. Enter. Select the implementation name. enter. Click on interface tab. Double click on GET_TAXI_SCREEN method. Click on signature in the application tool bar. Identify the input output parameters & implement the logic.

```
If I_TAXI_FCODE = 'SPF'.
E_SCREEN = '1011'.
E_PROGRAM = 'ZS10AM_XK01_SCREEN'.
E_HEADERSCREEN_LAYOUT = ''.
Endif.
```

Save, check, activate the method. Click on back. Save, check, activate the BADI.

Steps to check whether the screen is added to vendor transaction or not: -

Execute 'XK01'. Provide the vendor number, account group. Enter and absorb the screen group in the application tool bar.

→ Implement the BADI to throw an error message if they pass invalid cost center at the time of goods issue against cost center.

In the real time they issue the goods against cost center in two ways.

1. MIGO transaction code with 201 movement type
2. MB1A transaction with 201 movement type

In the client first four digit of cost center is plant number.

1. BWART → Movement type
2. KOSTL → Cost Center
3. WERKS → Plant

Logic: -

If BWART = '201'.

If WERKS <> KOSTL + 0(4).

MESSAGE E000 (ZMESSAGE1) WITH 'COST CENTER ISN'T BELONGS TO THIS PLANT'.

ENDIF.

ENDIF.

MIGO Transaction with 201 movement type

BADI Name : MB_MIGO_BADI

Method Name: PUBLISH_MATERIAL_ITEM

```
IF LS_GOITEM-BWART = '201'.
  IF LS_GOITEM-WERKS <> LS_GOITEM-KOSTL+0(4).
    MESSAGE E000 (ZMESSAGE1) WITH 'CONSTOER IS NOT BELONGS TO THIS
PLANT'.
  ENDIF.
ENDIF.
```

MB1A WITH 201 Movement type

BADI Name : MB_QUAN_CHECK_BADI

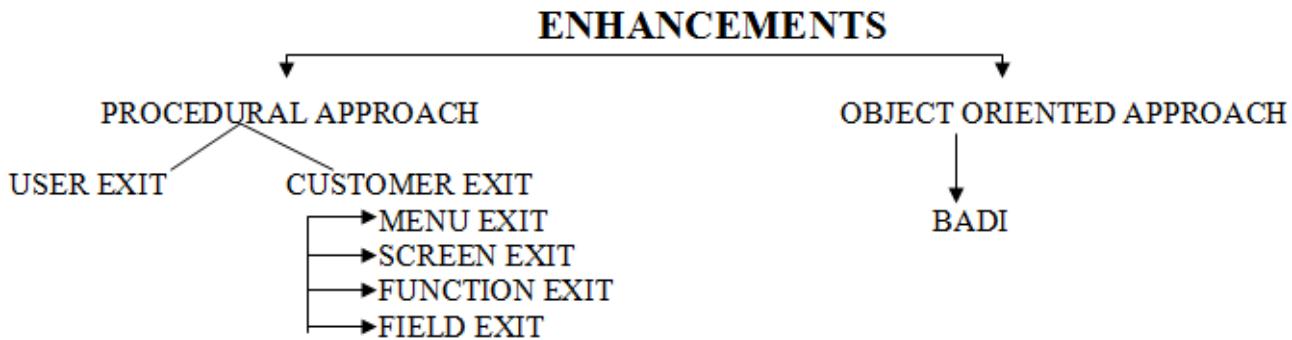
Method Name: CHECK_ITEM_DATA

```
IF IS_MSEG-BWART = '201'.
  IF IS_MSEG-WERKS <> IS_MSEG-KOSTL+0(4).
    MESSAGE E000 (ZMESSAGE1) WITH 'CONSTOER IS NOT BELONGS TO THIS
PLANT'.
  ENDIF.
ENDIF.
```

Enhancement Spot: -

Enhancement Spot is the collection of BADI definitions. If you want to create a BADI then first we create the enhancement spot. In that we create the BADI definition.

Note: - We can't create the transaction code for enhancement.



