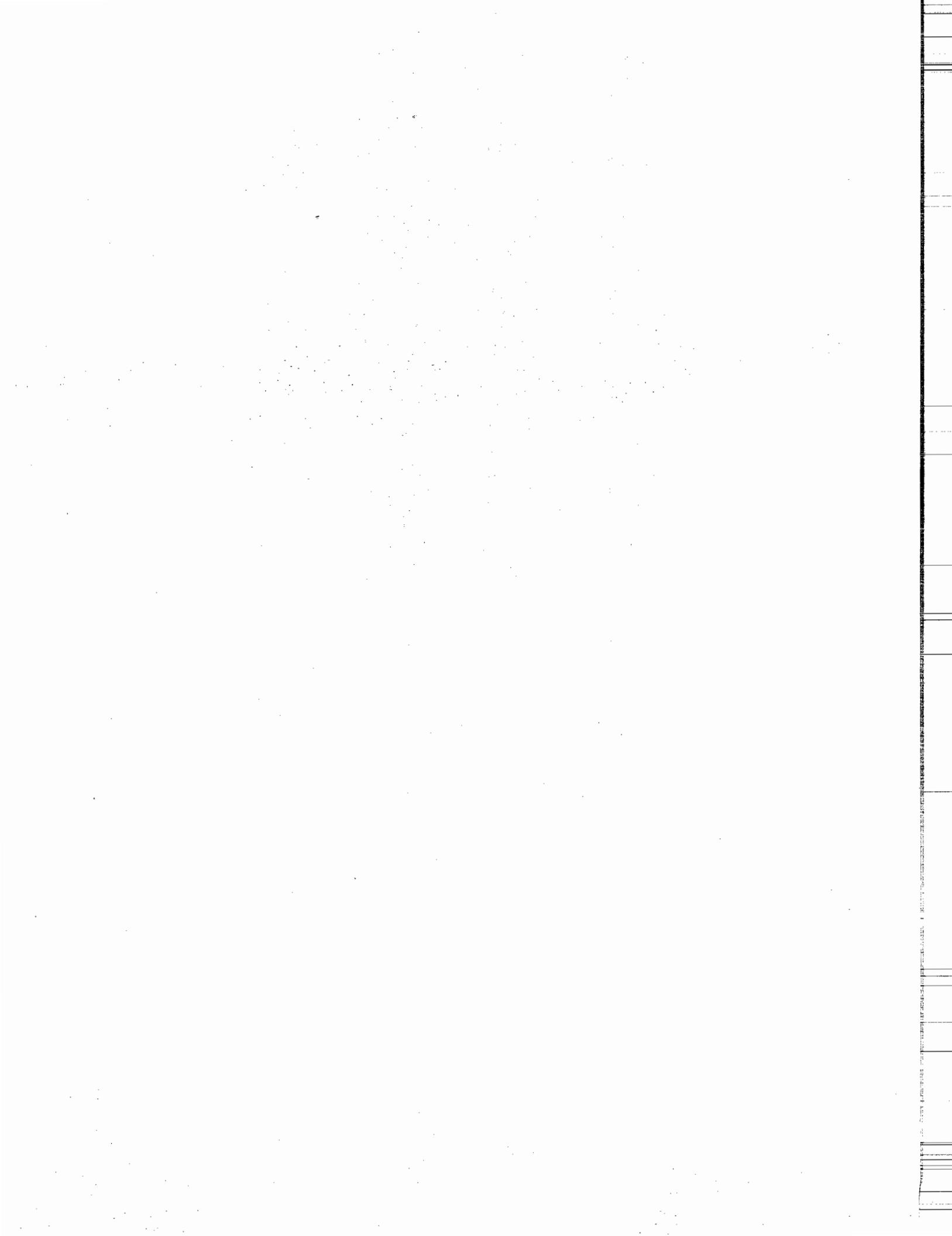


SAP BW/BI

By

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In data warehousing there are 3 different tables are there

1. Dimensional table
2. Relational table
3. Fact table

In DW Table called class and table columns/fields are called as objects.

Object is a realtime entity.

Dimensional table :- which table maintains all the objects as non-numeric and maintained as primary keys, that called dimensional table.

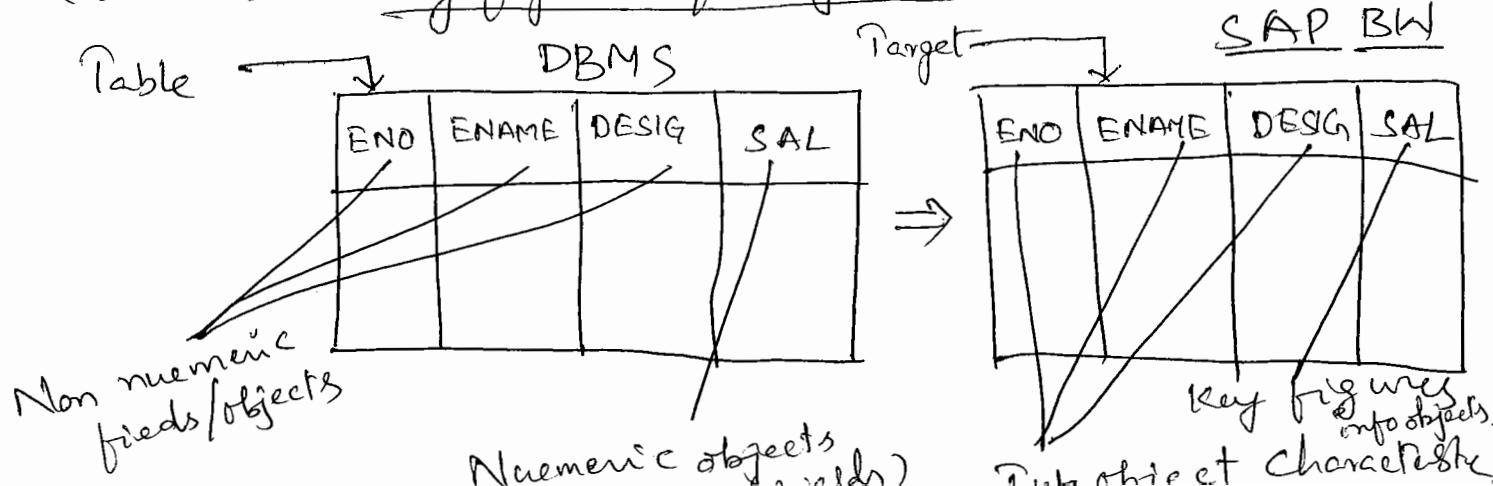
Relational table :- which table maintains both non-numeric and numeric objects, and atleast one non-numeric object maintained as a primary key, that table called as relational table.

* Fact table :- which table maintains both non-numeric and numeric objects and all non-numeric objects maintain as a foreign keys, that table called as fact table.

Non numeric objects in SAP BI/BW System

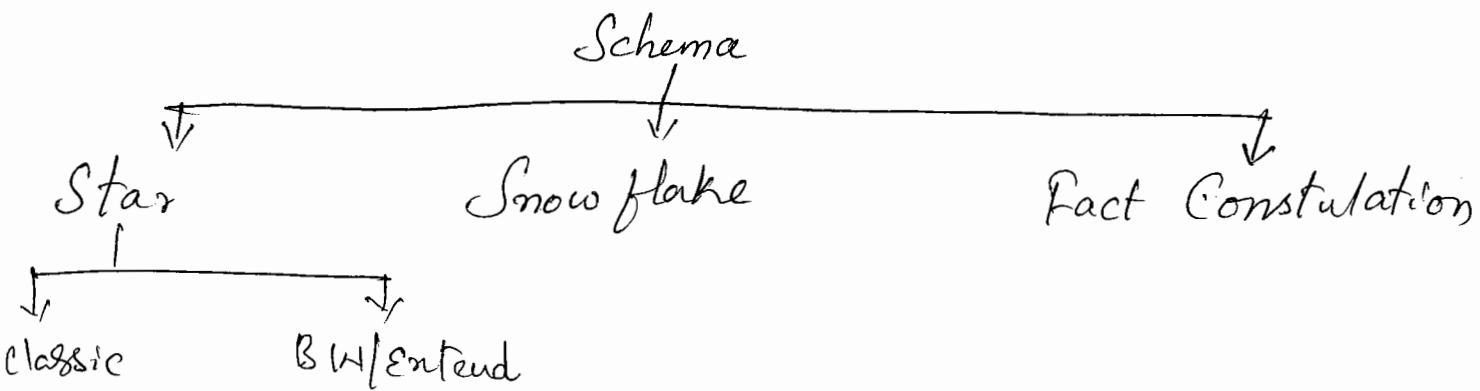
are known as 'Characteristic info objects'.

Numeric objects in SAP BI/BW System are known as 'Key figure info objects'.

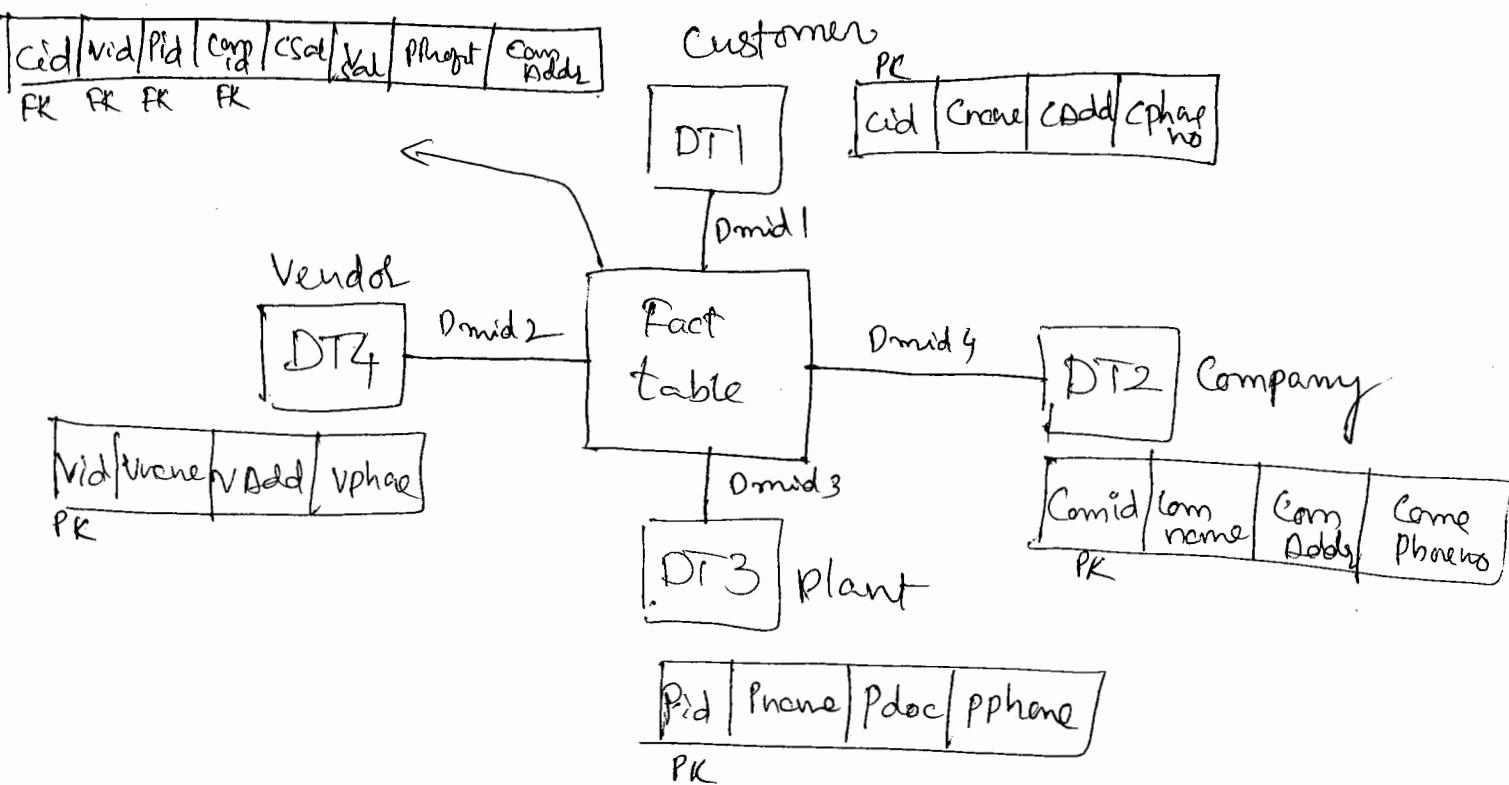


Schemas :- Schema is nothing but a database design or structure. In DW three standard schemas are proposed.

1. Star Schema
2. Snowflake Schema
3. Fact Constellation Schema.



Classic Star Schema :-

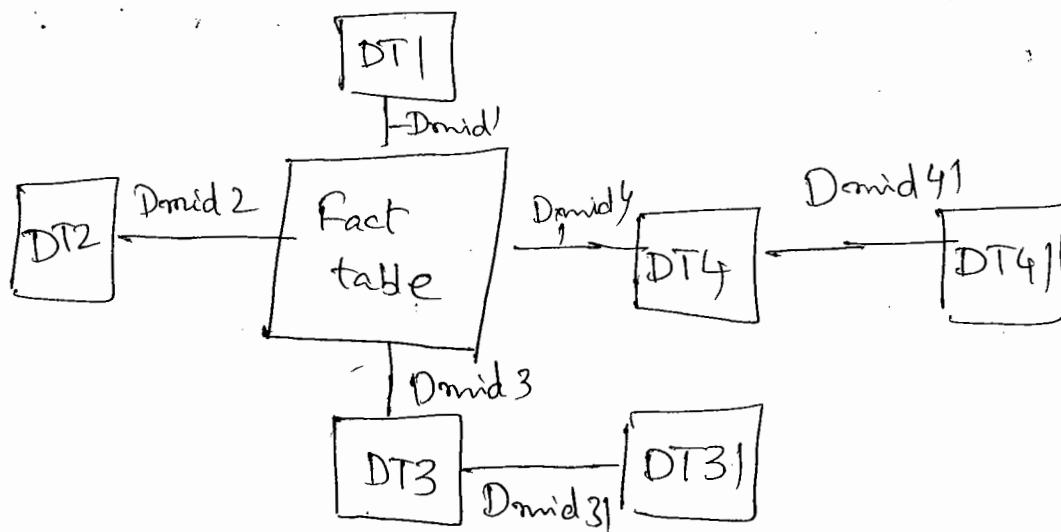


Fact table surrounded by the dimensional table where the primary keys of the dimensional table are placed in fact table as foreign keys.

Fact table maintains primary keys of the dimensional table along with the measures.

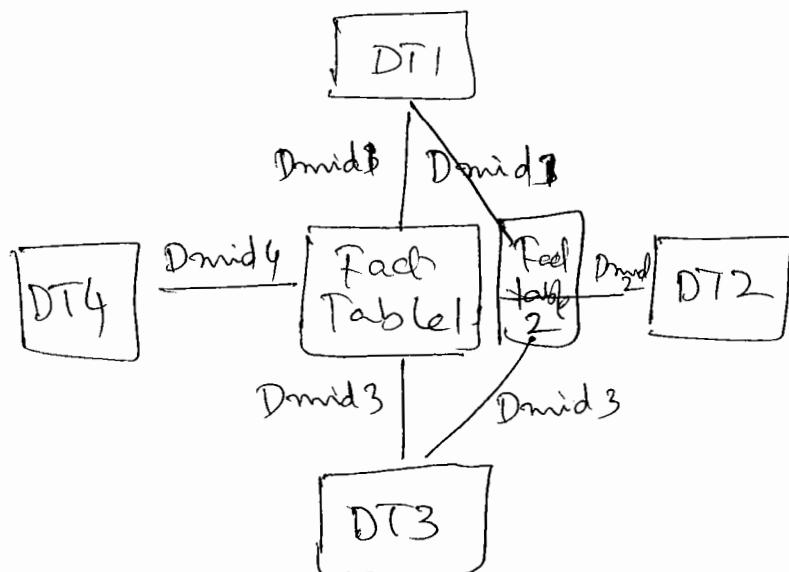
The join between dimensional table and fact table is called dimension id.

Snowflake Schema :-



Fact table Surrounded by the dimensional table, & some of the dimensions are drill down in the main dimension table. where

fact Constitution Schema :-

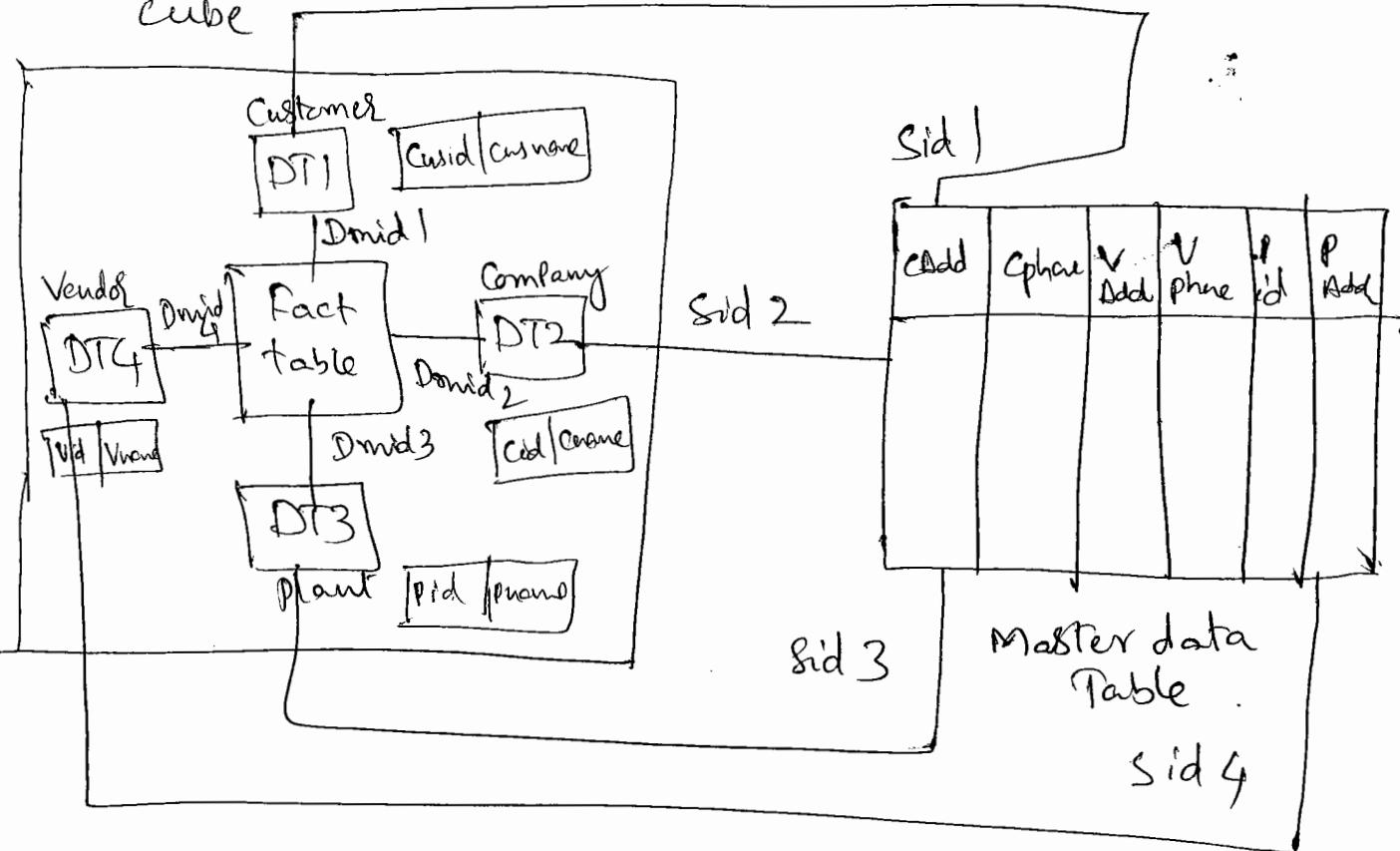


Multiple fact tables can share the common dimension.

BW Star Schema (or) Extended Star Schema :-

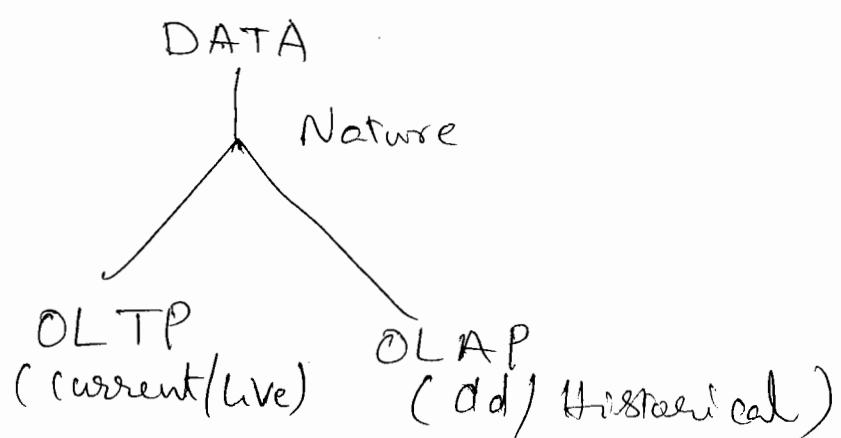
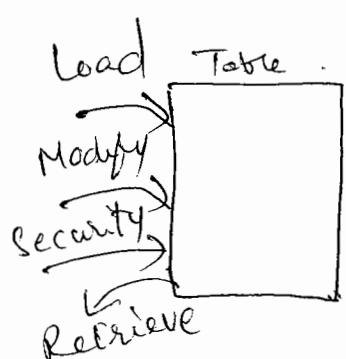
This Schema is used in SAP BW/BI System to design data targets.

cube



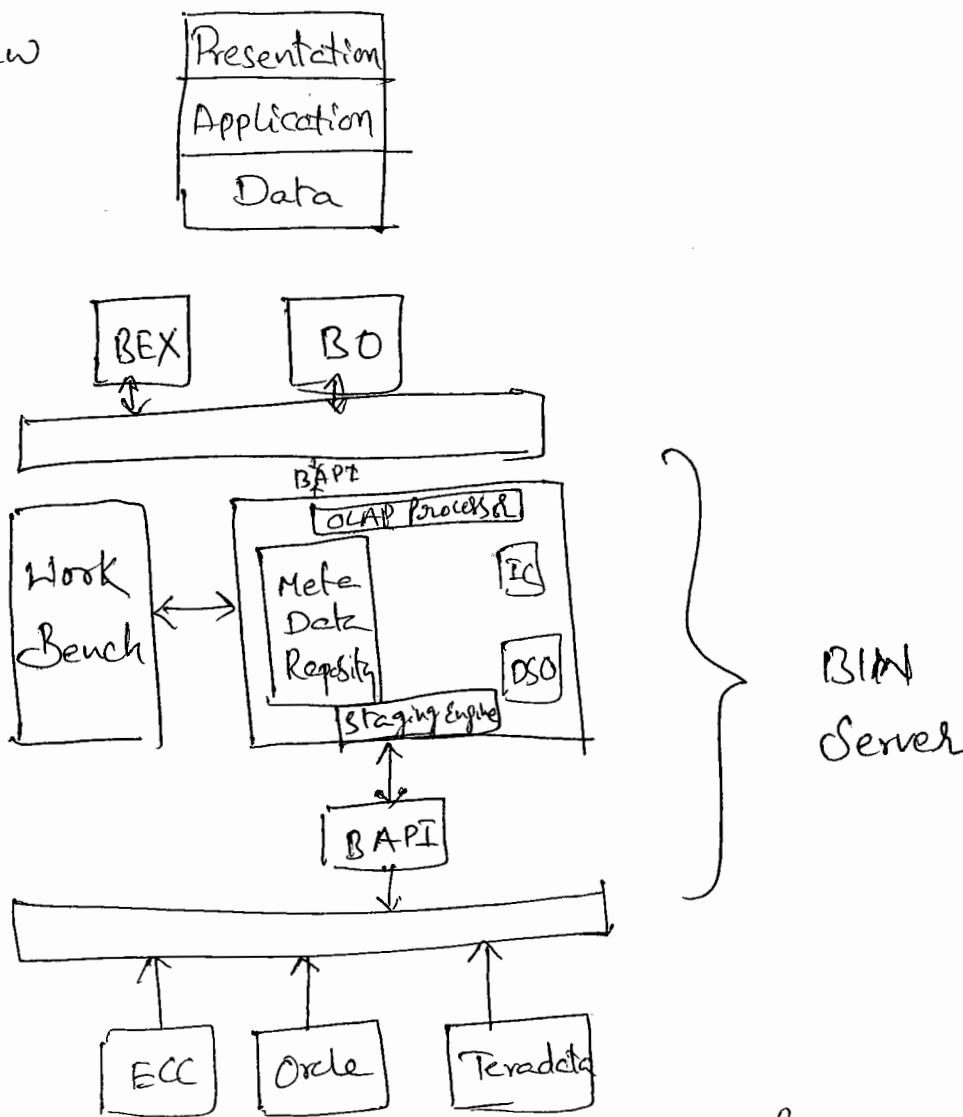
Fact table Surrounded by the dimensional table where master data table is maintained outside of the cube.

Dimid's and Surrogate id's are called generated Keys to access the data fastly.



SAP BI/BW Architecture :-

General view



BAPI - Business Application Programming Interface.

IC - Info Cube.

DSO - Data Store Object.

SAP BW/BI is a three tier/layer architecture.

The below diagram shows general view and design view.

In Database layer we can find multiple Source systems from which we have to Extract the data in SAP BW/BI system.

Here, BAPI is the RFC Connection, its main functionality is to Establish the Connection b/w one system to another system.

In Application layer, we can see multiple

Staging Engine :- When we Extract the data from the Concerned Source System, we need to store the data into a Temporary Storage Location in BI/BW System. This location called PSA (Persistance Staging area).

OLAP Processor :- When we generate the report on top of Targets in BW System, This information can pass through OLAP Processor. It can aggregates/summarise the Target Information key figures based on the same chart values.

Metadata Repository :- It looks like a Google search. We can know details of the objects in SAP BW/BI System in metadata Repository.

Work bench :- Work bench is used to do modeling activity in SAP BW/BI System. In SAP BW System work bench is known as Administrative work bench. In SAP BI System work bench is known as DW workbench.

In presentation layer, we can do reporting activity by using reporting tools. Application layer, in SAP BW/BI architecture is called BIW Server.

Functional areas in SAP BW :-

1. Modeling.
2. Administration
3. Transport Connection
4. Reporting Agent.
5. Document.
6. BI Content.
7. Translation

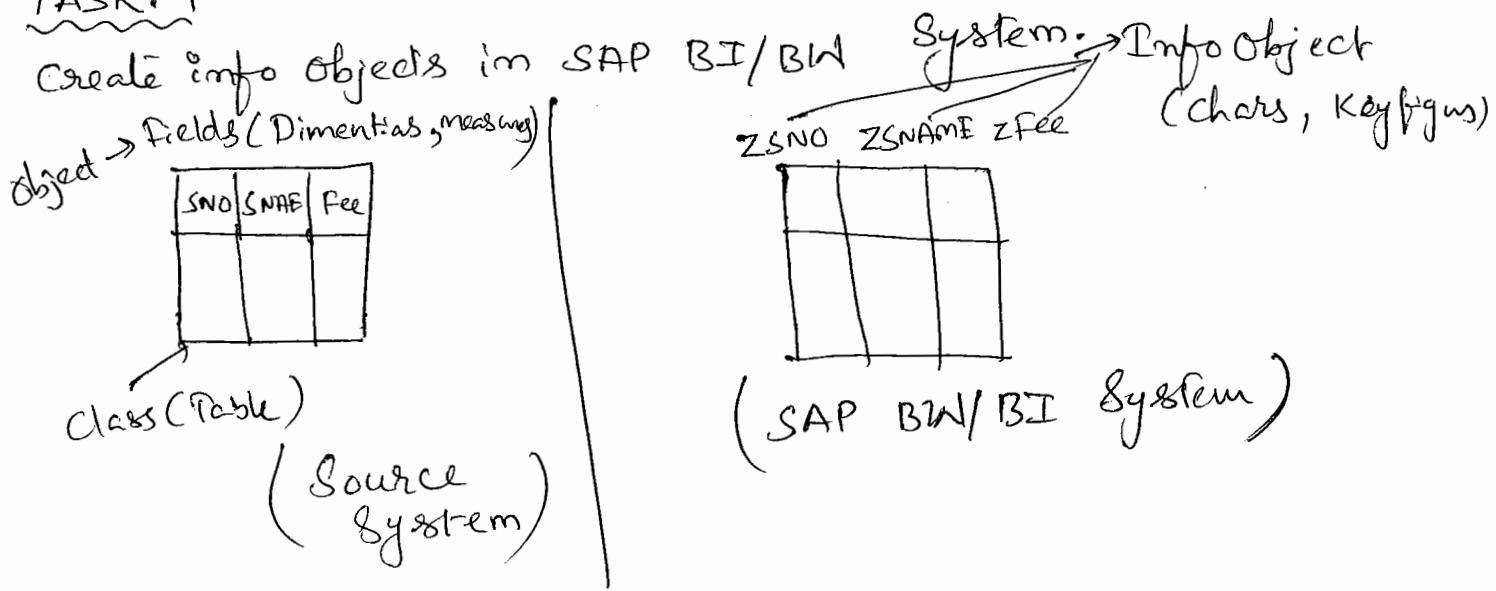
T. Code :- RSA10LD

Functional areas in SAP BI:-

T-Code : RSA1

1. Modeling
2. Administration
3. Document
4. Transport Connection
5. BI Content
6. Translation
7. Metadata Repository.

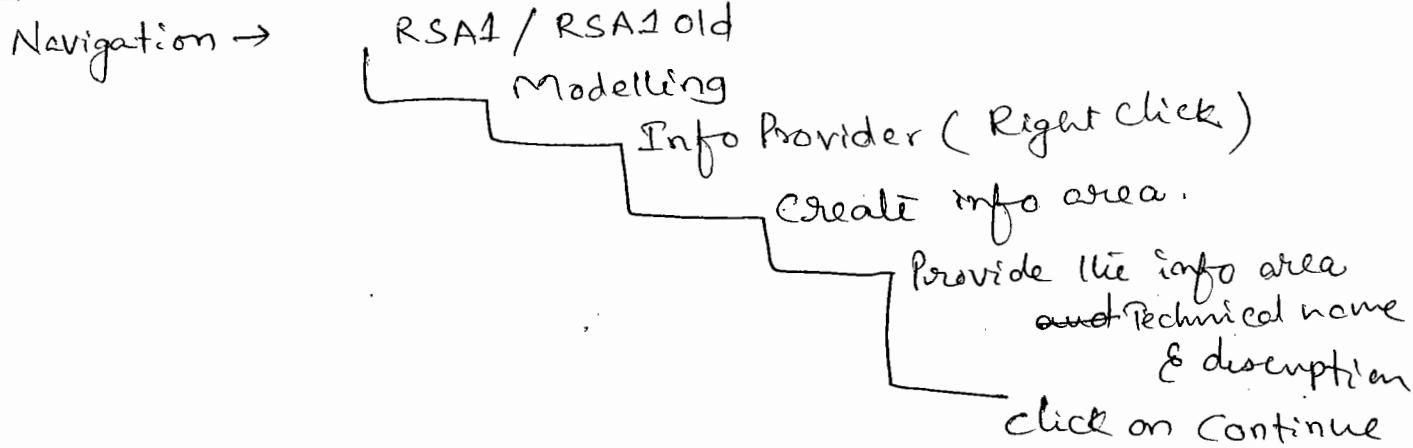
TASK:-



Prerequisites:-

1. Info area
2. Info object Catalog
3. Info objects.

Step1:- Info area.



Once we create the info area in info provider level if

Info area is a folder in this, we can store the targets in SAP BW/BI System.

Step 2: Info object Catalog.

RSA1/RSA10LD

└ Modeling

└ Info objects

└ Select our info area (Right click)

└ Create info object Catalog

(Chars & KF's)

Here we need to Create info object catalogs for characteristic once and for key figure once.

→ Provide the info object Catalog Technical name and description. → Create

→ Activate.

In the same way, we need to create info object catalog for key figure.

→ Choose the info object type 'key figure'

→ Provide the Technical name and description.

→ Create

→ Activate.

Info object catalogs are the folders to store info objects in SAP BW/BI system.

Step 3: Info objects.

Navigation

Fields (Dimensions)	CNO	CNAME	PUR	Date

measure

Info objects (char)

Key figure

ZCNO	ZCNAME	ZPUR	DATE

In our system the date format will be 8 digit and time format will be 6 digit.

(8) Date : YYYYMMDD

(6) Time : HHMMSS

RSA1/RSA2 DLP

└ Modeling

└ Info objects

└ Select info area

└ Select info object catalog (Right click)

└ Create info object

└ Provide the Technical name & description

└ Click on Continue.

→ Under GENERAL TAB provide the datatype NUMC and length 6.

→ Activate

→ 'Back'

In the same way try to create one more characteristic ZCNARME

→ Provide the technical name & description

→ Click on Continue.

Under GENERAL Tab provide the data type CHAR and length 20
→ 'Lower Case Letters' must be checked and then Activate

In the same way we need to select info object catalog for key figure

└ Create info object

└ Provide Technical name & description

└ Click on Continue.

Note: Only Amount & Quantity fields can be treated as

→ Choose the datatype 'Amount'

if Source Contains all amounts in same currency then we need to choose fixed currency option. like INR

if Source Contains variable currency formats - choose 'Unit/Currency' option and Enter SAP Standard info char 'O Currency'.

→ Click on 'BACK'

In the Same way we need to create one more key figure Quantity.

↳ key figure catalog (light click)

↳ choose Create info object.

↳ Provide Technical name & Description

↳ click on Continue .

↳ provide the datatype Quantity .

↳ Provide the fixed unit of measure Quantity

if Source Contains Variable quantity formats choose 'unit/Currency' as 'Unit'

↳ Activate

↳ click on 'Back'

Note:- Reference :- This Option is used for Copy function.

if we provide old info object char/Key figure as a reference to newly created char/Key-figure. The new info object is dependent on old info object. we can't change the properties of new info objects. if we change the properties of old info object, Those changes

Template! This Option is used for Copy function. if we provide old info object as a template to new info object, The properties of old info objects is applied to the new info objects. Both old and new info objects act as independent objects.

Info objects.

Characteristics

Datatypes:
CHAR
NUMC
TIME(6)- HHMMSS
DATE(8)- YYYYMMDD

Key figures

AMOUNT
Quantity
Number
Integer
Date
Time.

TASK 2:- In SAP BW/BI system, we need to load two kinds of data

1. Transaction Data
2. Master Data.

Always load ~~transaction~~ Master data first and then load transaction data.

To load Master data, we are using target is info obj character

To load Transaction data, we are using targets are info cubes and ODS/DSO.

ODS is a terminology in SAP BW System

DSO is a terminology in SAP BI System.

We always load data, two source systems mainly.

1. Flat file Source System
2. SAP Source System (ECC)

ECC - Enterprise Central Component.

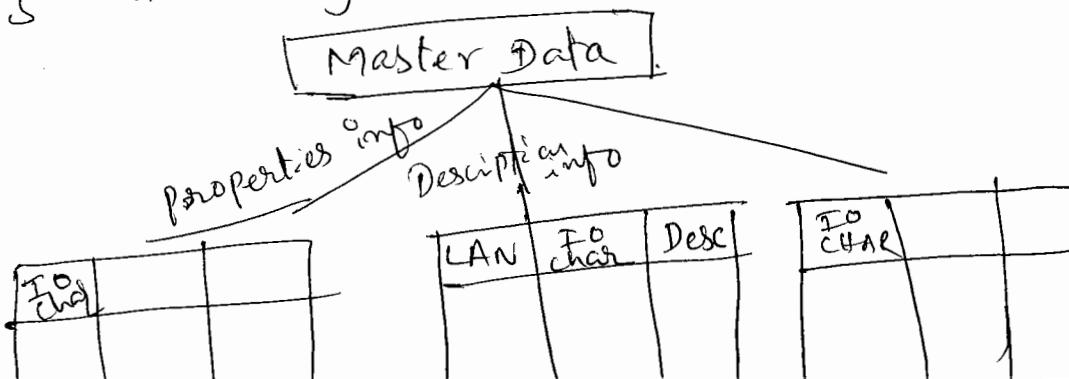
TASK 2:-

Loading Master data from flat file into SAP BW System.

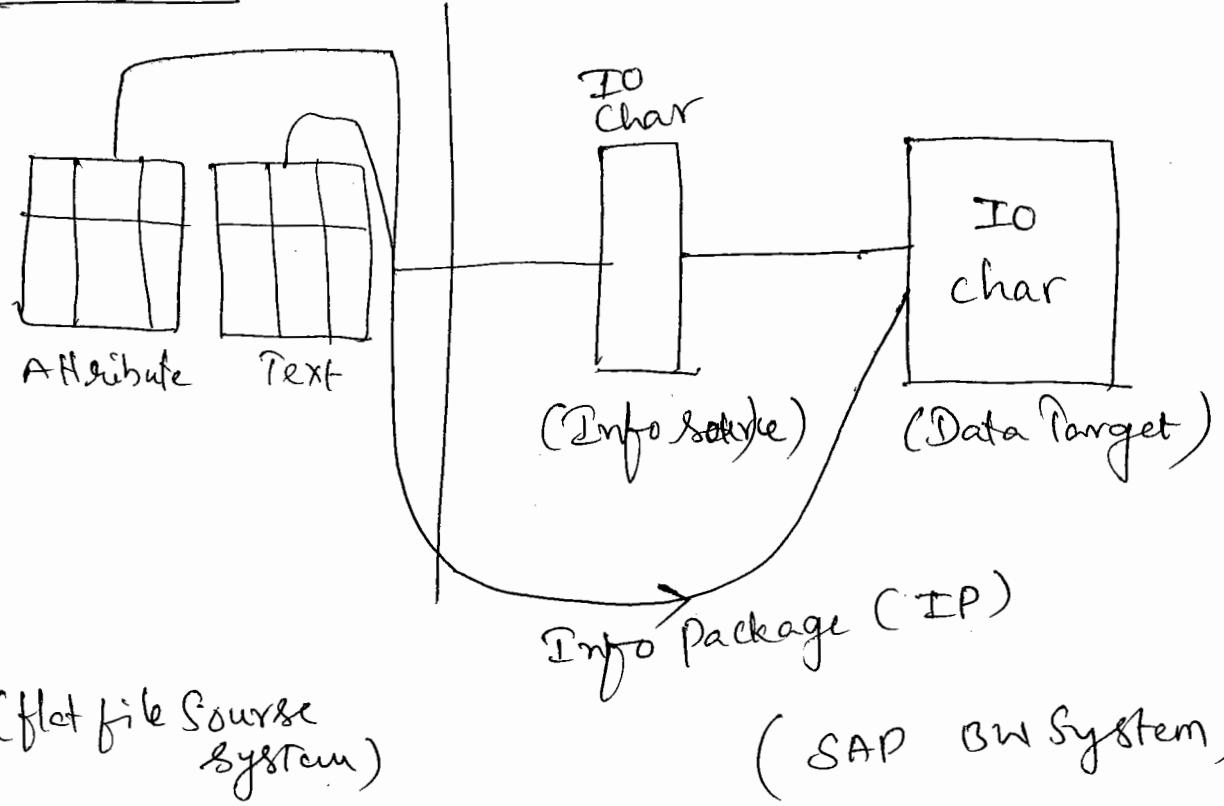
A) flexib Direct update :-

Master data maintain in three tables.

1. Attribute table
2. Text table
3. Hierarchy table.



Data flow:-



Example flat files :-

Attribute :-

Mat No	Mat Loc	ph.no
10001	Hyd	xxxx
10002	Vij	
10003	Tirup	
10004	wore	
10005	Ramant	

Text file :-

Mat No	Mat Name	Price	Qty
100.			

LAN	MAT NO	DESC
EN	10001	High
EN	10002	Low
EN	10003	Low
EN	0004	Medium
EN	10005	Medium

Prerequisites:-

1. Info area
2. Info object catalog.
3. Info objects
4. Application Component
5. Info source with direct update
6. Insert - Info object characteristic as Data target
7. Info package.

Info area:

Navigation:

RSA101d

↳ Modeling

 └ Info provider (Right click)

 └ Create info area.

 └ Provide the technical name & Description

Info area is a folder to store the targets in SAP BW/BI System.

Info object Catalog:

Navigation:

RSA101d

 └ Modeling

 └ Info objects

 └ Select our info area (Right click)

 └ Create info object Catalog

(char's & KF's)

Once create the info area under info provider level, it is also displayed in info objects level also.

We need to create info object catalog for both characteristics and key figures.

Info object catalog is a folder to store info objects.

Create the info object catalog for character one's and KF once.

 └ provide the Technical name & description.

 └ Create

 └ Click 'Activate'

 └ Go 'BACK'

Info objects :-

Navigation :-

RSA101D

↳ Modeling

↳ Info Objects

↳ Select info area

↳ Select info object catalog (Right click)

↳ Create info objects.

Here we need to create info objects for both characteristics and key figures.

In realtime, we need to treat amount and quantity fields as key figures.

↳ Provide Technical name & Description
↳ Click on 'Continue'

Note:- In master data, we always create attributes as characteristics only because master data has a truth information

Goto Attributes Tab,

under GENERAL Tab provide the datatype NUMC and length 6 and lower case letters don't enable.

Go to Attribute Tab, and try to add attribute characteristic as mentioned in the attribute file.

Enter ZLOC under attribute Tab and press Enter.
Then it will ask ^{popup} dropdown, create this attribute as CHAR, Click on continue.

Now, Provide the description of the attribute.

and provide the datatype 'CHAR' and length 15 and

lower case letters checkbox must be Enabled.

On Right Side, uncheck the attribute only box. Then Type is NAVIGATE instead of display. By default display.

Click on Navigation attribute on/off for this location attribute.

In the Same way, we need to create one more attribute i.e. phone number.

Now, Successfully we added the following attributes Location and phone number.

Go to Menu bar, click on Activate.

Then it will ask one popup message.

It will show "Activate Dependent Info Objects" click on 'continue'.

No need to create text file attributes language & DESC. for these SAP standard characteristics are there.

Language - OLANGU
DESC - OTXTSH

→ click on 'BACK' button.

Step 4: Application Component.

Application Component is a folder, In which we need to store Info Sources and data Sources.

Navigation's

RSA101d

↳ Modeling

↳ info sources (right click)

- ↳ Provide Technical name & Description
- ↳ click on Continue.

Step 5: Info Source with direct update,

RSAB10D

- ↳ Modeling

- ↳ Info Sources

- ↳ Select our Application Component (RC)

- ↳ Create info Source.

Now, provide the info object characteristic ZMATNO
just we have created under flexible update.

just we have created under ^{Direct} flexible update.

- ↳ Click on 'Continue'

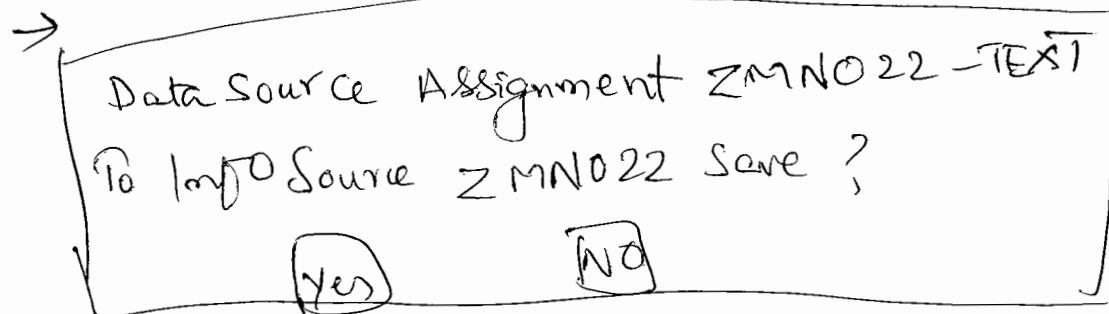
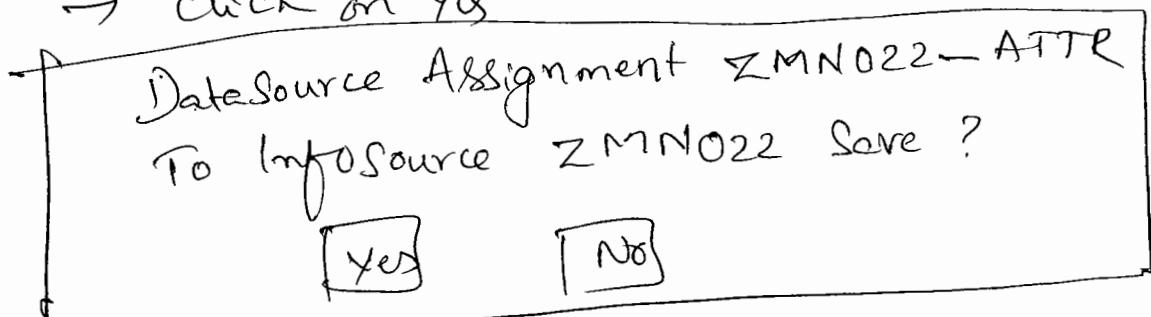
- ↳ Double click on the info source

Expand Transfer-Structure / Transfer-Rules.