USER EXIT: - User exit is nothing but adding some additional functionality to the standard functionality is always through sub routines (form, end form). In the real time most of the times we use user exits in SD

Some of the scenarios in user exit

Scenario 1: -

In real time if we maintain the key information of the sales order in a separate 'Z' table at the time of creating sales order. At the time of cancel the sales order then we must remove the sales order key information from the 'Z' table by using user exit.

Program Name: MV45AFZZ

User Exit: USEREXIT_DELETE_DOCUMENT

Scenario 2: -

In the real time SD functional consultant provide the number ranges for sales order, delivery & billing document. Based on the sales organization & company we split the number ranges into smaller ranges by using user exit.

Program Name: MV45AFZZ

User Exit: USEREXIT_NUMBER_RANGE

Scenario 3: -

As per client requirement if we add some additional fields to standard SD tables if you want to assign these fields values at the time of creating the sales documents then we use user exit.

Program Name: MV45AFZZ

User Exit: USEREXIT_MOVE_FIELD_TO_VBAK

Scenario 4: -

In the real time at the time of creating the sales order sometimes the end user select the same tax conditions more than once. To avoid this by using user exit.

Program Name: MV45AFZZ

User exit Name: USEREXIT_SAVE_DOCUMENT_PREPARE

Steps to identify the user exit: -

Execute SPRO. Click on SAP reference IMG. Expand sales and distribution. Expand system modification. Expand user exits. Expand user exits in sales. Click on documentation of user exits in sales document processing.

→ Delete the sales order key information from the 'Z' table at the time of cancel the sales document by using user exit.

Steps to implement the user exit: -

Execute SE38. Provide the program name MV45AZZ. Click on display. Click on find function key. Provide the user exit name (USEREXIT_DELETE Document). Enter. Double click on form or user exit. Identify the place where we implement the logic. Click on enhance () symbol in the application tool bar. In the menu bar click on edit → enhancement operations → show implicit enhancement options. It'll provide yellow line for all the forms. Select our user exit yellow line. Right click → enhancement implementation → create. Click on code. Click on create enhancement implementation. Provide the

implementation name (ZS10AM_UEI), short description (Delete sales document). Enter. Save in our own package or local object. Select the implementation name. enter. Provide the logic.

Delete from ZS10AM_SKI where VBELN = VBAK-VBELN. Save, check, activate.

→ Split the sales order number ranges into smaller ranger based on the sales organization.

When ever we are working with number ranger ranges then we must create one 'Z' table which contains based on which fields we want to split the number ranges and from value, to value and current value.

Table: ZS10NR

MANDT	VKORG	BUKRS_VF	FVAL	TVAL	CVAL
800	0001	1000	1000000	1999999	1000000
800	0001	2000	2000000	2999999	2000000
800	0005	1000	3000000	3999999	3000000
800	0005	2000	4000000	4999999	4000000

USEREXIT_NUMBER_RANGE: -

Data WA like ZS10NR.

Select single * from ZS10NR into WA where VKORG = VBAK-VKORG and BUKRS_VF = VBAK-BUKRS_VF.

USEREXIT_SAVE_DOCUMENT: -

Update ZS10NR set CVAL = VBAK-VBELN where VKORG = VBAK-VKORG and BUKRS_VF = VBAK-BUKRS_VF.

Enhancement frame work: -

Enhancement frame work is the collection of implicit enhancement & explicit enhancement. Now-a-days user exits are called implicit enhancements. In the old version if you want to implement the user exits then we must provide the access key (access key is provided by BASIS people). Now-a-days we implement the user exits through implicit enhancement.

Customer exits: -

Customer exit is nothing but adding some additional functionality to the standard functionality is always through function module. Customer exit is either menu exit or screen exit or function exit or field exit.

Note: - Customer exits are always identified through package of transaction.

Steps to implement the customer exit: -

Identify the package at the transaction (SE93). Based on the package identify the customer exits (SMOD transaction). Identify the right customer exit based on the short description or break point. Implement the customer exit through project (CMOD transaction).