→ Select the Source System as flat file.

→ Once we select the Source System as flat file
it will ask one pop-up screen

→ Click on Yes



- Try to activate Info Source for attribute data source once and text data source once.
- Now click on 'BACK' button.

Step 6:- Insert info object characteristics as Data Targets

RSA10ld

- ↳ Modeling
- ↳ Info provider
- ↳ Select Info Area (Right click)
- ↳ Insert characteristic as data target.
- ↳ provide Info object characteristic name.

Step 7:- Info Package.

RSA10ld

- ↳ Modeling
- ↳ Info Sources
- ↳ Select Application Component.
- ↳ Select our Info Source.
- ↳ Expand this
- ↳ Select our data source Assignment (RC)
- ↳ Create Info Package

Info Package is a Component, it can move source information, from source to destination.

- We need to create info package twice for Attribute file once and text file once.
 - ↳ Provide Info package Description.
 - ↳ Select the Attribute file
 - ↳ click on 'SAVE'
 - ↳ under 'External' ~~datatype~~ 'datatype' tab
 - ↳ choose the file from 'Name of file' option
 - ↳ Select the file type as 'CSV'
 - ↳ set the data separator as ','
 - ↳ set the Escape Sign as ';'
 - ↳ set the 'Number of Header Rows to be ignored' as '1'
 - ↳ click 'Preview'
 - ↳ click 'Continue'

Now Go to 'Schedule' Tab

- ↳ click on 'Start'
- ↳ Then we can get the message 'data was requested'
- ↳ Goto 'menu bar' click on 'Monitor'

In the same way create one more info package for text file also.

Check the Master data >

Navigation

RSASold

↳ Modeling

↳ Info Objects

↳ Select Info area

↳ Select Info object Catalog for
Character.

↳ Select required characteristic
ZMATNO (right click)

↳ Maintain master data

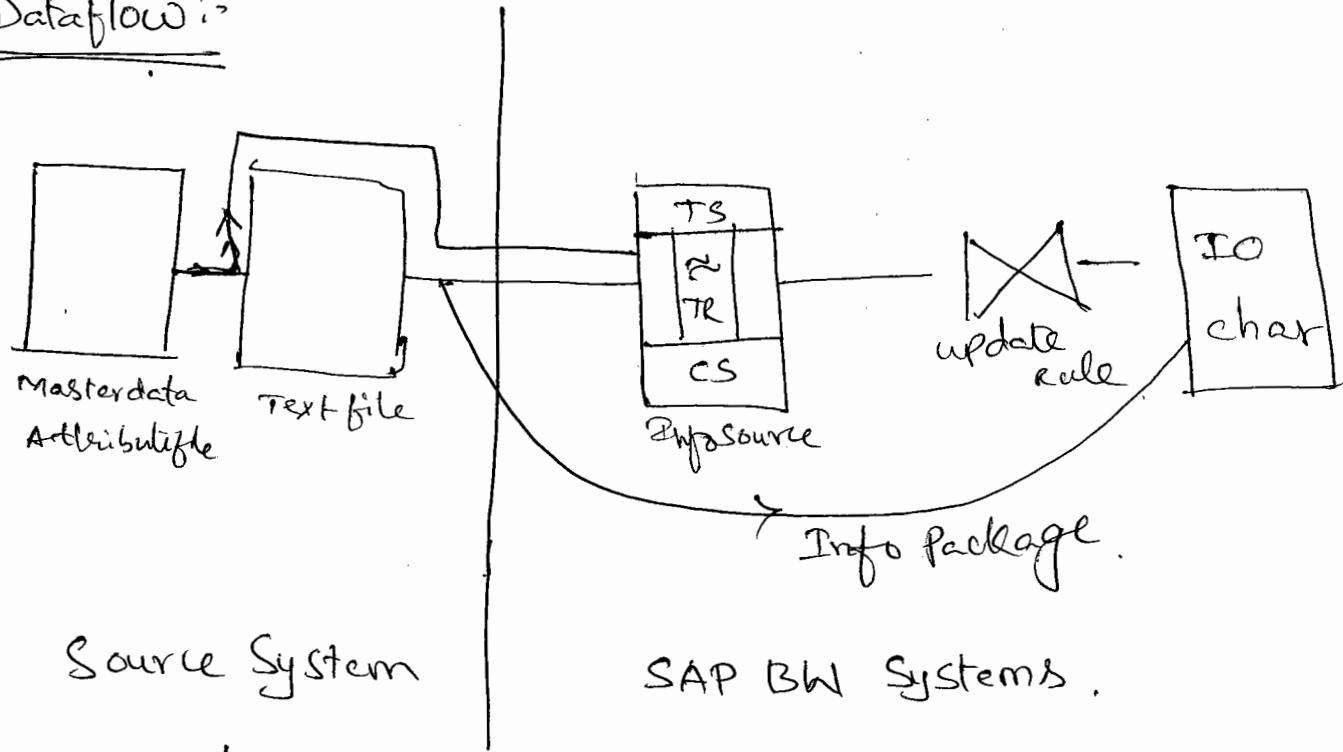
↳ Execute ,

Details:

① Dependent Info Object Activation .

 Flexible update :-

Dataflow :-



Prerequisites:

1. Info area
2. Info object catalog
3. Info objects
4. Application Component
5. Info source with flexible update
6. Insert Characteristic as data target
7. Create update rules.
8. Info package.

Step 1, 2, 3, 4 Same as TASK-2 PART A

Step 5:- Info Source with flexible update.

Navigation

RSAT10L

↳ modeling

↳ Info Sources

↳ Select Application Component (RC)

↳ choose 'Flexible update in Data Target' option

↳ provide Technical name & Description

↳ click on Continue.

↳ Double click on the Info Source

↳ In Communication Structure

↳ Enter the required Info objects.

↳ In the same sequence of file.

↳ fields of the source file.

↳ click on 'Expand'.

Transfer-structure-Transfer
Rules.

↳ click on 'yes'

↳ choose the Source System as flat file under Transfer structure-Transfer rules.

↳ click on 'yes'

↳ And 'Activate'.

↳ click on 'BACK'.

↳ In the same way we need to create one more Info Source for text file also.

Step 6 Insert characteristic as data target.

This step is same as TASK2 PARTA step 6.

Step 7: Create update rules.

RSA101d

↳ Modeling

↳ Info provider

↳ Select our info area

↳ Select our datatarget (Info object)
(right click)

↳ Create update rules.

We need to Create update rules for info object
attribute once and info object text one.

↳ Under dataSource Enter the
info source technical name.

↳ Click on 'Enter'

↳ Click on 'Activate'

↳ 'BACK'

↳ In the same way create update
rule for info object text also.

↳ Right click on info object
(text) and create update rules.

↳ Under data source provide the
text info source technical
name.

↳ Click on 'Enter' and
'Activate'

↳ 'BACK'

Step 8:- Info package

Same as Step 7 in TASK2 PART A.

Check the Masterdata !

RSA10ld

↳ Modeling

↳ Info objects

↳ Select our info area

↳ Select info obj catalog for character

↳ select info object characteristic

(RC)

↳ ~~Monitor~~ Master data
maintain

↳ Executi

Flatfile RFC

↳ RSA10d

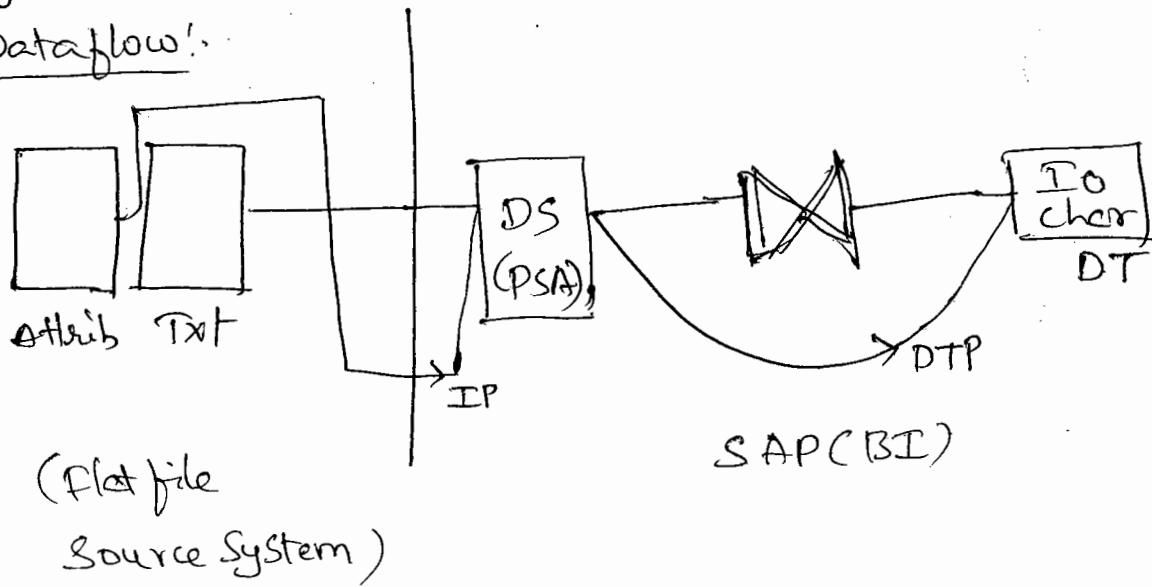
↳ Modeling

↳ Source System (RC)

↳ Create Source System Connection

TASK: 3: Loading master data from flatfile in SAP BI System.

Dataflow:-



IP → Info Package

DTP → Data Transfer process

DS → Data Source

PSA → Persistant Staging Area.

DT → Data Target.

Prerequisites:-

1. Info area

2. Info object catalog

3. Info objects

4. Select the Source System. 10. DTP.

5. Application Component.

6. Data source.

7. Info package

8. Insert characteristic as data target

9. Transformations

Step 1: Info area

Navigation

RSA1

↳ Modeling

↳ Info provider (RC)

↳ Create info area.

Step 2: Info object catalog

RSA1

↳ Modeling

↳ Info objects

↳ Select our info area (RC)

↳ Create info obj catalog.

Once we create our info area under info provider, it is also visible in info objects.
We need to create info object catalogs for both characteristic once, key figure once.

Step 3: Info Objects

RSA1

↳ Modeling

↳ Info objects

↳ Select our info area.

↳ Select our info obj catalog for character (Right click)

↳ Create info object.

↳ Provide technical name & description.

↳ Click on continue

Under General Tab, provide the data type NUMC

↳ Go to Attribute data tab

↳ Add Attributes.

Step 4: Select the Source System.

RSA1

↳ Modeling

↳ ~~Info~~ Source Systems

↳ Select the file folder (Right click)

↳ Create.

↳ Provide the Technical name &
Description

↳ click on Continue..

Now, Source System has created.

Step 5: Create Application Component.

RSA1

↳ Modeling

↳ Data Sources (Right click)

↳ Create Application Component.

Step 6: Data Source.

RSA1

↳ Modeling

↳ Data Sources

↳ Select our Application Component (RC)

↳ Create data Source.

↳ Provide data source technical name
Say zds-md-attr

↳ Choose the Source System.
Say ZFF-EPIC

↳ Choose the datatype data

- ↳ Select the Master data Attributes
- ↳ Click on Continue.
- ↳ Provide the Short, medium and long description.
- ↳ Go to 'Extraction' Tab
- ↳ Choose the name of the file (Attribute file)
- ↳ Set the Header rows to be ignored
- ↳ Set the Data format (CSV)
 - ↳ Set the Date separator ','
 - ↳ Escape sign ';'
- ↳ Go to 'proposal' Tab
- ↳ Click on 'Load Example Data'
- ↳ Go to 'fields' Tab
- ↳ Click on 'Yes'
- ↳ Change the format to 'Internal' for all the fields.
- ↳ Activate the date source

In the same way, we need to create one more data source for Text file also.

Step 7:- Info package

RSA^A Modeling

↳ Data Sources

↳ Select Application Component

↳ Select our Data Source (right click)

↳ Create Info Package.

↳ Create Info Package description.

IP - after

↳ Choose the data source

↳ Click on Save.

↳ Go to 'Schedule' Tab

↳ Go to 'Start'

↳ Click on 'Monitor'
at menu bar

In the same way, try to create one more info package for test data source.

Step 8:- Insert characteristic as Date Target

RSA^A Modeling

↳ Info provider

↳ Info area choose (RC)

↳ Insert characteristic as Date Target.

↳ Enter the info Obj Technical name.

↳ Enter.

Step 9: Transformation.

RSAT

↳ Modeling

↳ Info Provider

↳ Select Our Info area

↳ Select Our Info Object CHAR Match No.
(RC)
(Attributes)

↳ Create Transformations.

↳ Choose

Object Type : Data Source

In data source, click on browse
option and Enter the datasource
Technical name.

↳ click on 'Enter'

↳ click on required data
Source attribute

↳ click on 'Continue'.

Now Enter into Transformations area and map
the Source fields with the Target fields. and

↳ Activate

Now, In the same way we need to create
one more transformation for text info object.

Step 10:- Data Transfer Process.

RSA1

↳ Modeling

↳ Info provider

↳ Info area choose

↳ Info object character (RC)

↳ Create 'DTP'

↳ click on Continue.

↳ 'Extraction' Tab

Set 'Extraction Mode' as full

Go to 'update' Tab

↳ set 'Error Handling' as

'Valid Records update, Reporting
possible (Request Green)'

Go to 'Execute' Tab

↳ 'Activate' in 'DTP', Then
'Execute' button will enable

↳ Click on 'Execute'

↳ Click on 'Yes.'

In the same way try to create one more DTP
for Text info object.

Go BACK.

Check the Masterdata:-

RSA1

↳ Modeling

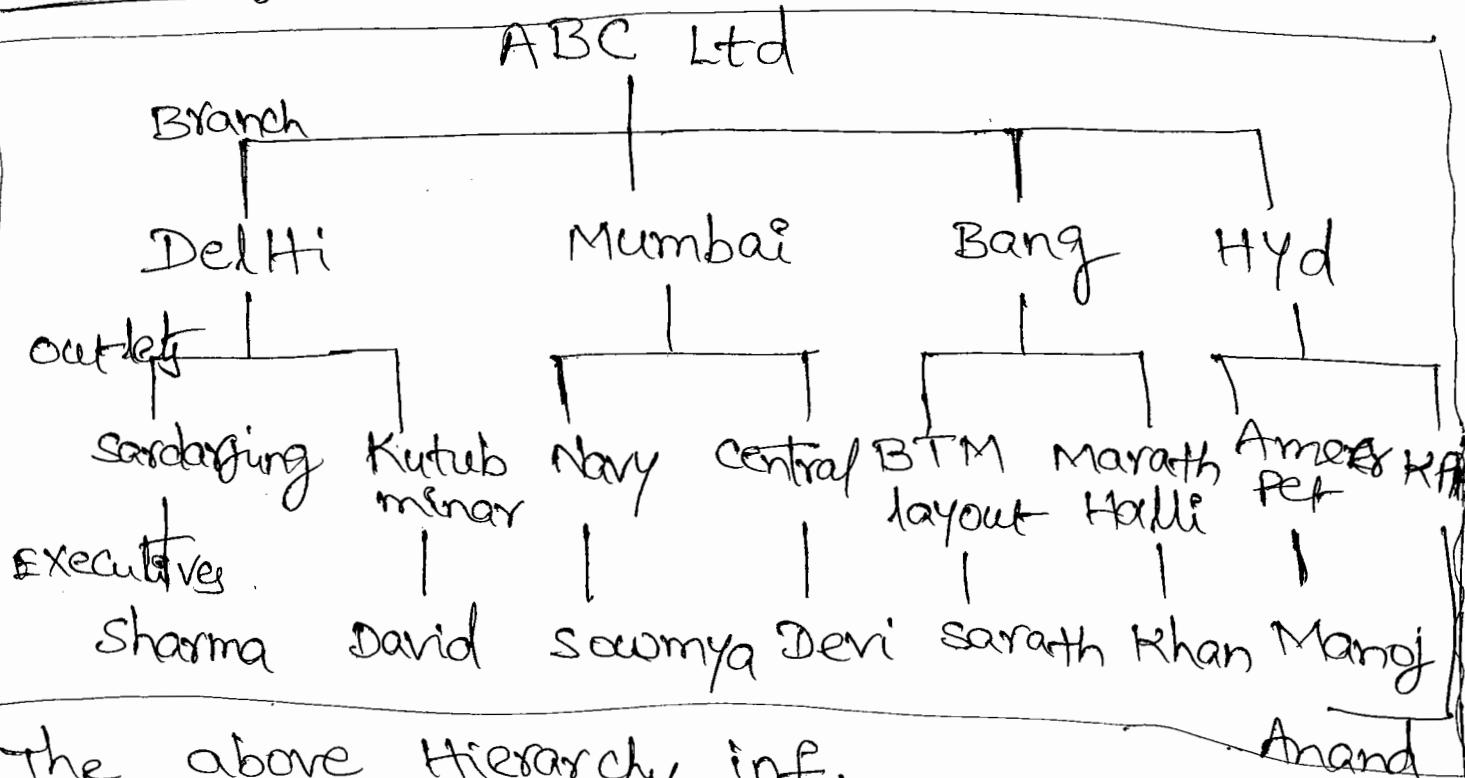
↳ Info objects

↳ Select Info Obj char (RC)

↳ Maintain master data

↳ Click on 'Continue'

Loading Master Data Hierarchy Loading:-



The above hierarchy inf,

~~Branch~~, outlet and executive are the Info object characteristics.

Double click on 'Executive' To go to hierarchy tab, enable 'with hierarchy' click on 'Maintain External char's in Hierarchy' Add 'Branch' and 'outlet' from left side to Right side.

click on Continue.

click on 'Maintain Hierarchy's'

click on create, provide hierarchy name and provide short, midium and long Desc

click on 'Characteristic nodes' and add 'Branch'

MASTER DATA

In SAP BI/BW System, we always fetch the data from two Systems mainly.

1. Flatfile Source System (Excel sheet in .CSV)

2. SAP Source System (ECC)

We always load two kinds of history data.

1. Masterdata

2. Transactional data.

To load master data, we use info object characteristic as data target.

To load Transactional data, we use Info cube & ODS/DSO

Info objects are basic building blocks in SAP BW/BI System

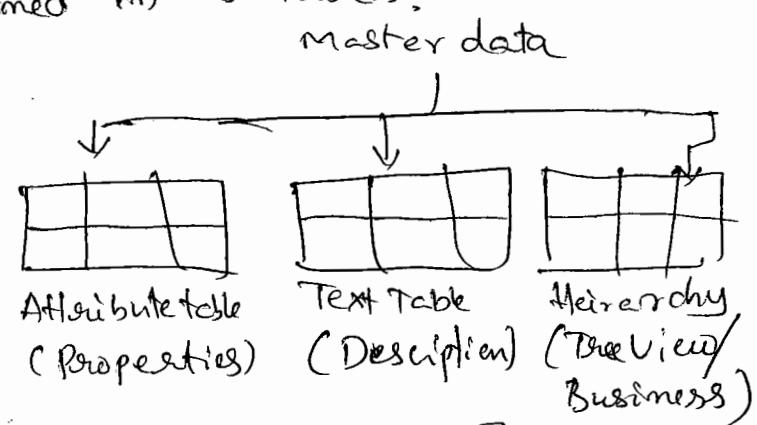


Master data internally maintained in 3 tables.

1. Attribute table

2. Text table

3. Hierarchy Table



The Table path for Attribute table [/bic/M2SNO]

Text table [/bic/T2SNO]

Hierarchy Table [/bic/H2SNO]

Note! To see the Table Contents T codes are SE11, SE16

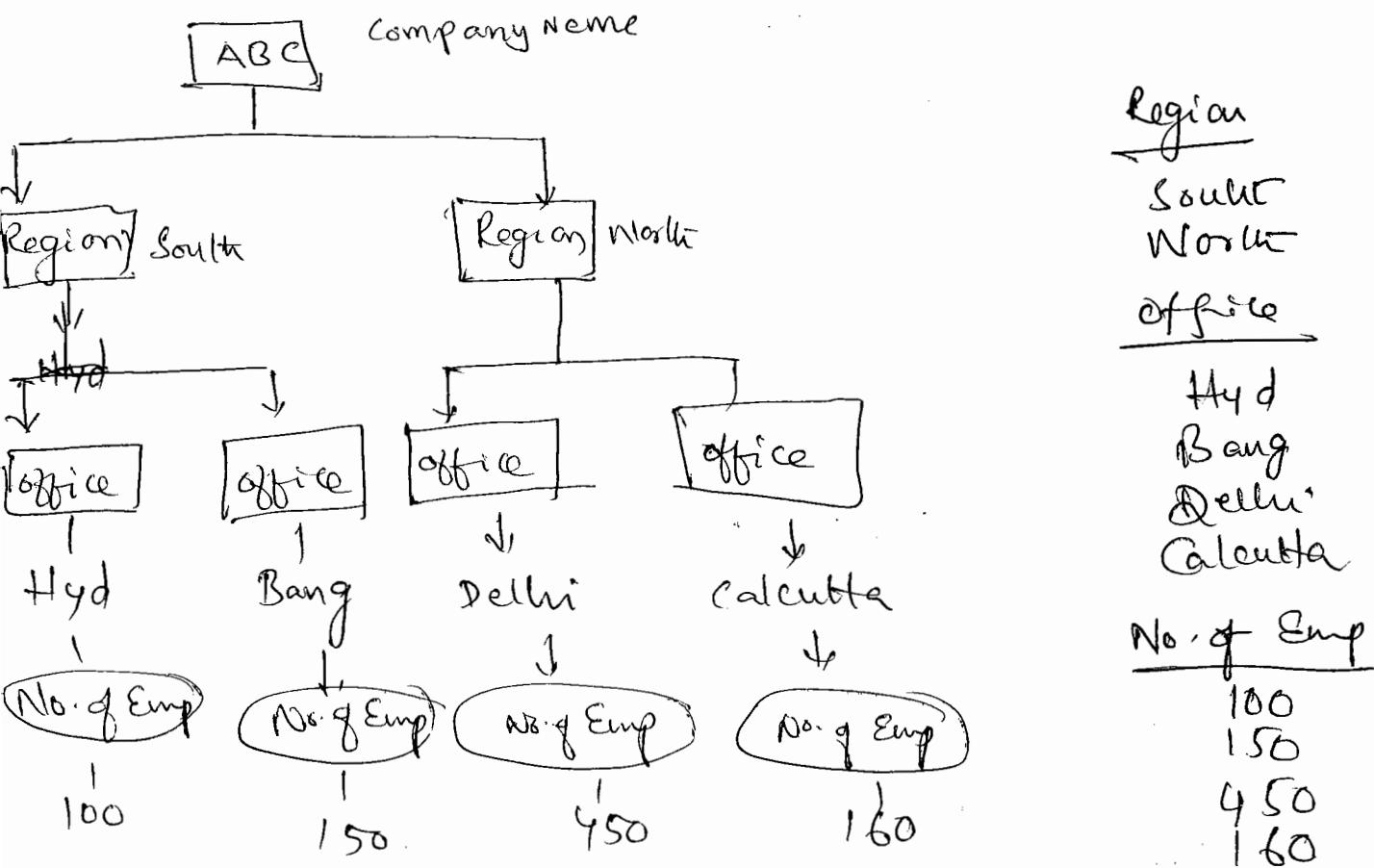
- SE11 is for Create and delete the Table.

TASK 4:- Loading master data Hierarchy information in SAP BW/BI System.

Note:- In SAP BI System, we can't load Hierarchy's.

In SAP BI BI System, we can load only Hierarchy's.

Let us take small Example.



Info Object Chars : Region, Office, No. of Emp.

Prerequisite :-

1. Info area
2. Info object catalog (char)
3. Info objects (char)

Step 1:- Info area.

Same as TASK 2

Step 2:- Info object catalog (char)

Same as TASK 2

Step3:- Info Objects (char)

Same as TASK 2.

Create 'Region', 'office', 'No. of Emp' info object char's respectively.

We need to load hierarchy information for bottom level info obj 'No. of Emp'.

- choose 'No. of Emp' info obj char.
- Double click on it.
- Go to 'Hierarchy' tab.
- Enable 'with hierarchies' check box.
- Click on 'External chars in hierarchies'
- Now, it will open on window
Select the upper nodes *Region, office from left side
and move to the right side.
- Click on Continue.
- Now click on Maintain Hierarchies
- Then we can get the POPUP message,

'characteristic ZNOE12 does not bear hierarchies'
(In the active version)

- Click on InActive (Ø) & Save this & Activate
- Click on 'Maintain Hierarchies'.
- Click on 'Create'
- Provide the Hierarchy name ABC and provide Description.
- Click on 'Continue'.

Note:- Try to add values in region and office and no. of Emp info objects.

Add Values to the Region Info Object

- Select the Region Info Object (RC)
- Maintain master data.
- Execute.
- Click on 'Create'
- Enter 'South', 'North' one by one
- 'Save'

Add values to the Office Info Object :-

- Select the 'Office' info obj (RC)
- Maintain master data
- Execute
- Click on 'Create'
- Enter 'Hyd', 'Beng', 'Delhi', 'Calcutta' one by one
- 'Save'

Add Values to the No. of Emp :-

- Select the 'No. of Emp' info obj (RC)
- Maintain master data
- Execute
- Click on 'Create'
- Enter Values
- Save.

Now, Open the 'No. of Emp' info obj.

- Go to 'Hierarchy Tab'
- Click on 'Maintain Hierarchies'
- Click on 'Create'
- Provide Hierarchy name & provide Description
- Click on 'Continue.'
- Click on 'Characteristic nodes'

- Select the 'North Region' (Right click)
- Insert characteristic.
- Enter 'Office Info Object' and Enter
- Select North offices Calcutta and Delhi
- Click on 'Continue'
- In the same way select the 'South' Region (RC)
click on 'Insert characteristic'.

- Select South offices ('Hyd') and ('Bang').

Go to 'North Region'

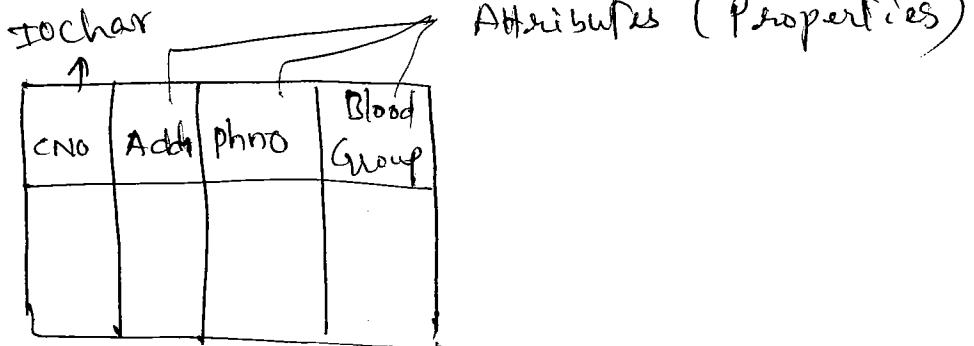
- Select ('Calcutta') (RC)
- Click on 'No. of Emp' insert.
- Select required value and click on 'Continue'.
- Same way Enter No. of Emp for all regions offices.
- Now 'Activate'.

MASTER DATA - ATTRIBUTES

Master data Attributes are also called properties of the info obj characteristic.

We can create attributes in the following ways.

1. Display Attribute
2. Exclusive Attribute
3. Navigation Attribute (Time independent)
4. Time Dependent Navigation Attribute
5. Transitive attribute.
6. Compounding attribute.



Master data Attributes.

Display Attribute :-

If we create attribute as display attribute then we can't able to put filter in report. It is only display the information.

Exclusive Attribute :-

It is also display attribute, It can maintain fact information and we can't put filter on this attribute.

Navigation Attribute (Time Independent) :-

If we create navigation attribute then we can able to put filter in report. and it is a time independent.

Time Dependent Navigation Attribute :-

An attribute as time dependent navigation

attribute, then we can able to put filter in report and it is time dependent.

Transitive Attribute:-

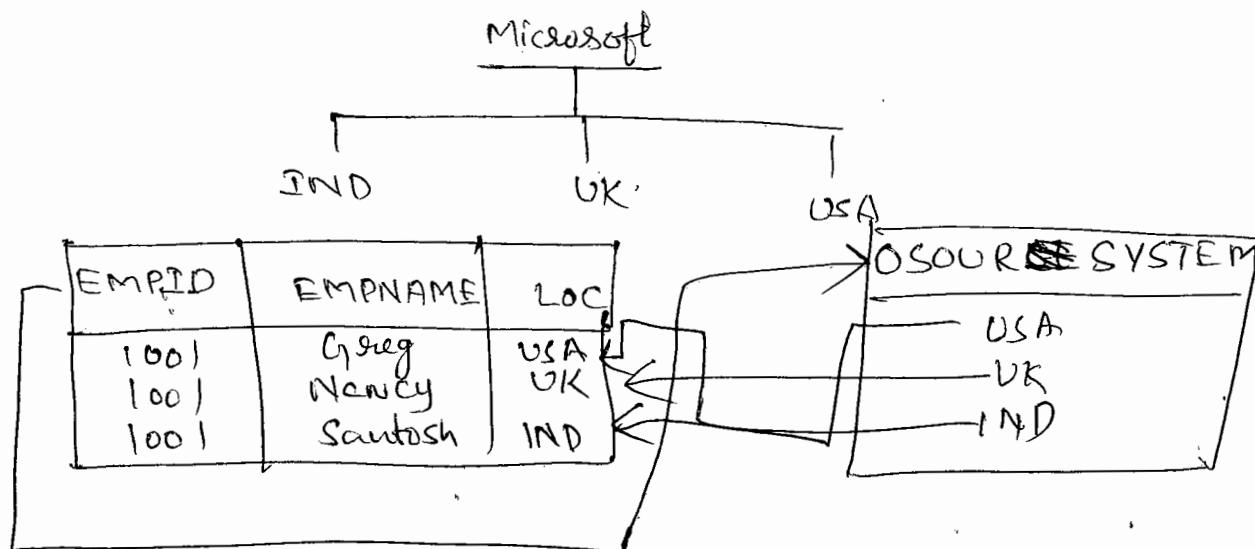
- It is a attribute of the attribute of the info obj char.
- We can able to create transitive attribute either display, navigational, Exclusive or time dependent attribute.
 - ⊖ Country → Info Char
 - ⊖ State → Attribute
 - ⊖ City → Transitive Attribute.

Compounding Attribute:-

- It is SAP standard info obj char.

'OSOURCE SYSTEM'

- This attribute can differentiate the values of the info obj characteristic.



TRANSACTION DATA

Transactional data is also called fact information.

In SAP BW/BI System, we can load transaction data into two targets.

1. Info Cube

2. ODS/DSO (Object Data Store/ Data Store object)

ODS is the terminology in BW System. DSO is in BI System.

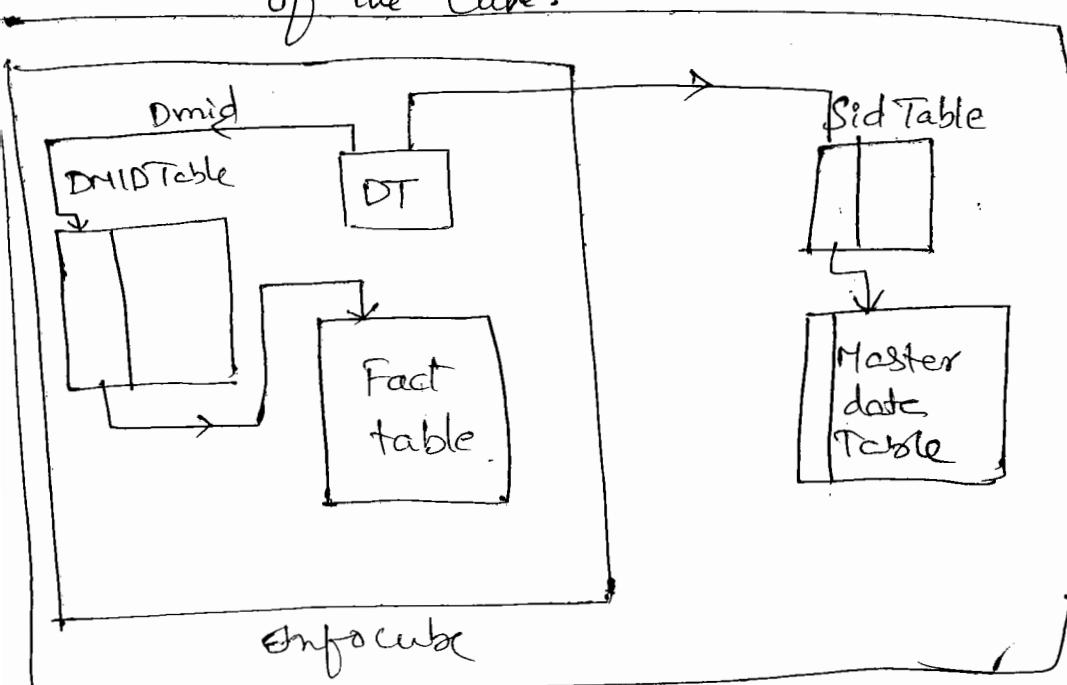
Info Cube:

- IC is a data target in SAP BW/BI System to load transaction data.

- IC maintains aggregated/Summarised level information

- IC is designed based on the BW System Extended Star Schema Structure.

- IC is a fact table surrounded by the dimensional table where master data is maintained outside of the cube.



Dmid's, SID's are placed in two tables DMIDTABLE, SIDTABLE to access the data between dimension table and fact table.

In info cube minimum no. of dimensional tables are 4.
Those are.

1. DATA PACKAGE →
2. TIME
3. UNIT
4. custom dimension table.

→ CHANGE RUN ID
→ Record Type
→ Request id.

Data Package, time and unit are SAP standard tables.
Time dimension table Contains all the time related characteristics,
all are SAP standard characteristics.

Data Package dimensional tables Contains technical characteristics.
(Change run id, record type and request id)
The maximum no. of DT in IC are 16. In that 13 we
need to customise.

The minimum no. of DT, we need to customise is 1.

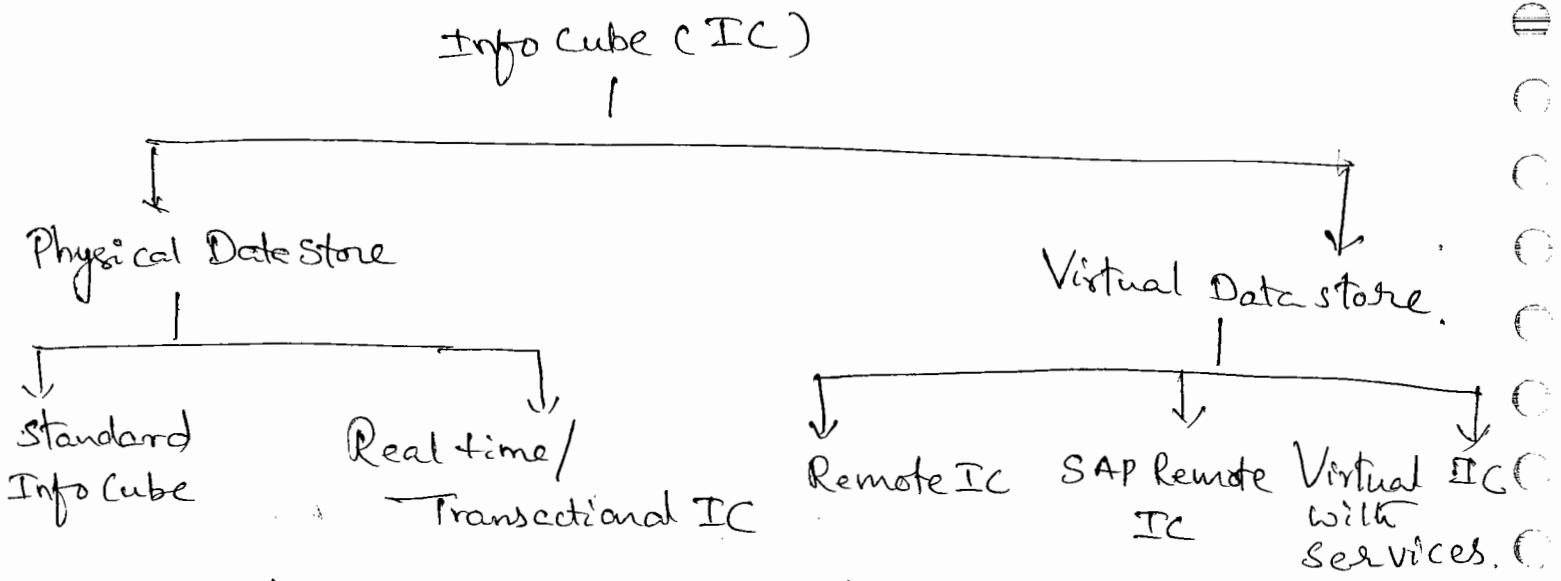
Info Cube	
* Min no. of Dimension Tables	= 4 (SAP std tables = 3, Custom table = 1)
* SAP std Tables Data Packages	UNIT & TIME
* MAX no. of Dimension Table	= 16 (SAP std tables = 3, Custom Tables = 13)
* MAX no. of Characteristics in IC	= 248
* MAX no. of Key figures in IC	= 233
* TIME	Contains SAP std Time characteristics
* Data Package	Contains SAP std Technical chars

IC having additive functionality, ie if we load same
record multiple times, then it can aggregate the same value
based on the same characteristic values. (KF)

IC is a multi dimensional structure.

Additive functionality

Types in Info Cube:



Info cube basically classified into two types. When data is physically maintained, ie called physical data store and if data is not maintained physically only it contains structure is called Virtual Data store.

Physical Virtual Data store is again classified into 2 types. When IC is used in planning system to maintain planning data ie called Transactional (or) Realtime IC. whereas IC is used in normal cases ie called Standard Info cube.

Virtual Data store doesn't maintain data physically. It can maintain only structure. In the query runtime, it will fetch the data from source system directly.

VDS is classified into three types based on source system.
If the source is non SAP source ie called Remote IC
If the source is SAP source ie called SAP Remote IC
If the source is a function module ie called Virtual IC with services.

Note:- Function module ie custom data source in SAP Source

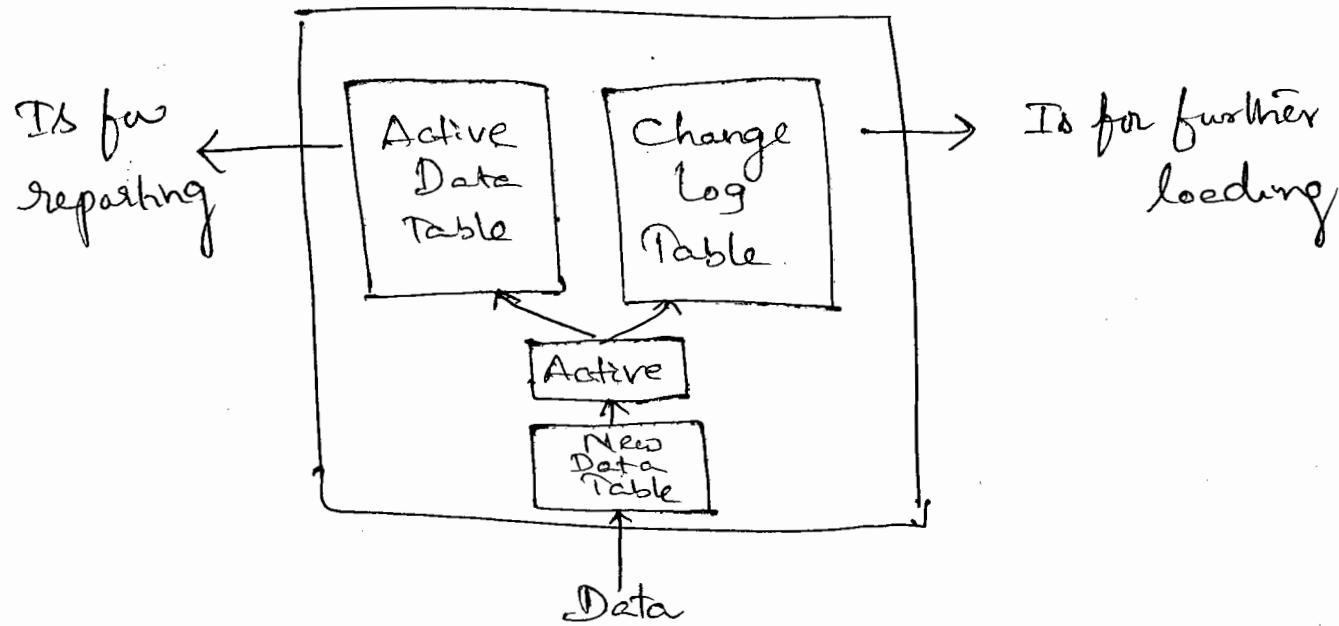
- ODS/DSO:
- DSO is a two dimensional structure
 - It can maintain detail level information.
 - DSO having override functionality i.e. if you load single record multiple times, it can overrides.

101	2,000
101	2,000

101	2,000
-----	-------

Note:- Master data maintains primary key, it maintains unique records, whereas transaction data contains foreign key.

Structure of the DSO:-



- DSO Structure Contains 3 tables internally. There are New Data, Active data ; Change Log Tables.
- Once data is loaded into this DSO, data is loaded into new data table first.
- Even data is available in new data table this target is not available for reporting and further loading.
- So, we need to activate the DSO
- Once activate the DSO, data can move to the Active data table.

- Once data moved from the new data table, the data will be erased from this table.
- If we want to generate a report, on top of DSO, data will be coming from active data table.
- If we want to load DSO data into another table target, data will be coming from change log table.
- Change log table, maintains standard info obj characteristic 'ORECORDMODE'
- 'ORECORDMODE' maintains the status of the records in the DSO. Those are.

After Image	Spaces
Before - Image	X
Add	A
Delete (key only)	D
New Image	N
Reverse - Image	R
Update Image (Value from update)	Y

'ORECORDMODE' equivalent field is maintained in SAP Source System (ECC).

Note:-

BW 1.0 — 1990

is ROCANCEL

BI 7.0 — 2005

BO 3.1/R3 — 2008 / DEC

BW 3.5 — 2010

BI 4.0 [BO 4.0/R4] — 2012 / June

BW 7.3 (BI 7.3) — 2012 / June

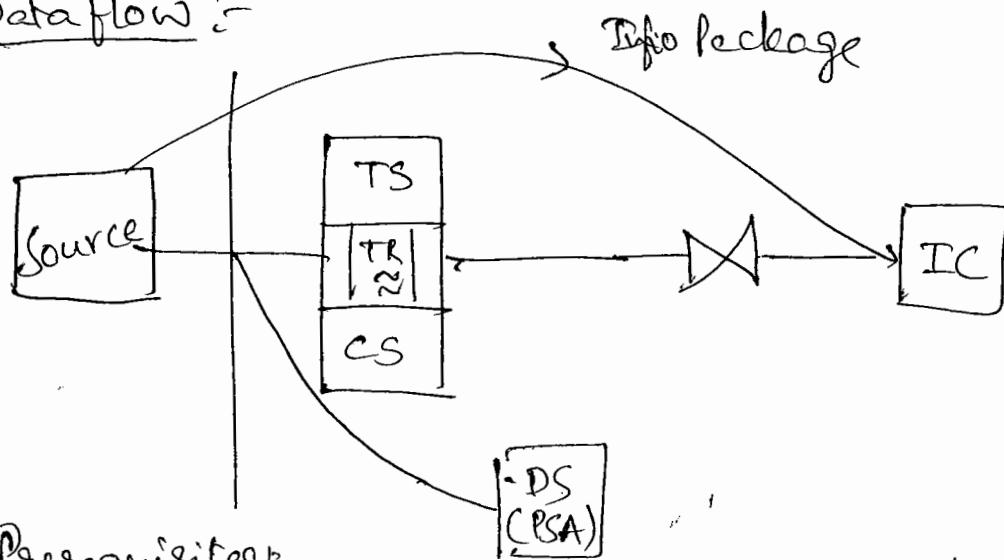
TASK 5:- Loading Transaction data into Info Base (IC)
 from flatfile in SAP BW / BI system.