Menu exit: - Menu exits are used to adding some additional menus to the standard GUI. Menu exits are not possible for all transaction codes.

Some of the standard transaction codes which contains menu exit: -

VX11: - Create financial document

CO01: - Create production order

MC94: - Change flexible LIS planning

→ **Implement the menu exit for the standard transaction VX11.**

Steps to identify the package: -

Execute SE93. Provide the transaction code VX11. Click on display. Identify the package (VEI).

Steps to identify the customer exits based on package: -

Execute SMOD. Click on find function key. Provide the package (VEI). Execute. Identify the all the customer exits.

Steps to identify the right customer exit which contains menu exit: -

Double click on each customer exit & identify the right customer exit which contains the menu exit.

Exit Name: RVEEXAKK2

Steps to open the documentation: -

Execute SMOD. Provide the customer exit in the enhancement. Select the radio button documentation. Display. Read the documentation.

Steps to implement the customer exit: -

Execute CMOD. Provide the project name (ZS10AMME) [any name]. Click on create. Provide short description. Save. Click on enhancement assignment. Provide the enhancement name as customer exit name (RVEEXAKK2). Enter. Click on save. Click on components. Back to initial screen. Select the radio button components. Click on change. Double click on each menu exit. Provide the short description (Go to SE16). Second button is Go to SE11. Enter. Double click on function exit. Double click on include. Implement the logic.

If SUCOMM = '+CS1'.

CALL TRANSACTION 'SE16'.

ELSEIF SUCOMM = '+CS2'.

CALL TRANSACTION 'SE11'.

ENDIF.

Save, check, activate the include. Back, activate the function module. Back. Activate the components. Back. Activate the project.

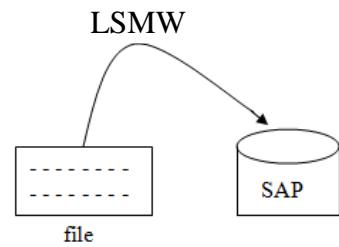
Steps to verify the menu exit: -

Execute VX11. select the financial document. Category (revocable), type (01), company code (1000). Enter. In the menu bar click on environment → Go to SE16.

LSMW

(Legacy Systems Migration Workbench)

LSMW is used to upload the data from file to SAP system.



Differences between LSMW and BDC

LSMW

1. LSMW is purely designed for functional people who don't do much coding.
2. In LSMW Mapping is done by system itself.
3. LSMW offers 4 techniques
 - a) Direct input recording
 - b) Batch input recording
 - c) BAPI
 - d) IDOC
4. In LSMW the flat file must be .TXT file.
5. LSMW is only possible for standard transaction code.

BDC

- 1) BDC is designed for technical people who knows much coding.
- 2) In BDC mapping is done by technical people
- 3) BDC offers two techniques
 - a) Call Transaction Method
 - b) Session Method
- 4) In BDC the flat file is either .TXT file or Excel sheet.
- 5) BDC is possible for any transaction code.

Note: - The transaction code for LSMW is 'LSMW'.

At the time of creating the LSMW we need to provide project (Module name), sub project (application), object (task).

→ **Develop a conversion program to upload the vendor master data from flat file to SAP system by using LSMW (Batch input recording method). The flat file contains vendor numbers, names and search terms.**

Steps to work with LSMW: -

Execute LSMW. Provide the project name (ZSMM), sub project name (ZSVEN) object name (ZSVC). Click on create in the application tool bar. Provide short description of project. Enter. Provide short description of sub project. Enter. Provide short description of object. Enter. Click on execute.

STEP 1 Maintain object attributes: Click on execute (Ctrl + F8). Click on change mode. Select the radio button Batch Input Recording. Click on over view icon in the right side. Place the cursor on recordings. Click on create recording. Provide the recording name & short description. Enter. Provide the transaction code (XK01). Enter. Provide the vendor number (H2020), account group (0004). Click on enter. Provide the name (BIG C), search terms (BC), country (KW). Save. Click on default all in the application tool bar. Save. Back, come back. Provide the recording name (SXK01). Save, back.

STEP 2 Maintain source structures: Click on execute. Click on change mode. Place the cursor on source structure. Click on create structure. Provide source structure is internal table name and provide short description. Enter. Save, back.

STEP 3 Maintain source fields: Click on execute. Click on change mode. Place the cursor on internal table name. Click on change mode. Click on table Maintaintance icon in the application tool bar. Provide field names. (Data types & lengths which is similar as file).

LIFNR	C	10	VENDOR
NAME1	C	35	NAME
SORTL	C	10	SEARCH TERM

Save, back. Save, back.

STEP 4 Maintain structure relations: Click on execute. Click on change mode. Save, back.

STEP 5 Main field mapping and conversion rules: Click on execute. Click on change mode. Select the each field. If the field is coming from flat file then click on source field. Otherwise click on rule in the application tool bar. Select the radio button constant. Enter. Provide the constant value. Save, back.

STEP 6 Specify files: Click on execute. Click on change mode. Select the legacy data on the PC (Frontend). Click on create or adding on top. Browse the filename. Provide short description. Select the delimiter is comma, enter. Save, back.

STEP 7 Assign files: Click on execute. Click on change mode. Save, back.

STEP 8 Read data: Click on execute. Click on execute. Back, click on back.

STEP 9 Display read data: Click on execute. Enter. Click on back.

STEP 10 Convert data: Click on execute. Click on execute. Back, click on back.

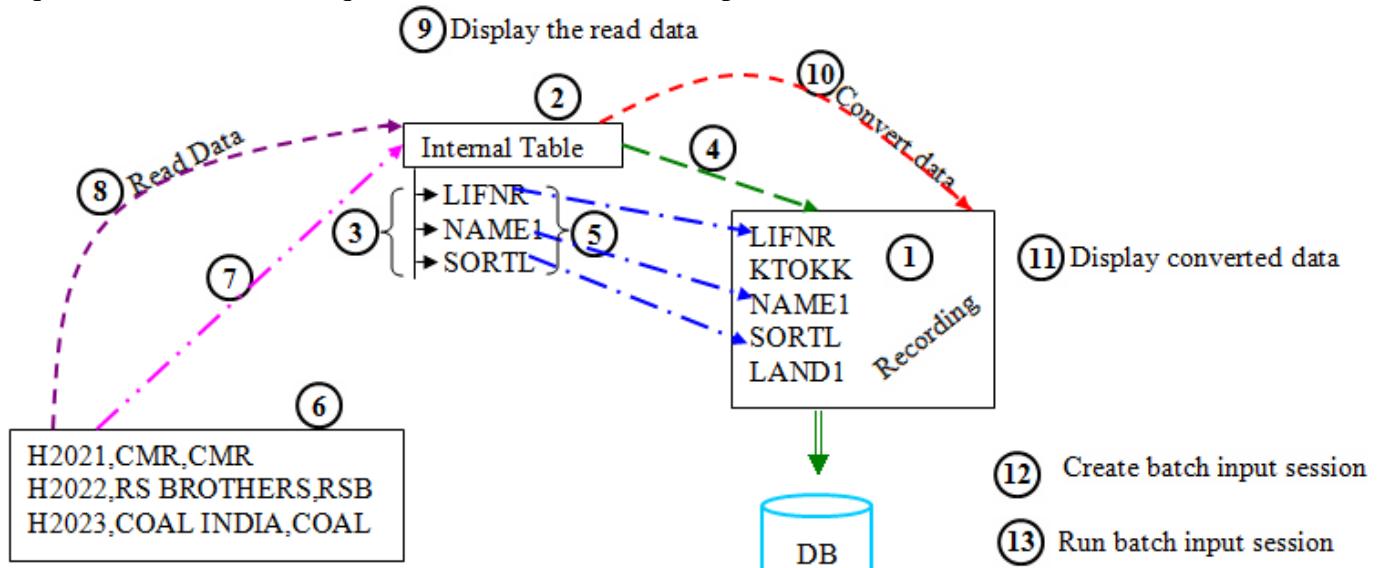
STEP 11 Display converted data: Click on execute. Enter. Back.