Let us take Sample flat file

(A) SAP BW System

Item No	Item Name	Price	Qty
1001	Rice	44	1
1002	Bhreath	40	1
1003	Sugar	28	1
1004	Tamarind	35	1
1005	White Gram	86	1
1006	Red Gram	90	1
1007	Salt	30	1
1008	Tea	150	1
1009	Oil	96	1
1010	Chilli	55	1

Dataflow :-



Prerequisites:

1. Info Router Area
2. Info area Catalogue
3. Info Obj
4. Application Component
5. Info Source

7. update Rule
8. Info Package

Step 1, 2, 3, 4 Same as TASK 2

Step 5:- Info Source.

Same as TASK 2

- Double click on Info Source
- Now, Enter the Info objects in communication structure, in the same sequence of flat file.
- Then Expand 'Transfer-structure / Transfer-Rules'
- click on 'Yes'
- choose the source system as required flatfile connection.
 click on 'Yes'
- Activate the Info Source.

Step 6:- Create Info cube

RSA10d

↳ Modelling

↳ Info Provider

↳ Info Area (RA)

↳ Create Info Cube

↳ Provide Info cube technical name & Description.

↳ click in 'Create'.

Then we enter into the IC internal screen.

In left side, menu bar click on 'all info obj'

→ Expand characteristic folder

→ find. Enter our required char.

→ Drag and drop the chars into dimensional folder.

→ In same way Go to left side menu bar

- Close chars folder
 - Expand 'key figure' folder
 - Go to 'find'
 - Enter our required key figure
 - Drag and drop into 'key figure folder'.
- This method is called 'Indirect assignment of chars and key figures'.

In another way also, we can add chars and key figures into respective folders. This method is called 'direct assignment'.

- On Right Side Right click on Dimensional folder / KF folder
- ↳ Info object Direct input
 - ↳ Enter Info objects.
 - ↳ Activate the Info cube.

- Click on version  on Right side.
- Double click on the Active.

Step7:- update Rule.

So RSA1 Old!

↳ Modeling

↳ Info Provider

↳ Info area

↳ Info cube (IC)

↳ Create update rule.

↳ under 'DataSource' Provide
'Info Source' Technical name:

↳ Enter

↳ Activate

Step 8:- Info Package.

Same as TASK 2.

check the data in Info cube

Select the IC (RC)

↳ Manage

↳ click on 'Contents' Tab.

↳ Click on Infocube Content

↳ Click on fields Selection for O/P

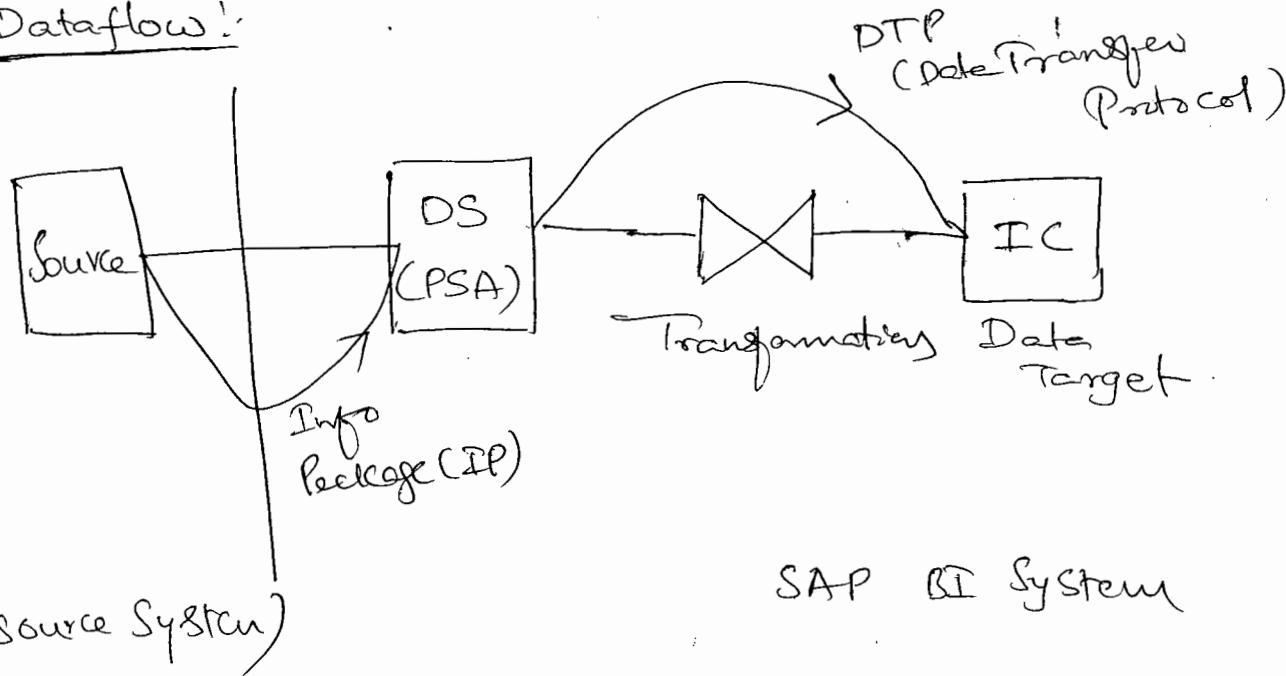
 ↳ click on TC Content

↳ Select the required Info obj

↳ Click on Execute & Execute.

(B) SAP BI System:-

Dataflow:-



Prerequisites:-

- (1) Info area
- (2) Info obj Catalog
- (3) Info objects
- (4) Select the Source System

(6) Data source

(7) Info Package

(8) Info cube

(9) ~~Consolidation~~ Create Transforms

(10) DTP.

Step 1, 2, 3, is same as TASK 2

Step 4 :- Select the Source System.

RSA1

↳ Modeling

↳ Source Systems

↳ Select file folder (Expand)

↳ Double click on required flat file Connection

↳ Then automatically Enter into the
data sources area related to this flat
file Connection.

Step 5 :- Create Application Component-

Same as Step 4 TASK 2

Step 6 :- Create dataSource

RSA1

↳ Modeling

↳ Data Sources (Specific flat file connection related)

↳ Right click Application Component (RC).

↳ Create dataSource.

↳ Provide Data Source Technical name.

↳ Choose ' DataType DataSource ' as
Transaction data.

↳ Click on Continue.

↳ Provide the short, long, medium
description.

↳ Click on ' Extraction ' tab

↳ Choose the name of the file
from the browser.

↳ Set Header rows to be ignored
as 1.

↳ Set data format as CSV

- ↳ Set the data separator as ','
- set the escape sign as ';'.
- ↳ Go to 'Proposal' Tab.
- ↳ click on 'Load Example data'
- ↳ Go to 'fields' Tab.
- ↳ click on Yes.
- ↳ Change the format into internal for each and every field.
- ↳ Activate the Data Source.

Step 7:- Info Package

RSAT

↳ Modeling -

- ↳ DataSources (Flatfile related)
- ↳ Application Component
- ↳ Data Source (Right click)
 - ↳ Create Info Package.
 - ↳ Provide Info Package description ↗
Re.
 - ↳ Select the data source
 - ↳ click on 'Save'
 - ↳ Go to 'Schedule' Tab.
 - ↳ click on 'Start'
 - ↳ click on 'Monitor'.

How to check the data in Data Source.

- ↳ Double click on Data source (which we have loaded now)
- ↳ Go to Menu bar
- ↳ click on 'Manage PSA'

↳ click on 'Continue'.

↳ click on 'Continue'.

Step 8:- Create Info cube.

Same as TASK 5(A) step 6.

RSA1

↳ modelling

↳ Info provider

↳ Info Area (RC)

↳ Create Info Cube

↳ provide the Tech name & Description.

↳ click on 'Create'.

Go TO menu bar, click on 'Hide/Show Navigator (Shift+F11)'

Now we can add characteristics into dimensional folder and key figures in key figures folder by follow two methods

1. Indirect Assignment:-

→ Go to left side Menu bar

→ click on 'all info obj'

→ Expand chars/KFs

→ Enter the required chars/KFs

→ Drag and drop into the respective folder.

2. Direct Assignment:-

→ On Right side, select the Specified dimension/
Key figure folder (RC)

→ check on 'Info obj direct input'

Enter required chars / KFs.

→ Click on 'Continue'.

→ Activate the Info cube

- Double click on 'Active'.
- Click on 'Yes'.

Step 9:- Create Transformations.

RSAT

↳ Modeling

↳ Info Provider

↳ Info Area

↳ Info cube (RC)

↳ Create Transformations.

↳ choose 'Object Type' as 'DataSource'

↳ and click on 'Data Source' browser

↳ Enter the 'dataSource' name

↳ Click on *

↳ Click on Continue.

Map the Source fields onto the Target info objects.

Map the Source fields onto the Target info objects.

→ After map the KFs, we need to remap again.

→ Double click on the Rule (=) of KFs

→ Click on 'Continue'.

→ Enter the IO Assignment 'info object' name

→ Click on Transfer Values.

→ Click on 'Yes'

→ Activate the Transformations.

→ Create Data Transfer Process.

RSAT

↳ Modelling

↳ Info Provider

↳ Info Area

↳ Info cube (RC)

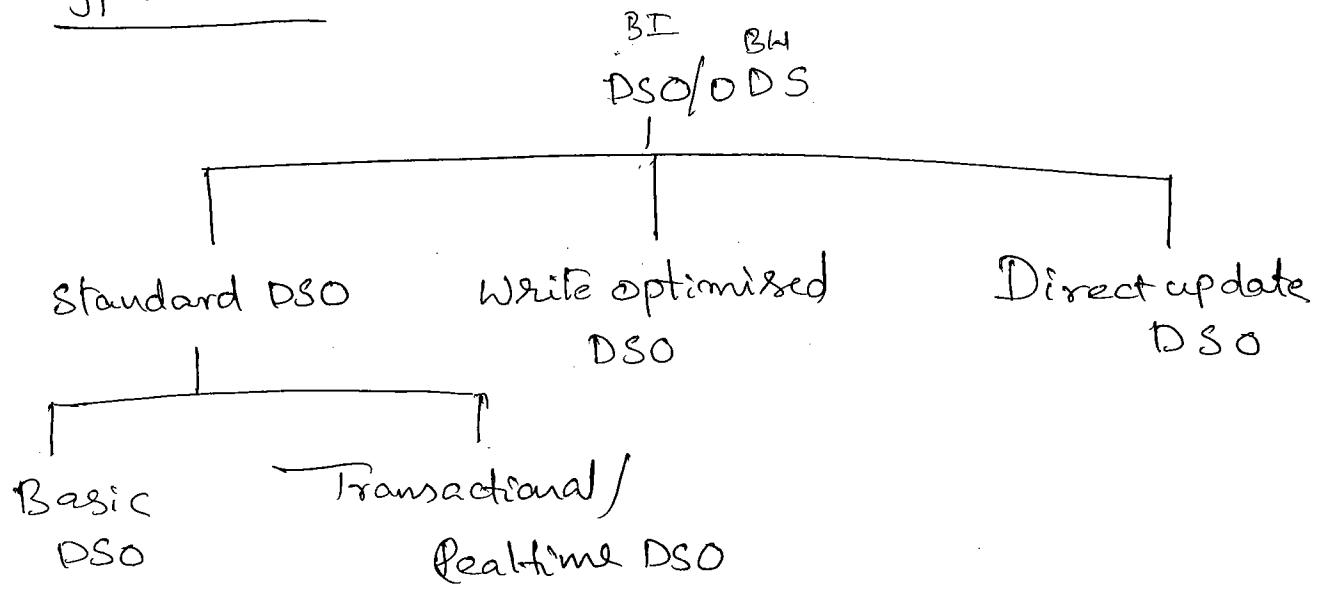
→ Create DTP

- ↳ click on 'Continue'.
- ↳ Under 'Extraction' Tab.
- ↳ choose Extraction mode as 'Full'.
- ↳ Go to 'Update' Tab.
 - ↳ choose Error handling as 'Valid Records'
Update, reporting possible (Request Green)'!
- ↳ Go to 'Execute' Tab.
 - ↳ Activate the DTP.
 - ↳ Click on 'Execute'.
 - ↳ Click on 'Yes'.
 - ↳ Refresh. (when it is on process)

Now check the data in Info Cube!:-

- Select the Info cube
- Right click
- Manage
- Click on 'Contents' Tab.
- Click on 'Info cube Contents' button
- Click on 'field Selection for output'
- Select the required characteristics.
- Click on Execute twice.

Types - DSO :-



Standard DSO structure is as discussed above.

write optimised DSO. will prefer in following cases.

- If the source system contains large amount of data records
- Source system contains duplicate records
- ~~- Direct~~

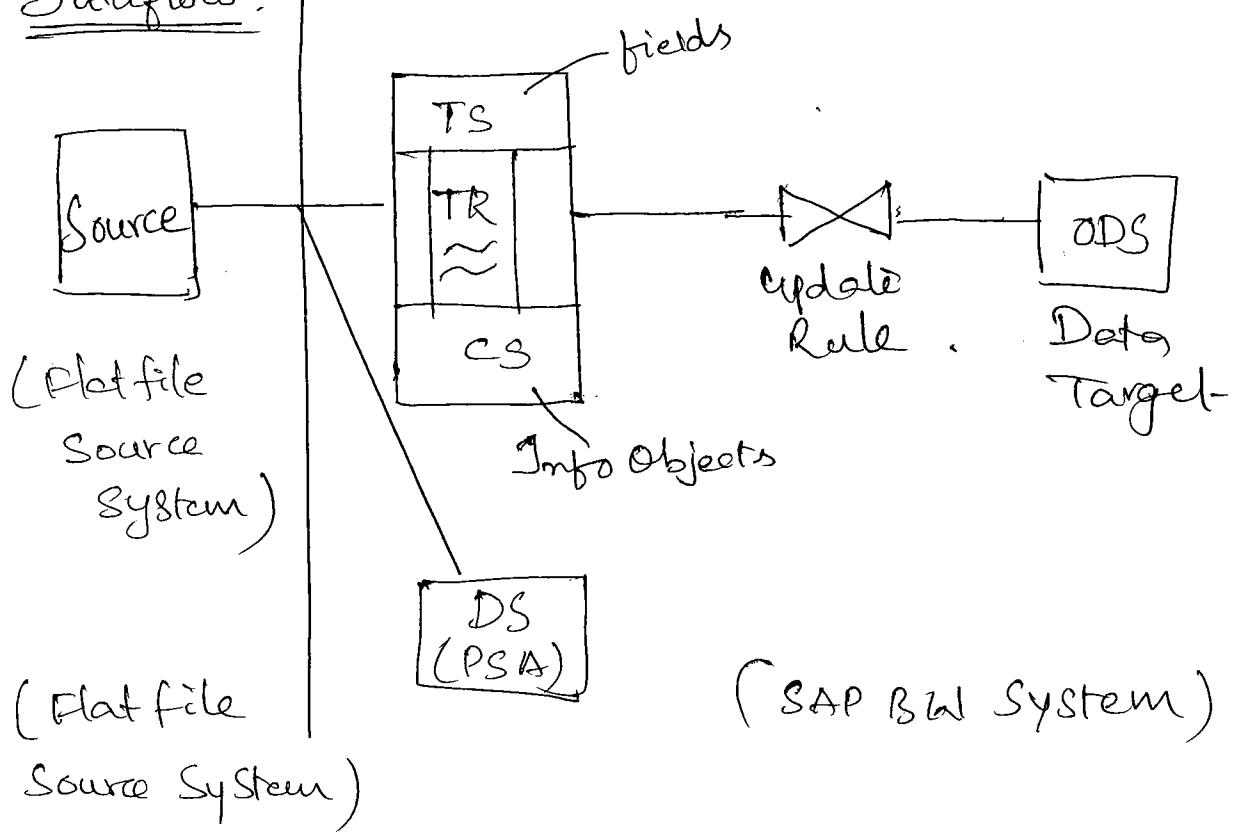
Direct update DSO will prefer in planning systems to analyse the data.

SNO	Std DSO	Write Optimised DSO	Direct update DSO
1.	Data can be loaded through info package or DTP	Data can be loaded through info package or DTP	Data can be loaded through API (Application prog Intf)
2.	Sid's can be generated	Sid's can't be generated	Sid's can't be generated.
3.	Data records with the same key are aggregated.	Data records with same key are not aggregated	Data records with same key are not aggregated.
4.	Once data is loaded even this DSO is not available for reporting and further processing	Once data is loaded immediately data is available for reporting and further processing	Once data is loaded immediately data is available for reporting and further processing
5.	In Standard DSO, there are 3 tables one these - 1. New Data 2. Activate Table 3. Change log	Only one table is there i.e Active data	Only one table i.e There is Active Data
6.	Place the characteristics in <u>key fields</u> and place the key figures in <u>data fields</u> , while designing the Target.	place the characteristics into Semantic key fields and key figures in data fields while designing the Target	place the characteristics in key fields and key figures into data fields while designing the Target.

TASK 6:- Loading transactional data from flatfile into ODS (Object Data Store)/DSO (Data Store Object).

PART A:- BWL System.

Dataflow:-



Prerequisites:-

1. Info Area
2. Info Obj catalog
3. Info objects
4. Application Component
5. Info Source
6. ODS
7. Update Rule
8. Info Package.

Step 1, 2, 3, 4 Save as Previous Task TASK 5 A.

Step 5 :- Info Source

RSA10ld

↳ Modeling

↳ Info Sources

↳ Application Component (RC)

↳ Create Info Source.

Let us take a sample flatfile mentioned in TASK 5A.
Follow the same procedure as mentioned TASK 5A.

Step 6 :- Creation of ODS

RSA10ld

↳ Modeling

↳ Info providers

↳ Info area (RC)

↳ Create ODS

↳ Provide the Technical name & Description
for the ODS.

↳ click on Create.

Do the same procedure as mentioned TASK 5 PART 6 Step 6

place the characteristics into KEY FIELDS

key figures into DATA FIELDS.

Goto Settings.

1. Set 'Type of Data Standard'

2. Set check 'unique data records'

→ Activate the ODS

→ ~~Version Activate~~.

Step7: update Rule

follow the same procedure TASK 5A + Step 7

- choose the data source as info source Technical name.
- click on 'Enter'

Note: we need to add SAP Standard Info object

'ORECORDMODE' in info source Communication Structure.

Else will get error.

- Click on 'Activate' the update rule.

Step8: Create Info Package.

Do the same procedure as mentioned TASK 5 PART A Step 8

Check the Data in ODS:-

RSA102D

↳ Modelling

↳ Info provider → Info area

↳ Select ODS (RC)

↳ Manage

↳ Check the data in new data Table

under 'Contents' Tab

(There is no data in Activate Data and

Change log Table)

↳ Go to 'Request' Tab

↳ Click on 'Activate' Button

↳ Select the Request

↳ Click on 'Start'

1. close the window

↳ Select the request
↳ click on 'Refresh' button. Again 'refresh'
Do the Refresh, until get Popup window in that
Apply changes.

Now Go to Content Tab

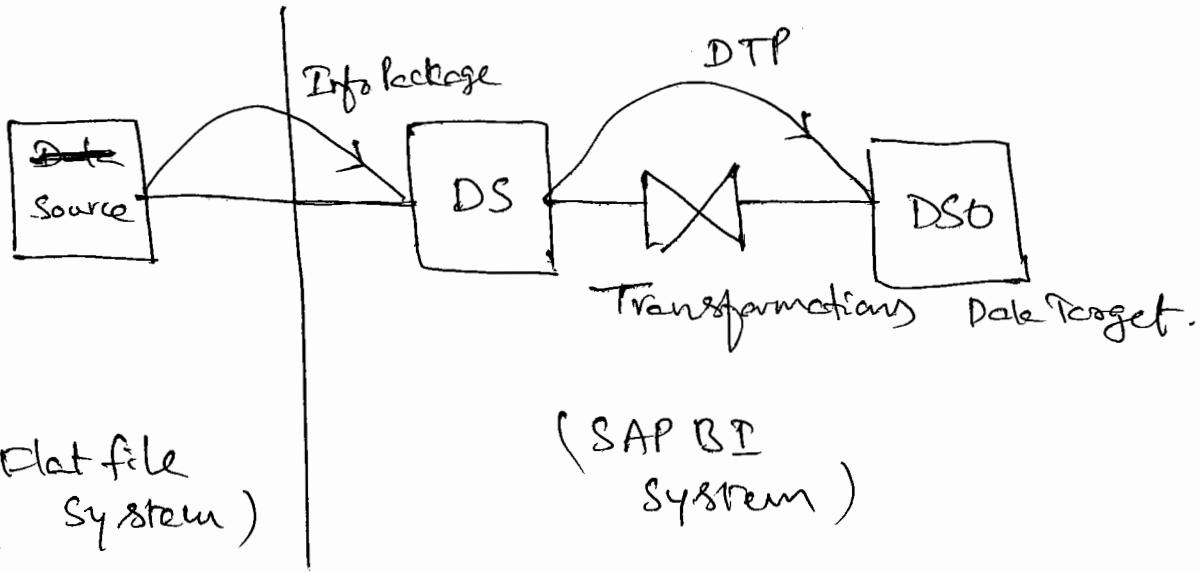
Check data in New Data, Active data and Change log

Tables.

Now we can find, there is no records in New data table
and we can find there is records in Active data and
change log tables.

PART B: SAP BI System.

Dataflow:-



Berequisites:-

1. Info Area
2. Info Object Catalog
3. Info objects
4. Select the Source System (Flat file)
5. Application Components
6. Data Source
7. Info Package
8. DSO
9. Transformations .
10. DTP .

Step 1, 2, 3, Same as TASK 5 PART B.

Step 4:- Select the Source System (Flat file)

RSAT

↳ Modeling

↳ Source Systems

↳ Select the file folder (Expand)

↳ Double click on the required flatfile

Some file

Step 5:- Create Application Component.