STEP 12 Create batch input session: Click on execute. Select the check box keep. Execute. Enter.

STEP 13 Run batch input session: Click on execute. Select the session name. Process. Click on process.

Next on wards the end user execute the same LSMW from 6th step on wards for each flat file.

Steps to create the request number to LSMW: - In the menu bar click on extras → Generate change request. Click on create request. Provide the short description. Enter.



→ Develop a conversion program to upload the vendor master data from flat file to SAP system by using LSMW. (Direct input method). The flat file contains vendor numbers, names & search terms.

Steps: Execute LSMW. Provide project name, sub project name & object name. Provide short description. Execute.

STEP 1 Main Object Attributes: Click on execute. Click on change mode. Select the radio button. Standard batch/ direct input method. Select the object – (0040), select the method (0001) [standard]. Save, back.

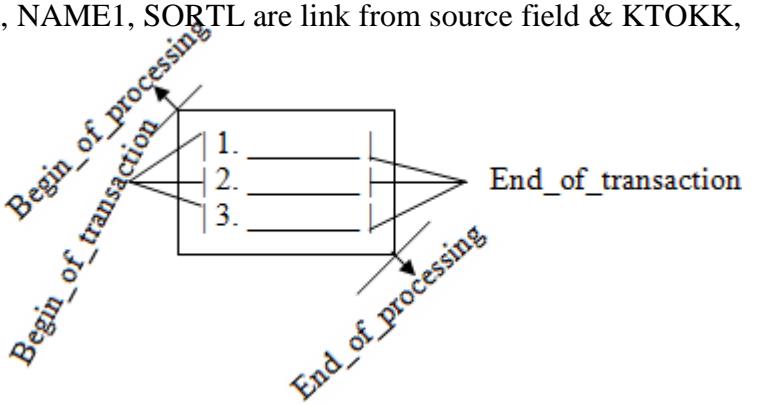
STEP Maintain Structure Relations: Click on execute. Click on change mode. Select our required structure & click on relationship. Here we establish the relationship to BLA1. Save. Back.

STEP Maintain field mapping and conversion rules: Click on execute. Click on change mode. Select the transaction code field. Click on rule. Select the constant. Enter. Provide the transaction code (XK01). Enter. Provide the rest of the mandatory (LIFNR, NAME1, SORTL are link from source field & KTOKK, LAND1 are link from Rule). Save, back.

Rest of the steps are same as previous method.

Events in LSMS:

1. Global Data
2. Begin_of_processing
3. Begin_of_transaction
4. End_of_transaction
5. End_of_processing



Global data: - It's an event which is used to declare the variables, work areas & internal tables which are needed to implement the logics.

Begin_of_processing: - It's an event which triggered at the time of entire flat file processing start.

Begin_of_transaction: - It's an event which is triggered at the time of each record processing start.

End_of_transaction: - It's an event which is triggered after completion of each record processing.

End_of_processing: - It's an event which is triggered after completion of entire flat file processing.

Note: - LSMW events are available in 5th step. That field mapping & conversion rules.

→ Develop a conversion program to update the vendor city from flat file to SAP system by using LSMW (batch input recording method). Through XK02 transaction. The flat file contains vendor numbers & cities & also download the error vendor which aren't created.

Execute LSMW. Provide the project name, sub project name, object name. Click on create. Provide short descriptions. Execute Maintain object attributes. Execute. Change mode. Select the radio button batch input recording. Click on over view icon in the right side. Select the recording. Click on create. Provide the recording name (SXK02). Short description. Enter. Provide transaction code (XK02). Enter. Provide the vendor which is already created. Select the address check box. Enter & update the city. Click on save. Click on default all.

Note: - When ever we are working with update transaction then we must remove the other than flat file fields recording steps from recording.