In That DataSources Area

↳ Rightclick on DataSources

↳ Create Application Component.

Step 6:- Create Data Source.

In Data Sources Area (Specify flatfile related)

Rightclick Application component

Create DataSource.

↳ Provide the DataSource technical name
and description.

↳ Choose the Type of dataSource as
Transactional Data.

↳ Click on 'Continue'.

In 'Extraction' Tab

Select the file from the browser at name of the file

Options -

Set Header Rows to be ignored as 1.

Choose the file type as CSV.

Set the Data separator as ',' and set the
Escape sign as ';'.

Go to 'Proposal' Tab.

Click on 'Load Example Data'.

Go to 'Fields' Tab

↳ Click on 'Yes'

↳ Choose the format as 'Internal' for Each and
Every source field.

↳ Activate the Data source.

Step7:- Info Package.

- ↳ select the Data source (RC)
 - ↳ Create Info package.
 - ↳ Provide the info package description.
 - ↳ choose the data source and click on 'Save'
 - ↳ click on 'Schedule' Tab
 - ↳ click on 'Start'.
 - ↳ click on 'Monitor'.

How to check the data in DataSource..

RC on DataSource

- ↳ Manage
- ↳ select the request.
- ↳ click on 'PSA' maintenance.
- ↳ click on 'Continue'.

Step8:- DSO Creation.

Same as TASK 6 PART A Step 6,

Step9 :- Create Transformations.

TASK 7

- ↳ modelling → Info provider.
- ↳ Info area
 - ↳ DSO (RC)
 - ↳ Create Transformations.
 - ↳ choose the Object Type as DataSource.
 - ↳ choose the Data Source Technical name from the browser.
 - ↳ Continue.

- Map the source fields, with the target info objects
 - We need to remap for key figures.
 - Double click on the Rule (=) of the key figures.
 - Enter the 'TO Assignment' as Info obj Technical name.
 - Click on 'Transfer Values'
 - Click on 'Yes'.
- Do the same for another key figure.
- Activate the Transformations.

Step 10: Create DTP.

RSA2

- ↳ Modelling
- ↳ Info Providers
- ↳ Info area
- ↳ DSO (EC)
- ↳ Create DTP.
- ↳ Click on Continue

'Extraction' Tab

- ↳ Choose Extraction mode as 'Full'.

'Update' Tab

- ↳ Choose Error handling as 'Request green'.

'Execute' Tab

- ↳ Activate the DTP.
- ↳ Click on 'Execute'.
- ↳ Click on 'Yes'.

Check the Data in DSO!

Same as mentioned in PART A, TASK 6.

TASK 7:- Loading transaction data from flatfile into write optimised DSO/ODS

Sample flatfile:-

CNO	CName	Amt
101	Raju	10,000
102	Manoj	25,000
103	Raju	15,000
101	Raju	10,000
102	Manoj	25,000
103	Raju	15,000

Prerequisites:- (SAP BW)

1. Info Area
2. Info Object Catalog
3. Info Objects
4. Application Component-
5. Info source.
6. write optimised ~~ODS~~ ODS
7. Update Rule
8. Info Package.

Step 1, 2, 3, 4 Same as TASK 6 PART A.

Step 5:- Creation of Info Source

RSA10LD

- ↳ Modelling
- ↳ Info Sources
- ↳ Application Component (RC)
- ↳ Create Info Source

Follow the same procedure as mentioned in TASK 6 PART A Step 5.

Step 6:- Creation of write Optimised DSO.

RSA2OLD

↳ Modeling

↳ Info Provider

↳ Select our Info area. (RC)

↳ Create DSO (write Optimised)

↳ Provide the Technical name and description of ODS and Continue .

↳ Goto ' settings ' Tab

↳ click on ' Type of ODS '

↳ select ' write optimized ' option.

↳ click on ' Continue '

↳ Enable ' Do not check uniqueness of Data '

↳

place the characteristics into Semantic key fields

↳ Select the ' semantic key ' on Right side

↳ Click on ' Info object direct input '.

↳ Enter characteristics

In the same way, select data fields right click and

click on ' info object direct ' input .

↳ Enter required key figure and
click on Continue .

↳ Activate ' write optimised ' ODS .

Step 7, Step 8 Same as TASK 6 PART A.

SAP BI ↗ Prerequisites (Part B)

1. Info Area
2. Info object catalog
3. Info object
4. select source system (flat file)
5. Application Component
6. Data source
7. Info package
8. write optimised DSO
9. Transformations
10. Data Transfer Process (DTP)

Steps 1, 2, 3, 4, 5, 6, 7 same as Task-6 Part-B

Step 8: Step same as Task-7 step 6.

Step 9, Step 10 same as Task-6 Part B

EMPTY

TASK 8: Load Extraction of the data into direct update DSO/DSO.

In directupdate DSO, we can load data through API.
In SAP BI system one API is there ie called APD
(Analysis process designer).

APD is a new work bench, in this we can do modelling activity from data loading from one system to another system.

Let us take info cube from this, Try to load the data into direct update DSO.

In normal case data loading from info cube to direct update DSO is not possible, but through APD it can possible.

The T-Code for Create APD is RSANWB

Now, let us create 'Direct update DSO' with the characteristics and key figures as mentioned in the info cube.

Now, Go to 'Analysis Process Designer (APD)' by Enter T-code RSANWB.

On left side select '(GENERAL)' folder.

↓
Right click on this.

↓
Click on Create.

Now, it will open the APD Screen.

Provide the APD description.

Go to 'Data Sources'

↳ Select the 'info Provider' option.

- ↳ Go to field selection.
- ↳ Move the characteristics and key figures from right side to left side using arrow.
- ↳ Click on 'Continue'.

Go to 'Data Targets' Area.

- ↳ Click on 'Direct update DSO' option.
- ↳ Enter 'Direct update DSO' technical name at DSO option.
- ↳ Click on 'Continue'.

Now, we try to add the arrow marks of source targets (Info cube) and destination target (Direct update DSO).

Now click on mapping area, then it will open one window

- ↳ Set automatic assignment as 'Same Info Object'
- Then automatically mappings done between source and destination targets and click on Continue.

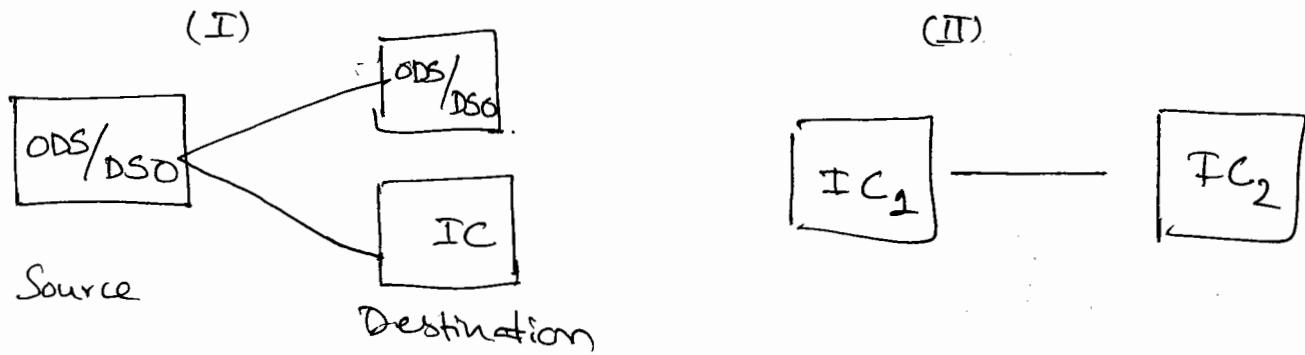
- ↳ Activate the APD.
- ↳ Provide the APD Technical name.
- ↳ Click on 'Continue'.
- ↳ Execute the 'APD'

Now, Go to ~~Desto~~ 'Direct update DSO' and check the data.

DATA TARGET 10 DATA TARGET

In SAP BW/BI System become load one target information into another target.

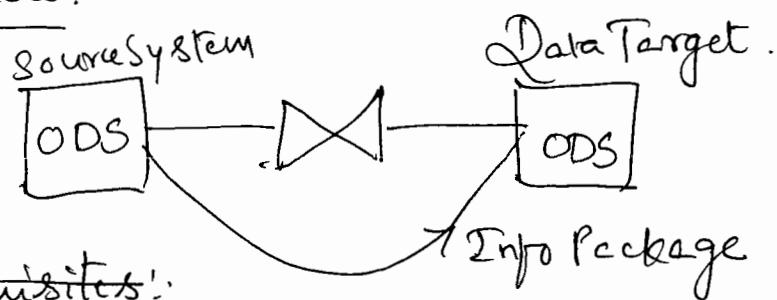
- I) We can load ODS/ODS information to another ODS/ODS (8)
- II) We can load Info cube information to another info cube only.



TASK 9:- Loading ODS/DSO data into another ODS/DSO and info cube.

PART A:- ODS → ODS (SAP BW system)

Data flow:-



Prerequisites:-

Step 1:- Select the Source ODS

Step 2:- Create the Destination ODS with the same structure of the source ODS.

Step 3:- ↳ Right click on the Source ODS.
↳ 'Generate Export DataSource' click

↳ Then we get the Popup message.

Step 4:- ↳ Select the destination ODS
↳ RC → Create update Rules.

Under Data Source

- ↳ choose the 'ODS object'
- ↳ Enter the source ODS name.
- ↳ Click on Enter.
- ↳ Activate.

Step 5:- Select the Source ODS

- ↳ Right click on this
- ↳ 'update PSO Data to Data Targets' click
- ↳ Now, we got the POPUP Screen, Choose 'Full update' and click on 'update'.
- ↳ Click on 'Start' (Schedule Tab)
- ↳ Click on 'Monitor'.

check the Data in new Target DSO.

PART-B:- ODS — InfoCube (SAP BW System)

Follow the same procedure as mentioned in PART-A.

Step1:- Select the source ODS.

Step2:- Create the Destination Info Cube.

Step3:- Select Source ODS

- ↳ RC → 'Generate Export DataSources' click
- ↳ Then we can get the Popup Screen
(The generation of Data Source was successfully).

Step4:- Select the destination Info Cube
↳ RC → Create update Rules

Choose Data Source as Source ODS and click on Continue
— Activate.

Step 5:- Select the Source ODS

↳ Right click

↳ 'Update DSO Data to Data Targets' click

↳ Now, we get the PopUp screen.

Choose 'Full update' option and click on 'update'

↳ Click on 'Start' (Schedule Tab)

↳ Click on 'Monitor'.

PART C:- Info cube to Info cube (SAP BW System)

Step 1:- Select the Source Info cube

Step 2:- Create destination info cube with the same structure.

Step 3:- Select the Source Info cube

↳ RC → 'Generate Export DataSource'

↳ Click on 'Create'.

Step 4:- Select the Destination Info Cube

↳ RC → Create update rule.

↳ Choose 'DataSource as Info Cube'.

↳ Click on Enter

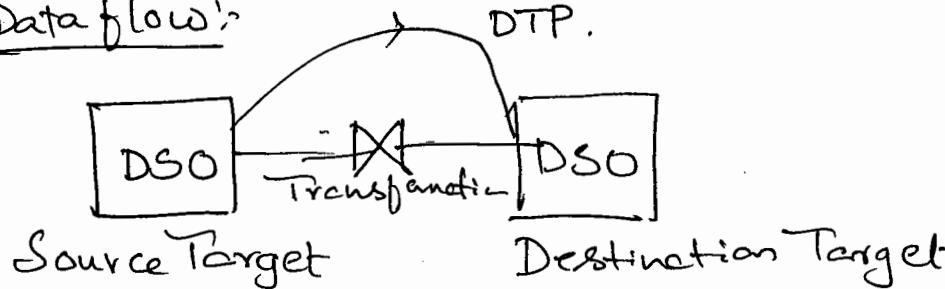
↳ Activate.

Step 5:-

Then create info package for source Info cube.

~~PHOTO~~ DSO — IC (SAP BI System)

Data flow:-



Step 1:- choose Source DSO

Step 2:- Create Destination DSO with the same Structure of Source DSO.

Step 3:- Select the Destination DSO

↳ Right click

↳ Create Transformations.

Choose the 'Source of the Transformation' 'Object Type' as Data store object.

↳ click on Continue

↳ Activate.

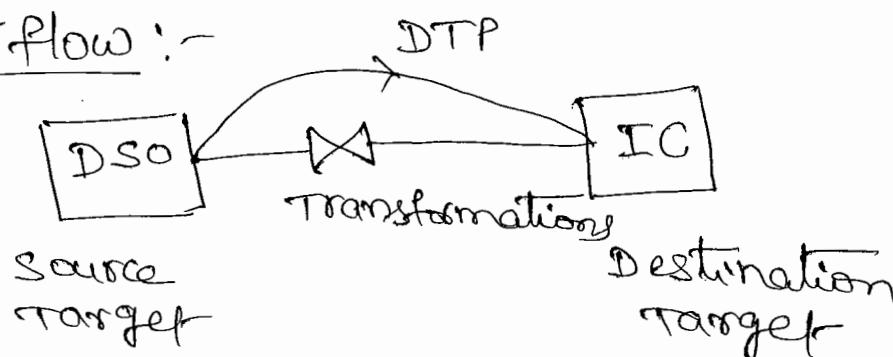
Step 4:- Right click on the Destination DSO

↳ click on 'Data Transfer Process'

↳ Activate, and Run the DTR

PART E:- DSO — InfoCube (SAP BI System)

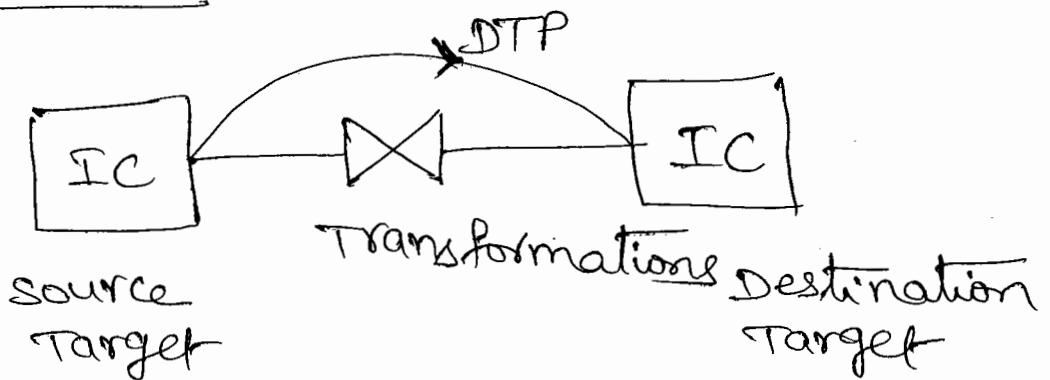
Data flow:-



follow the same procedure as mentioned in Part - D.

PART F:- Info Cube — Info Cube (SAP BI System)

Data flow:-



follow the same procedure as mentioned
in the part-D.

VIRTUAL DATA TARGETS

In SAP BW/BI System, two kinds of virtual data targets are available.

Virtual Data Target (VDT) does not contain data physically, It maintains structure. whenever we try to execute a query on top of VDT, data will be come from source directly into report.

The following are the Virtual data targets used in SAP BW/BI.

1. Multi Provider.
2. Info set.

Multi Provider (MP):

- MP is one of the VDT in SAP BW/BI System.
- MP works under the concept of 'UNION'. ie it can combine the data of multiple targets information in the report.
- So, we can add 'N' number of info cubes, 'N' number of DSOs, 'N' number of info objects (Master data), 'N' number of info sets and 'N' number of aggregation levels.
- MP is basically two types.
 1. Homogenous Multi Provider
 2. Heterogeneous Multi Provider.

Homogenous MP:- If we combined technically identical info provider that MP are known as Homogenous MP.

For Example IC₁

Year	Sals
2010	XXXX
2011	XXXX

IC₂

Year	Sals
2010	XXXX
2011	XXXX

DSO

Year	Sals
2010	XXXX
2011	XXXX

MP

74

Year	Sals
2010	XXXX
2011	XXXX

Heterogeneous MP :- Atleast one of the info obj are Common in info providers, then we can combine these info providers to create MP are called Heterogeneous MP.

The diagram illustrates the creation of a single Info Set (IS) from three separate Info Providers (IC₁, IC₂, DSO₁). An arrow points from the three separate tables to a combined table.

IC₁

Year	Sales	Margin
2010	10,000	3,50,000

IC₂

Year	Plant	Qty Sold
2010	Delhi	500kg

DSO₁

Year	Profit	Net Sales
2010	25,000,000	15,000,000

IS (Info Set)

Year	Sales	Margin	Plant	Qty Sold	Profit	Net Sales
2010	10,000	3,50,000			0	0
2010	0	0	Delhi	500	0	0
2010	0	0		6	25,000,000	15,000,000

Info Set :-

- Info set is another Virtual target in SAP BW/BI System.
- Info set works under the concept of 'JOIN'.
- We can take one DSO, one Info cube, one Info object (Master data).
- In Infoset, we can able to create two types of Joins
 1. Inner Join.
 2. left outer join.

If the common characteristic is time dependent then that type of join is called temporal join.

Temporal join, it may be inner join or left outer join.

STUDENT

SNO	SNAME	FEE
101	Raju	5,000
102	Medhu	2,500
103	Saritha	3,000

PARENT

PNO	SNO	PNAME	DOB
201	102	Venkatesh	
202	103	Krishna	
203	101	Vinayak	

STUDENT
(MASTER DATA)

SNO	Addr	phno.
101	Hyd	916628226
102	SEC	2736721
103	VSKP	123456

Info set \Rightarrow

SNO	SNAME	PNAME	Addr	phno	Fee	Due
101	Raju	Vinayak	Hyd	xxx	5000	
102	Medhu	Venkatesh	SEC	xxx	2,000	
103	Saritha	Krishna	VSKP	xxx	3,000	

TASK 10 :- Create ~~Homogenous~~ multi provider.

PART A: Homogenous MP
Let us take 2 info cubes, 1 DSO to create multi provider.

IC 1 :

Year	Sales
2010	5,500000

IC 2

Year	Sales
2011	70,000,000

DSO1

Year	Sales
2012	8,50,000

Select the info area under info provider.

↳ Right click on it

↳ Create Multi provider.

↳ Create MP Technical name & Description.

Go to 'Info cubes' Tab

↳ Click on 'find'

↳ Select the required Source info cubes.

↳ Select IC1, IC2

Go to 'Data stores' Tab

↳ Click on 'find'

↳ Select the required Source DSO.

↳ Select DSO1

Click on 'Continue'.

→ place the characteristics and key figures into respective dimensional folder and key figure folder.

Now,

↳ Expand '1 Dimension' folder

↳ Select the Each and Every characteristic

↳ Right click on it

↳ Click on 'Identify (Assign)',

of this characteristics.

↳ Click on 'Continue'.

In the same way

Expand 'Key figure folder'

↳ Select the Each and Every key figure

↳ Right click on it

↳ select '(Select(Assign))'.

↳ Click on 'Continue'.

↳ Put the checkmark for all the given

Sources of this Key figure.

↳ Click on 'Continue'.

Activate the Multi-provider.

PART B :- Heterogeneous Multi Provider.

Let us take the following targets as the sources.

IC 1:

Year	Margin	Sales
2012	250,000	8,500,000

IC 2

Year	Plant	Qty
2012	Hyderabad	1,50,000

DSO1

Year	Profit	Net Sales
2012	50,000,00	20,000,00

Do the same procedure as mentioned

in the Task-10 Part A.

The below is the o/p of the Multi-provider.

Year	Plant	Margin	Sales	Qty	Profit	Net Sales
2012	-	2,50,000	8,50,000	0	0	0
2012	Hyderabad	0	0	1,50,000	0	0
2012	-	0	0	0	50,000,00	20,000,00

EMPTY

TASK 11: Creation of Info Set.

Let us take the following targets as the sources.

Master data Attribute - Student *

Student Info cube

SNO	Address	ph-no.
11201	Hyd	123456
11202	VSKP	45678
11203	R2Y	910112
11204	SRM	12476

SNO	SNAME	FEE

PARENT DSO

P NO	S NO	P NAME	DUE

Right click on Info area

↳ Create info set

↳ Provide info set technical name & description.

↳ Choose the source info object attribute (Student Master data)

↳ Click on 'Continue'

→ Now, we enter into the info set screen. In this screen left side we can see all the source objects. Info obj attribute, info cube and DSO.

→ Right side, we need to drag and drop source target from left side to right side.

→ We need to make the join between three targets based on the common characteristic SNO.

We Can See the info set over output in report.

INFO PACKAGE

- Info package is one of the Component in SAP BW/BI System.
- It can move Source information from one system to another system (Source to target)
- The following update modes are available in info package level.
 1. Full update
 2. Delta update
 3. Initialisation of Delta with data transfer
 4. Initialisation of Delta without data transfer
 5. Early delta initialisation.
 6. Repair full request.
 7. Repeat Delta.

Full update :- If we use this option in info package level, it will fetch complete records from source to destination.

Delta update :- If we use this option in info package level it will fetch recently added records into target.

Initialisation of Delta with data transfer :- In info package after run the full update. If we want to run delta, first of all we need to enable the delta.

Enable the Delta is called initialisation of the delta.

If we used Initialisation of Delta with data transfer option, it will do full update plus delta enables.

Initialisation of Delta without data transfer :-

If we use this option in info package level, it will do full update plus delta enables.

Early delta initialization

If we use this option in info package level, It will enables the delta even full update is running.
This option can supports for some data sources only.

Repair Full request

If we use this option in info package level then it will run full update again.
Once delta update is running in info package, we can't run full update. But some records when full update fails during delta update, if we want to run full update again, using Repair full request.

Repeat Delta

If Delta load fails then we can run those delta records again using this Option.

Note:- Flat files doesn't support delta update. But we can put ~~pseudo delta~~ 'Suedo Delta', we can extract required records into target.

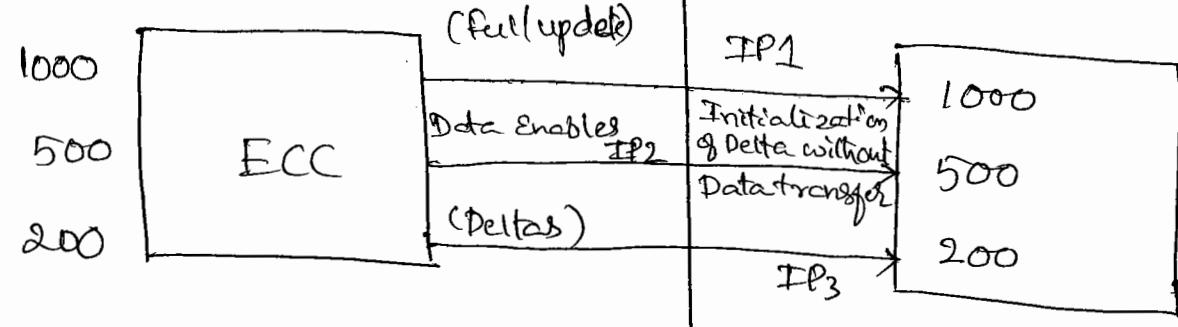
Suedo Delta is nothing but setting filter Option in Info Package level.

Full update with filter is called 'Suedo Delta' and it's also called fake delta.

ECC \rightarrow Enterprise Central Component.

full update

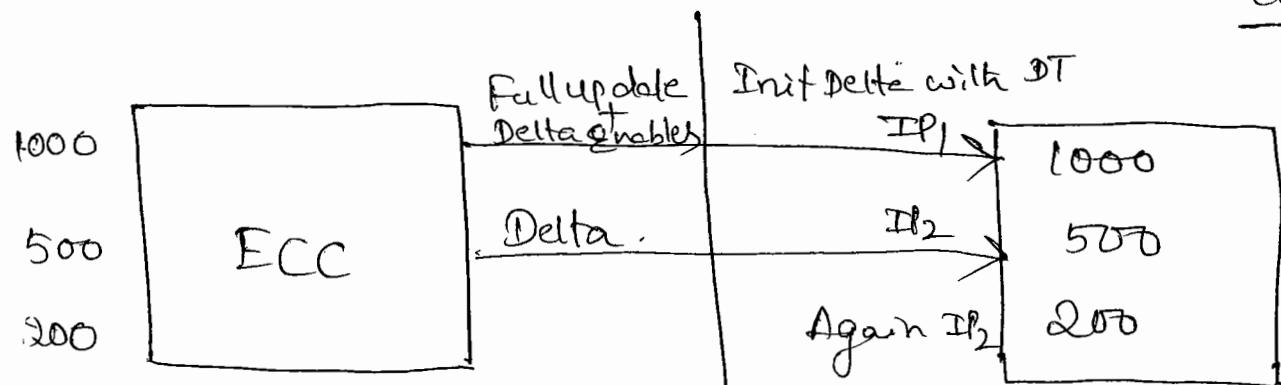
CASE 1:-



Source

Destination

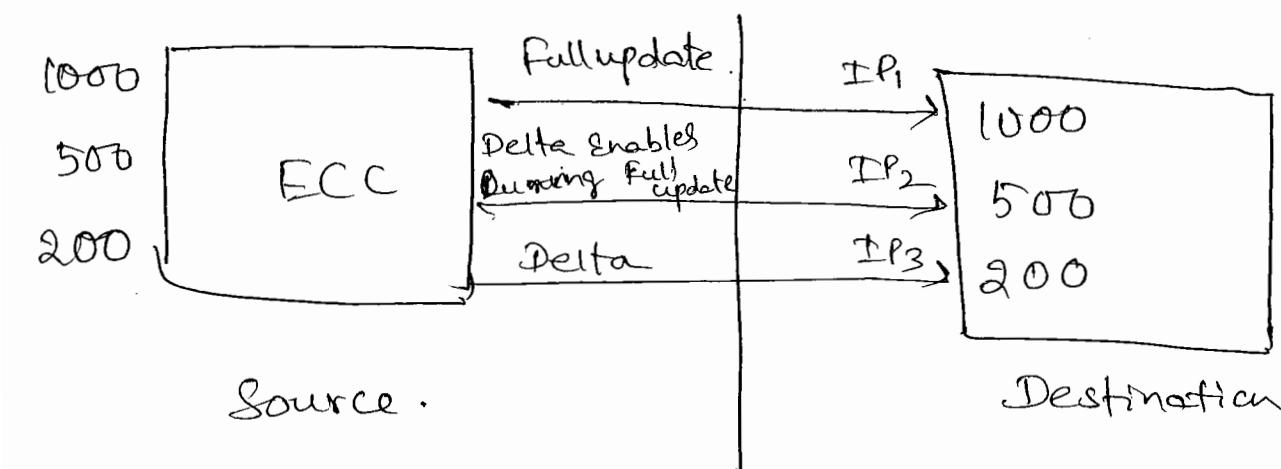
CASE 2 :-



Source

Destination

CASE 3:-



Source

Destination

D.T.P (Data Transfer Process)

DTP is one of the Component to move the data from Source to Target.

In DTP we can find 3 options mainly

Under Extraction tab, we can see Extraction mode containing two options.

- ① Full
- ② Delta

Once Create the DTP with full update then to enable the delta we need to create one more DTP with the following Option.

Under update tab, we need to set Error handling as 'no update no reporting'.

This can be act as initialization of the delta, then we can create one more DTP with delta option to fetch the delta records.

DTP can transfer the records using TRFC (PSA) data transfer method. It can transfer 1962 bytes/Record.

DTP can transfer the records Compared to info package is high speed because of TRFC method.

DTP is classified as 4 Categories depending upon the functionality.

- ① Standard DTP
- ② Direct update DTP
- ③ Error Stack DTP
- ④ RDA DTP.

Standard DTP:- It Can move the records from data source to data target within SAP BI System.

Direct update DTP:- This DTP can transfer the records directly from the source into the data target in SAP BI.

This option we can set in DTP Extraction tab.

- Enable the following check box.

Don't extract from PSA but access data source
(for small amount of data)

- If the source system contains small amount of data, then we can prefer direct update option.

Error Stack DTP:- If records are loaded into data target with error, those error records are stored in Error stack DTP. So open the error stack DTP, modify those error records & run the DTP again. So the records can be loaded to the data target.

In DTP, Menubar we can see Error Stack.

Note:- In DTP Extraction tab, we can see 'Symantic group Option'

- Symantic group main function is "it can maintain same sequence order of the records as maintained in the source system". After the modifying update records in Error stack when we run DTP it can load the modified records in the same

data from SAP Source System multiple times for a day
we can use RDA.

Different Update Mechanisms in ECC :-

In SAP ECC three different kinds of update mechanisms are three.

- Those are
1. V1 update (Synchronous update)
 2. V2 update (Asynchronous update)
 3. V3 update (V2 + Scheduling).

V1 update :- V1 update at the same time moves the records to the document tables (Std tables) and update table / Extraction table.

V2 update :- V2 update moves the records first to the document tables and after that moves the records to the further tables. It is a outdated method.

V3 update :- If we run the V3 update, It can moves the records to the document tables first and then moves to further tables with scheduling options.

Different update Modes in ECC :-

Three different update modes are in ECC.

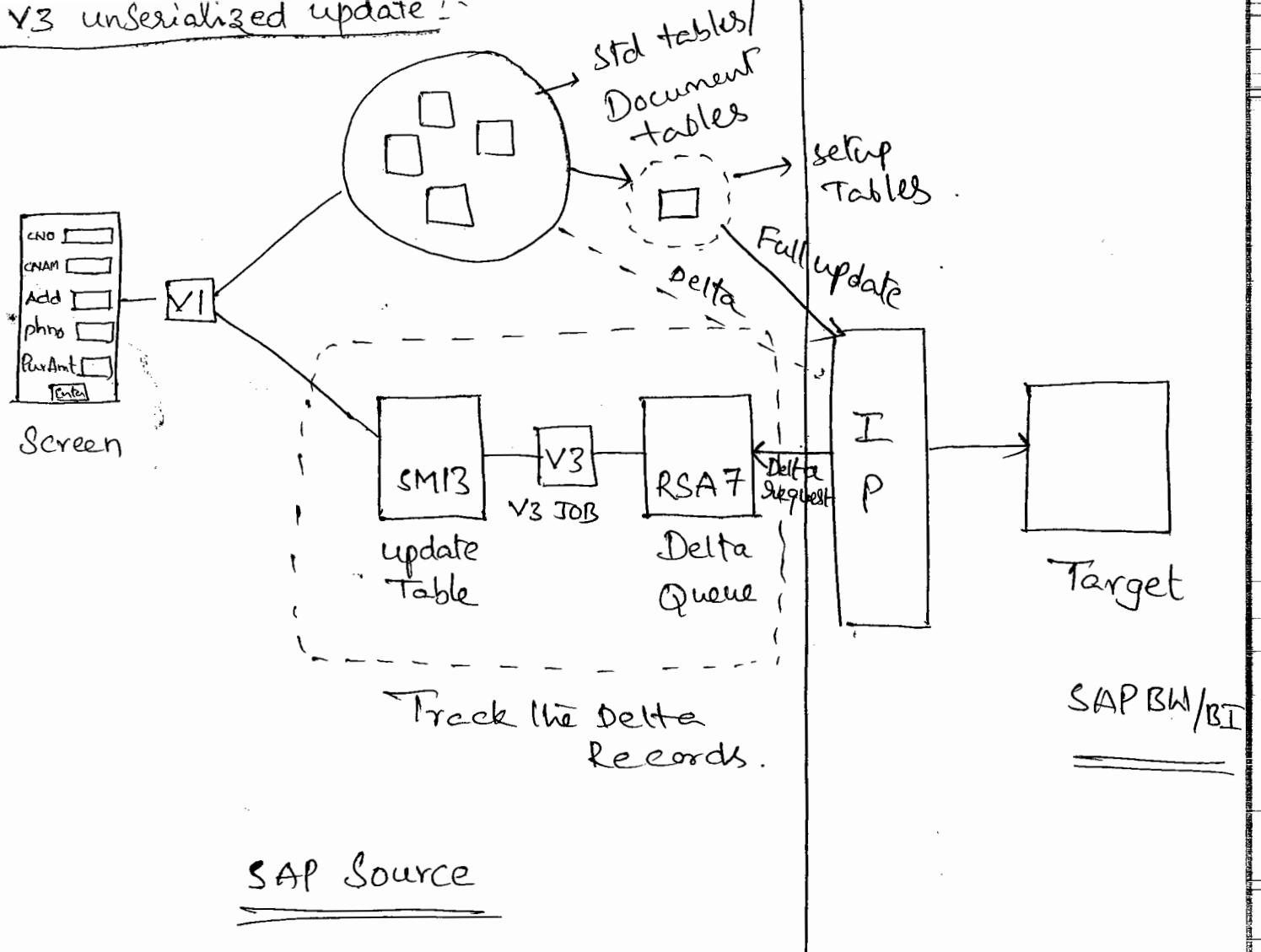
1. V3 unserialized update
2. Direct Delta update
3. Queued Delta update.

V3 unserialized update method is used to fetch the records from MM module table.

Direct Delta update method is used to fetch the records from FI module table.

Queued Delta update method is used to fetch the records

V3 unserialized update



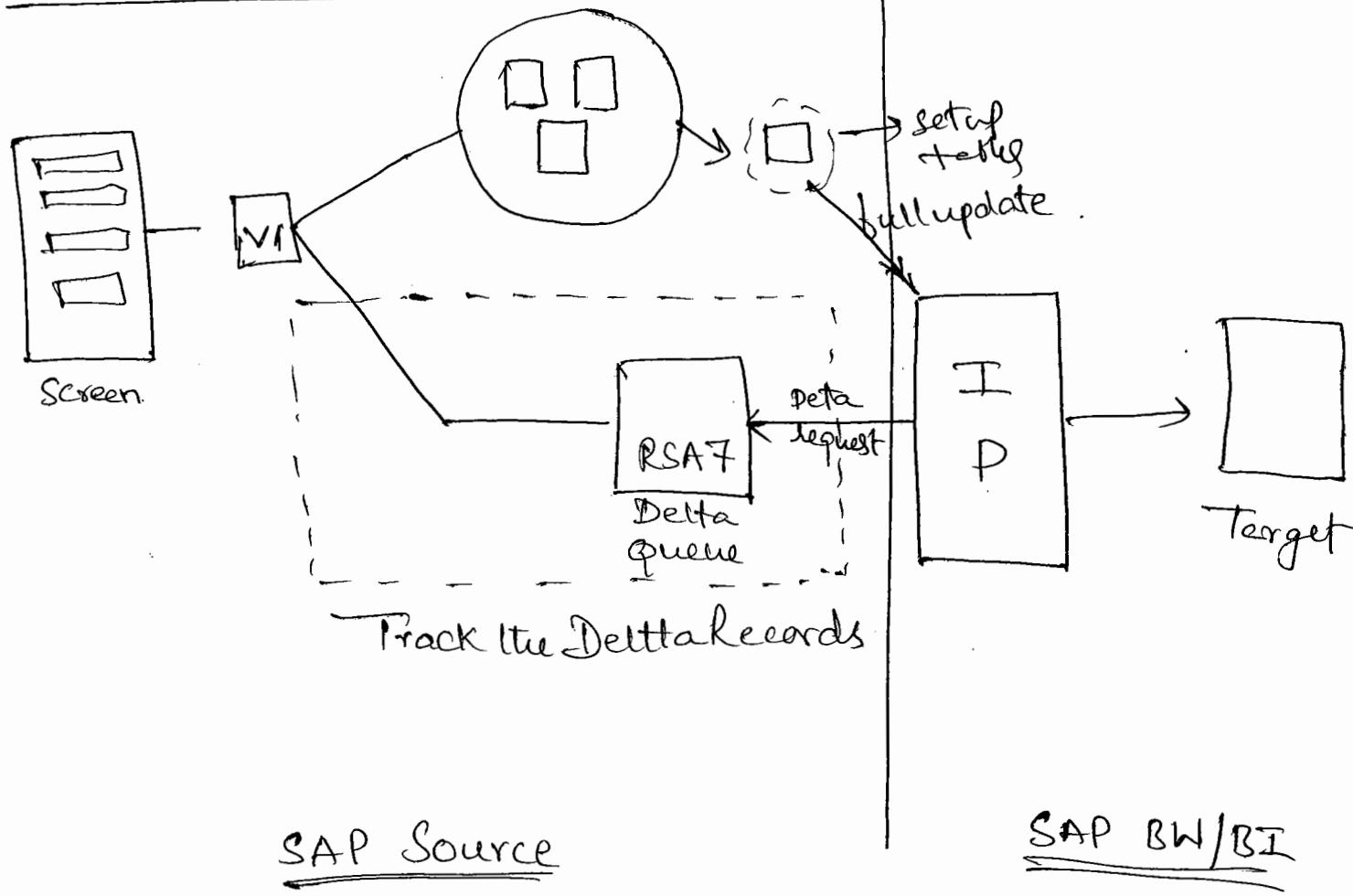
In this method update table and Delta Queue are maintained to trackout the delta records.

Setup tables are the buffer area, we need to create to avoid records during Extraction.

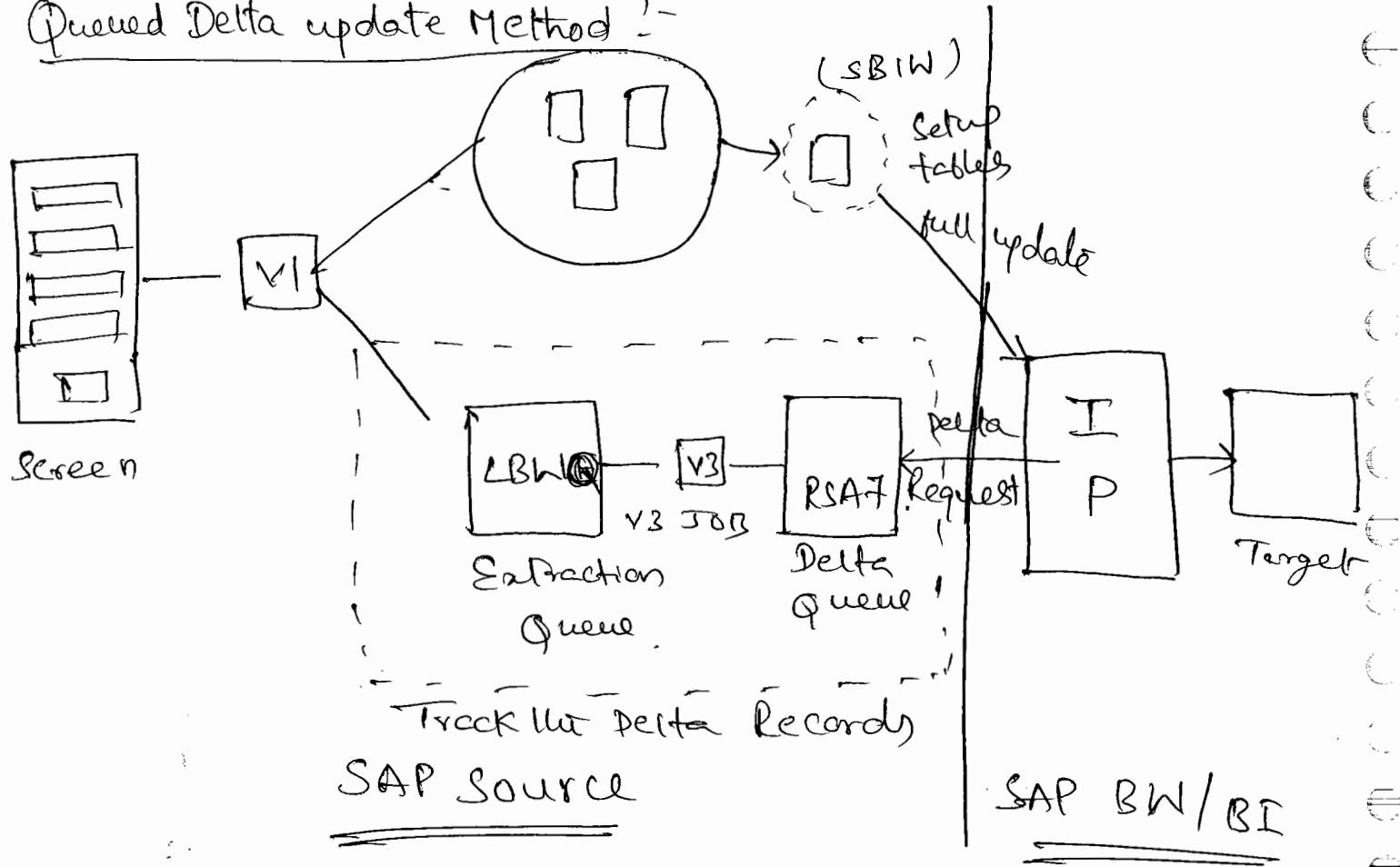
If we run info package with full update, It will fetch the records from Setup table directly.

If we run the delta in info package, then it will send the delta request to the delta queue, it will check the status of the records and fetch the records from document tables directly.

Direct Delta update Method :-



Queued Delta update Method :-



FAQ1: What is the update mechanism? Can run all the update modes at the initial loading.

Ans: ✓ 1 update Mechanism.

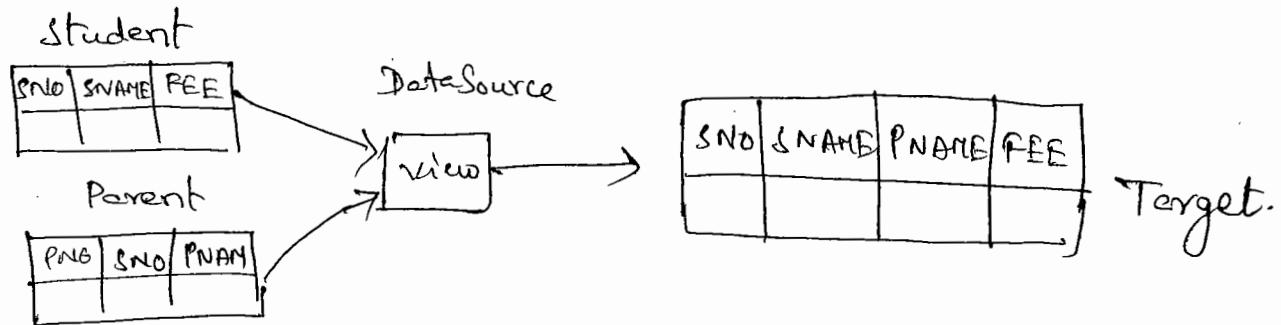
FAQ2: What is the difference between View and workbook.

Ans: If we create View on top of any two tables, we can see the data in runtime.

- If we delete the tables, we can't run the View.

- If we create the workbook on top of any two tables it can store the data physically. Even tables may be deleted data can be seen in workbook.

Ex:



Some dataSources in ECC have created already by SAP.
Those are called standard data sources.

Some dataSources can't fulfill the requirement of client business that time, we need to create our own dataSource in ECC. Those custom dataSources are known as 'Generic dataSources'.