Here we remove the NAME1, SORTL, LAND1 recording steps by using (-) screen field in the application tool bar. Save, back. Click on back. Provide the recording name. Save, back.

In main field mapping and conversion rules: execute. Click on change mode. Provide the mapping. (LIFNR ORT01 from source field, D0110 from rule constant as X). Click on layout (Ctrl + F7) in the application tool bar. Select the Global data definitions, Processing time check boxes. Enter. Then we get the events. Double click on global data. Declare the work area & internal tables.

Data: Begin of wa_error,

 LIFNR type lfa1-lifnr,

 End of wa_error.

Data it_error like table of wa_error.

Data V type lfa1-lifnr.

Click on save. Check, back. Click on save. Double click on begin of transaction. Implement validation logic.

Select single lifnr from lfa1 into V where lifnr = itab1-lifnr.

If sy-subrc <> 0.

Wa_error-lifnr = itab1-lifnr.

Append wa_error to it_error.

Skip_transaction.

Endif.

Save, check, back. Double click on end of processing.

Call function 'GUI_DOWNLOAD'

EXPORTING

 FILE NAME = 'C:\VIDYA.TXT'

 WRITE_FIELD_SEPERATOR = 'X'

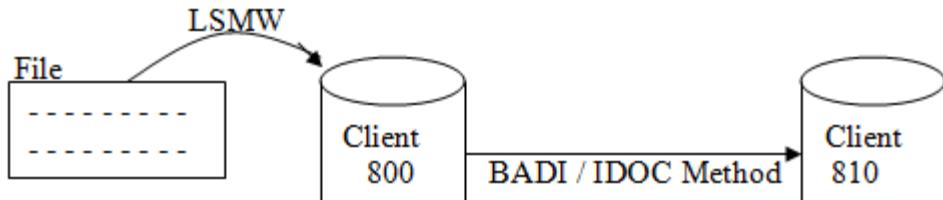
TABLES

 DATA_TAB = IT_ERROR.

Save, check, back. Save, back. Rest of the steps are same as previous one.

Note: - When ever we are working with BAPI methods & idoc methods then we must create a file port in WE21 transaction. In the real time file ports are provided by BASIS people.

Note: - In the LSMW BAPI and Idocs methods acts like inbound.



Steps to create file port: - Execute WE21. Expand the file. Select the SUBSYSTEM file port. Click on copy in the application tool bar. Provide the to port (SPT). Enter. Select the check box Unicode format in system settings. Click on save.

→ Develop a conversion program to upload bank details from flat file to SAP system by using LSMW (BAPI method) the flat file contains bank country key, bank key & bank name.

STEPS Execute LSMW. Provide project name (ZSFI), sub project name (ZSBAN), object name (ZSBC). Click on create. Provide short description. In the menu bar click on settings → IDOC inbound processing. Provide the file port (SPT). Partner type (LS), partner number (SP800). Click on activate idoc inbound processing. Click on yes. Save, back, execute.

Maintain object attributes: -Execute. Click on change mode. Select the radio button BAPI. Select the business object of Bank (BUS1011), method (Create), save, back.

STEP Start idoc generation: execute, click on execute.

STEP Start IDOC processing: Execute. Click on Execute & absorb the status. If the status is '53', it's success.

→ Develop a conversion program to upload customer master data from flat file to SAP system by using LSMW (Idoc method). The flat file contains customer number, names, search terms & street.

STEP Execute LSMW. Provide project (ZSSD), subproject (ZSCUS), object. Click on create. Provide short descriptions. In the menu bar click on settings → idoc inbound processing. Provide the file port (SPT), partner type (LS), partner number (SP800). Click on activate Idoc inbound processing. Click on back. Execute.

STEP Maintain object attributes: Execute. Click on change mode. Select the radio button IDOC. Provide the message type (DEBMAS), idoc type (DEBMAS06). Save, back.

Hai friends, this is **Satish Reddy**. If you find any mistake in this material please send me mail to satishkumarreddy.mn@gmail.com.

Thanking you.