Grid	GNAME	SNO	PNO	%

SNO	SNAME	FEE

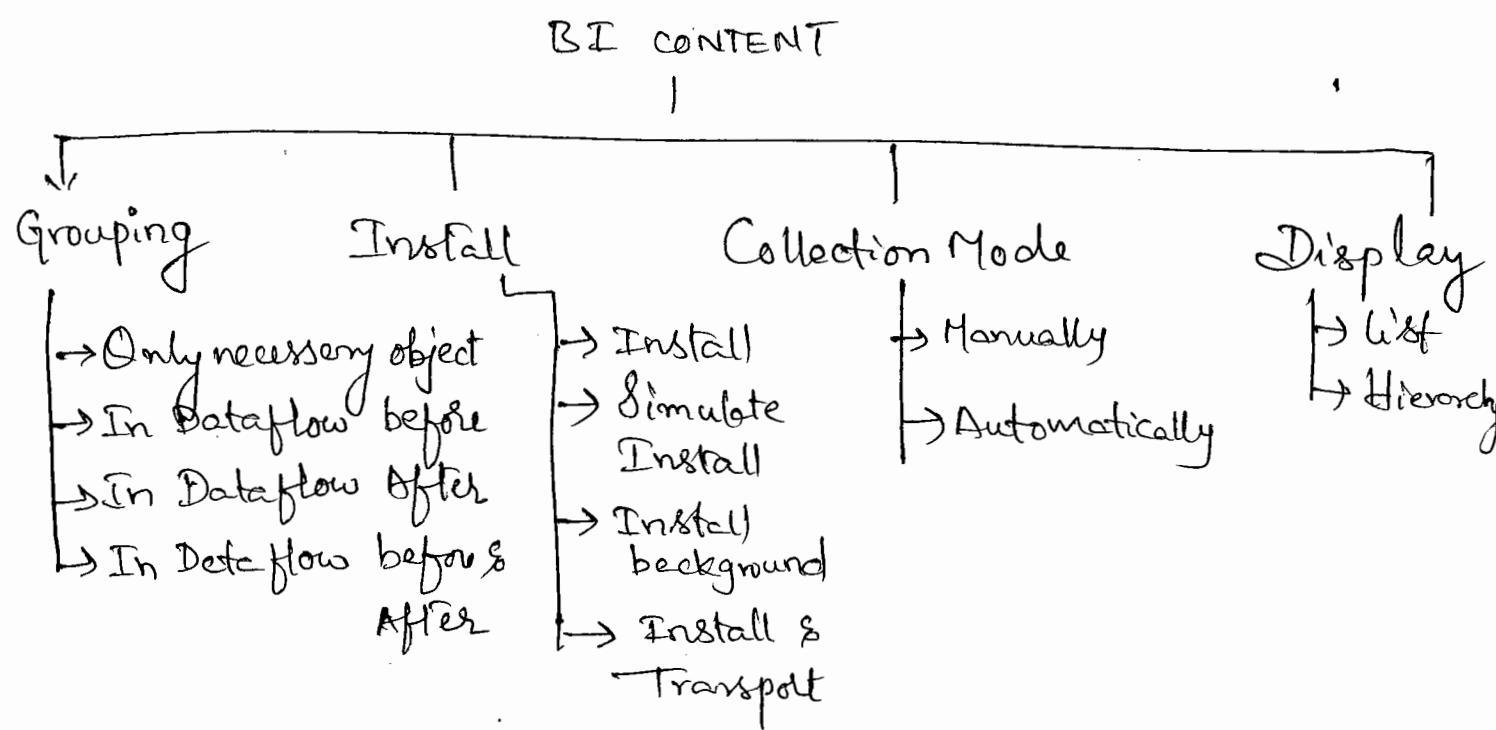
PNO	SNO	PNAM

View

Grid	GNAME	PNAM	Grid	%

BI Content in BW/ BI System:-

- 'BI Content' is one of the functional area in work bench in SAP BW/BI System.
- BI Content is the best part of SAP. More than 60% of the activity we need to use from BI Content, only 40% we need to customize.
- BI Content having 4 Options.



Grouping :-

Only Necessary objects → If we put this Option for particular object for in SAP BW/BI System. It Can activate only the main object.

Ex:- Info Cube.

In Dataflow before! → If we select this option, It will activate along with main object before objects also.
Eg:- Info Source, update rule

In Dataflow After :- If we activate any object with 'In Dataflow After', it will activate this object along with the other objects depends on it.

Eg:- Info Cube, BEX query, report, work book.

In Dataflow before and After :- If we choose this option, It will activate main info obj and activate also before and after objects.

Install :-

Install :- If we choose 'Install' option, It Can install obj directly from BI Content.

Simulate Install :- If we choose this option, It Can install with debugging.

Install ~~before~~ background :- If we choose this option, It Can install object in background.

Install ~~before~~ Transport :- If we choose this option, It Can install the object and transport also.

Collection Mode :- It Contains two options

If we choose manually, we need to arrange all the objects in systematic order.

If we choose automatically, system will automatically arrange all the objects.

Display :- List display and Hierarchy display.

TASK 12) Activate / Install Standard objects in BI Content in SAP BW / BI System.

• RSA1 / RSA1FOLD

↳ Go to 'BI CONTENT' (functional area)

↳ click on 'Object Types' option

↳ Select the required object which we need to install.

↳ Let us take 'Info Object'

↳ Expand this, Double click on the 'Select objects'

↳ Click on 'find' and enter the required info object. which it has given.

↳ Select the 'Info object chosen'
(OABCINDIC)

↳ Click on 'Transfer Selections'.

↳ Go to 'Grouping' and select 'Only Necessary Objects' option.

↳ Go to 'Install' and click on 'Install option'.

↳ Refresh

↳ Go to 'Modeling'

↳ Go to 'Info Objects'

↳ Click on 'find' (OABCINDIC)

SAP EXTRACTION

SAP Extraction

Application Specific

BI Content	Custom Generated
Ex: SD, MM, FI, PP, PM, HR, etc.	Ex: CO-PA, FI-SL etc:

Cross Application.

Generic Data Sources

Eg: Table,
View,
InfoSet Query,
Function Module.

TASK 13!: Extract the Data from SAP Standard data source

(2 LIS_11_VAHDR) (Sales Order Header level Information)

into SAP BIW / BI System.
ECC System!

Step 1!: Goto LBWE (LO COCK PIT)

Step 2!: Delete the Setup tables using T-Code LBWG

Step 3!: Delete Delta records status in Extraction Table
T-Code LBW1Q

Step 4!: Initialize Setup Table using T-Code SB1W

Step 5!: Check the Data Source Data using T-Code RSA3

Step 6!: Choose Delta update method 'Queued Delta' in
LBWE.

BIW System!

Logon to BI / BIW system .

RSA1

↳ Source Systems .

↳ click on RFC (BIW - ECC) Connection .

SAP Application Component (Expand)

↳ Sales & Distribution (Replicate)

↳ Select standard data source 2 LIS-11- VDHDR

Data Source	2 LIS-11- VAHDR	(Sales order Header level information)
Tables	VBAK, VBUK	
Module	SD	SD

Step 1:-

Log on to ECC System

↳ Go to T-Code LB10E (Log Cockpit)

↳ Select given data source '2 LIS-11- VAHDR'

↳ Before Extract the data from this standard dataSource, we need to inactive the data source. This is known as 'shutdown ECC'

↳ Double click on the 'Active' option of this dataSource

↳ Then it will ask 'prompt for Customizing request'

↳ Click on 'Create Request' on this pop-up window.

↳ Now it will open, Create Request Pop-up window.

↳ Enter the short description-

↳ Select the 'SAP USER' Task.

↳ And click on 'SAVE'.

↳ Now request can be generated.

↳ Click on 'Continue'.

↳ Double click on the 'Structure'

- ↳ In the popup window will open. As called 'Selection Criteria'
- ↳ In Selection Criteria right side part is called 'Pool (Communication Structure)'. This pool Contains all the available fields of this data source.
- ↳ Left side part is called 'Selection criteria (Extract Structure)'. This Selection Criteria Contains only selected fields from the pool, of this data source.

- Sometimes client asks to Extract the data from this standard dataSource by adding some fields to this dataSource.
- At that time we can check those fields belongs to given dataSource or not.
- If the fields belongs to given standard dataSource, select those fields ^{move} from pool to Selection criteria. and click on Continue.
 - ↳ Now, the additional fields are successfully added to the dataSource 'structure maintenance'.
 - ↳ Click on 'DataSource generation' option of this standard dataSource.
 - ↳ Then it will ask request, provide the request and click on Continue.
 - ↳ Click again 'Continue'
 - ↳ Go to menu bar 'DataSource'
 - ↳ Click on 'Generate'.
 - ↳
 - ↳ In DataSource generation window, for each field maintaining four options.

Selection → If we check for particular field of this datasource, those are used for selective data loading in info package level.

Hide → If we select this option particular field, we can hide that field in SAP BW/BI system.

Inversion → This option must be Enabled for all the measure fields of this datasource for 'Request Reverse posting' in BW/BI system.

fields only → This option is enable for newly added fields of this datasource (outside table fields)

Step 2:- Delete the Setup tables

If we want to Extract the data from this datasource first time, then we need to delete the setup tables and reinitialize the setup tables.

- ↳ T code LBWG
- ↳ Enter the Application number 11
- ↳ Click on 'Execute'.
- ↳ Click on 'yes'.

Step 3:- Delete the Delta records status from Extraction Queue table and delta Queue table.

- ↳ T-code LBWQ (Extraction Queue)
- ↳ Delete the given datasource record status.
- ↳ Enter the T-Code RSA7 (Delta Queue)
- ↳ Delete the given datasource record status.

- Step 4: Initialize setup tables using T-Code RSA3
- ↳ Expand 'Settings for Application-Specific Datasource (PI)'
 - ↳ Expand 'Logistics.'
 - ↳ Expand 'Managing Extract Structure'
 - ↳ Expand 'Initialization'
 - ↳ Expand 'Filling in the Setup Table'
 - ↳ Expand 'Application-Specific Setup of Statistical Data'.
 - ↳ Execute 'SD Sales Orders - Perform Setup'
 - ↳ Double click
 - ↳ Provide the name of the run. (user defined).
 - ↳ Enter the termination date
 - ↳ Click on 'Execute',
 - ↳ 'start of order processing' click on Continue.

Step 5: Check the Datasource data using T-Code RSA3

- ↳ Enter the Datasource name (2LIS-11-VAHDR)
- ↳ Click on 'Extraction'.

Step 5: Choose Delta update method 'Queued Delta' in LBWE.

The following standard given datasource is 2LIS-11-VAHDR
it belongs to SD module, so we need to select Queued
Delta update method.

Go to LBWE (LO COCKPIT)

- ↳ Select 'level 11 (SD sales) update mode'

↳ click on 'Job Control' and set the properties for the scheduling.

↳ Go to dataSource 2LIS-II-VAHDR
↳ click on 'Active'.

Step 7: Log on to BI/BW system.

(A) SAP BW System.

RSA2 Old

↳ Modeling

↳ Source Systems

↳ Double click on the RFC Connection.

↳ Expand 'SAP'

↳ Expand 'SAP application Component'

↳ Select 'Sales & Distribution'

↳ Right click

↳ 'Replicate Metadata'.

Now, given dataSource 2LIS-II-VAHDR looks like

☒ 2LIS-II-VAHDR

Then ☒ symbol indicates info source assignment is not allocated for this datasource -

So we need to change ☒ symbol to ☑ symbol.
means we need to assign the info source to the dataSource.

↳ Right click on the given dataSource

2LIS-II-VAHDR

↳ Assign info source.

↳ Then it will ask one pop up window with 'next >' button, 'Continue'.

Then, we enter the BI Content Screen.

Now, Go to 'Grouping' → Select 'Only Necessary obj'
Install → click on 'Install'
Then InfoSource has assign to this dataSource.

Step 8: ③ SAP BI System.

RSA1

↳ Modeling

↳ Source Systems

↳ Expand 'SAP' folder

↳ Double click on 'RFC Connection'

↳ Expand 'SAP'

↳ Expand 'SAP Application Components'

↳ select sales & Distribution

↳ RC → Replicate Metadata.

Now, we can see the given dataSource 2LIS-11-VAHDR with Grey colour bubble. It indicates 3.X dataSource. So we need to migrate this dataSource into 7.X dataSource.

↳ Select the given dataSource 2LIS-11-VAHDR

↳ RC → 'Migrate'

When we click on migrate, it will ask two options, one is 'with Export', another is 'w/o Export'.

If we choose 'with Export' option then we can migrate 3.X dataSource into 7.X dataSource and demigrate also.

If we choose this Option, we can migrate 3.X dataSource to 7.X dataSource back.

- ↳ choose 'with Export'
- ↳ Then the given datasource has migrated into 'F.X' datasource.
- ↳ This datasource looks without grey colour bubble.

Follow the same procedure in BW, BI to transfer to Targets

Note:- Gather SD DataSource Assignment.

SD
Flow

DataSources!

SD	DataSources (Techn+Desc)	Tables (Techn+Desc)	Fields (Techn+Desc)
---------------	-----------------------------	------------------------	------------------------

Choose ECC

LBNE

Options 11 (order)

12 (Delivery)

13 (BI/Img)

SEL → To view table description.

Module	DataSources	IC
SD	2L1S-11-VAHDR	OSD-C03

Generic Datasource :-

If the client requirement is not satisfy with the SAP standard datasource then we need to Create our Customised dataSource.

These Customized datasources are Called generic datasources. Generic datasources Comes under 'cross application Extractors'.

Generic datasource we can Create using four methods.

1. Table
2. View
3. InfoSet Query.
4. Function module.

In Generic datasource, we need to create Delta in Customized way. This Delta is Known as Generic Delta.

Generic delta, we can Create in three methods.

1. Time Stamp.
2. Zero Calday (Ocalday).
3. Numeric pointer.

Time Stamp:- If we fetch the data multiple times in a day then we use time stamp delta method.

Ocalday:- If we fetch the data on dailywise then we need to use Ocalday delta method. In source system date field must be present in the datasource.

Numeric pointer:- If date field is not present in the datasource then we need to use numeric pointer method to fetch the records. It will fetch the records based on record number.

If date field present in datasource, then we can use either Time stamp / Numeric pointer. ○ Calday method..

If data target is DSO for generic datasource then we need to select in generic delta, the following option.

○ New status for changed Records.

If the data target is Info cube for generic datasource then we need to select the in generic delta, the following option.

○ Additive Delta

Safety Interval :-

Safety interval we can see in generic delta of generic data source.

Safety Interval having two options.

1. Safety Interval upper limit.
2. Safety Interval lower limit.

Safety interval we consider in generic delta to avoid missing records, during Extraction.

If we use delta method, Time stamp / Calday, then we need to set Safety interval lower limit during extraction.

If we use delta method numeric pointer then we need to set interval upper limit during extraction.

The maximum value for Safety interval limit is 1 hour, minimum 1/2 hour.

The maximum limit we can set for incase of numeric pointer minimum is 10 in Safety interval upper limit.

Step 14: Create generic dataSource using Table.

Follow below steps.

Step 1: Create Table using T-Code SE11.

Step 2: Create Generic dataSource using T-Code RSA2.

Step 3: Check the DS data using T-Code RSA3.

Step 4: Logon to BW/BI System.

BW System:-

↳ RSA1 Old

↳ Modeling

↳ Source Systems

↳ Double click on 'ECC-BI' Connection.

↳ Expand 'SAP'

↳ Expand 'SAP Application Components'

↳ Select Required Module

↳ Right click on it and click on
Duplicate Metadata.

↳ Then we can find Generic dataSource

Assign info source

↳ Click on 'Continue'.

BI System:-

↳ RSA1

↳ Modeling

↳ Source System

↳ Expand 'SAP'

↳ Double click on 'ECC-BI' Connection.

↳ Expand 'SAP'

- ↳ Select Required module
- ↳ Right click on it and click on Replicate metadata.
- ↳ Then we can find generic data source.
 - ↳ RC on generic datasource (3.X)
 - ↳ Migrate (with Export)
- ↳ Then generic DS migrate into 7.X DS Then
 - ↳ RC on generic DS create info package.

Step 1:- Create a table

In ECC System, Create a table using T-Code SE11

SE11 - ABAP Dictionary : Initial Screen

- ↳ Provide the table name zmatinf
- ↳ 'Create'
- ↳ Provide the 'Short description' material info.
- ↳ 'Delivery and Maintenance' choose.
- ↳ 'Enter' Delivery class as 'A'.
- ↳ A → Application table (Master and Transaction Data)
- ↳ choose 'Data Browser/ Table View Maint.' as 'Display/Maintenance Allowed'.
- ↳ Save
- ↳ Go to Menubar Click on 'Technical settings'
- ↳ click on 'Yes'.
- ↳ Enter Package name and click on Enter.
- ↳ choose 'data class' as 'APPL1'
- APPL1 → Transaction data, transparent tables.

To Create a Package Using T-Code SE80

Choose Test Repository

↳ Package

↳ Enter the Package name 'ZEPIC'

↳ Click on 'Enter'

↳ Click on 'Yes'.

↳ Provide short description 'EPIC BI'.

↳ Click on 'SAVE'.

↳ Click on 'Create'

↳ Enter 'Short description'

↳ Select the Task 'SAPUSER' and click Save.

↳ Click on 'Save'

↳ Click on 'Back'.

Fields Tab

↳ Enter the field name 'ZITEMNO'

↳ Enter data element 'ZITEMNO'.

(Data Element = Domain + Description)

(Domain = Data type + length).

↳ Double click on enter on Data Element.

↳ Click on 'Yes'.

↳ Click on 'Continue'.

↳ Click on 'Yes'.

↳ Provide Short description 'Item No'.

↳ Provide the domain 'ZITEMNO'

↳ Double click on Domain 'ZITEMNO'.

↳ Click on 'Yes'

↳ Click on 'Save'

- ↳ click on 'Yes'
- ↳ Provide the Short description ('Item No')
- ↳ choose the datatype 'NUMC'
- ↳ Choose No.of chars '6'
- ↳ Activate the Domain.
- ↳ click on 'Save'
- ↳ click on 'Continue'.
- ↳ click on 'Continue' again.
- ↳ click on 'Back'
- ↳ Activate the data Element!
- ↳ click on 'Continue'.
- ↳ click on 'Back'

In the Same way, Create one more field zitemname. Enter the data Element ('zitemname').

- ↳ Double click on 'Data Element'

Follow the same procedure as above.

Zitemname	char	20	
Z Price	CURR	6	Decimal places 2
Z AmtRef	CURY	6	
Z Qty	QUAN	6	
Z QtyRef	UNIT	3	

Atleast one field assign to primary key so ZITEMNO assigned as Primary key.

ZITEMNO

Click on 'Currency/Quantity fields' Tab.

Z Price

Z MAT INF

Z AMTREF

Z Qty

Z MAT INF

Z QTYREF.

↳ Activate the Table.

↳ click on 'Continue'

↳ Again click on 'Continue'.

↳ Click on 'Yes'

Now, Enter some records into the table Z MATINF.

Goto Menu bar.

↳ Utilities (M)

↳ Table Contents

↳ Create Entries.

Z ITEM NO 1101

Z ITEM NAME Rice

Z PRICE 120,00

Z AMTREF INR

Z QTY 5

Z QTYREF KG.

↳ Click on 'Save'.

↳ Click on 'Reset' and try to records.

Step 2: Create Generic dataSource

↳ Create generic dataSource using T-code RS02

↳ Choose 'Transaction data' as Datasource.

↳ Z MAT

↳ Click on 'Create'.

↳ Provide application Component 'SD'.

- ↳ Provide the short, medium, long description.
- ↳ Enter the Table in ' Extraction from DB View'
- View/Table ZMATINF
- ↳ Click on 'Enter'.
- ↳ Click on 'Generic Delta'.
- ↳ Choose field name as 'ZITEMNO' and 'Numeric pointer' because there is no date fields.
- ↳ Choose 'Additive Delta' because we will use Info cube as target.
- ↳ 'Settings'
Safety Interval Upper limit 10
- ↳ Click on 'Save'.
- ↳ Again click on 'Save'.
- ↳ Again click on 'Save'
- ↳ Click on 'Continue'.
- ↳ Go to Menu bar
 - ↳ Data Source
 - ↳ Generate

Step 3: Check the Data Source data using T-code RSA3.

- Step 4 :- Follow the procedure as mentioned at the task page.
- (d)
- Step 5 :- Follow the same procedure as mentioned at the task page.
- Step 6 :- Right click on DataSource
- ↳ Create info package.
 - ↳ Provide the info package Description and click on 'Save'
 - ↳ Go to schedule tab and click on 'Start' and click on monitor.
- Step 7 :- Create info Cube.
- Create the info obj characteristics and key figures what are the fields are available at dataSource. Create in the same order.
- In info cube, place the key figures and characteristics into respective folder.
- Activate the info cube.
- Step 8 :- Transformations.
- Right click on Info cube
- ↳ Create Transformations.
 - ↳ Provide the source as dataSource for transformation.
 - ↳ Click on 'Continue'.
 - ↳ Map the source fields with the Target fields.
 - ↳ Remap key figure info obj by providing IO Assignment.

Step 9:- Create DTP.

Right click on Info cube

↳ Create DTP.

↳ Under Extraction tab choose

update method as 'Full' and under

↳ Update Tab choose

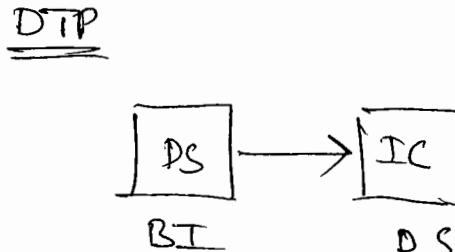
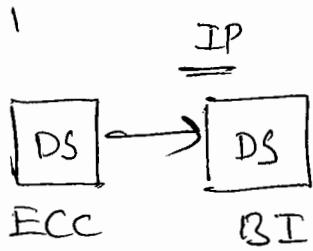
Error handling 'Request Green'.

↳ Execute Tab

Activate the DTP and click on 'Execute'

click on 'Yes'

Enable the Delta (Initialize) In BI System:



6:00 AM 1000 IP1 Full update(1000)

(1000) DTP1 Full update

6:00 PM 300 IP2 Delta Init

(0) DTP2

Without DT(0)

(Extractiontab)

IP3 Delta update(300)

update Mode : Delta

(updatetab) Error handling :

No update, No Reporting

(300) DTP3 Delta

(700)

(200)

6:00 AM 700 (700)

2:00 PM 200 (200)

Assignment for generic datasource using view

Let us take the following tables.

Emp

ENO	ENAME	Desg	Sal	Sal Ref
1101	Madan	TL	35000	INR
1102	Santosh	BA	55000	INR
1103	Prabhas	PM	100000	INR

Dept Table

DNO	END	Oname	Bonus	Amt Ref.
3001	1103	Finance	5000	INR
3002	1101	IT	25000	INR
3003	1102	Marketing	30000	INR

Step 1: Create Tables Emp & Dept (SE11)

Step 2: Create View (SE11)

Step 3: Create generic DS (RSO2)

TASK 15: Create generic datasource using View:

Step 1: Create Tables Emp & Dept- using T-code SE11

Step 2: Create View using T-Code SE11 on Emp & Dept Tables

↳ T-Code SE-11

↳ Create View

↳ Enter View name ZEmp-Dept.

↳ click on 'Create'

↳ choose View Type as 'Database View'.

↳ click on 'Copy'.

↳ Provide short description and Enter Table names.

↳ click on 'Relationships' button.

↳ Under Table/Join Conditions tab

↳ Provide the join condition.

ZEmp ZENO | ZDept ZENO

↳ Go to View Fields table.

Enter View fields.

TASK 16:- Extract the data from CO-PA dataSource.

- CO-PA dataSource comes under Custom generated Extractor.
- To Create a CO-PA dataSource using T-Code KEBØ
- We can create CO-PA dataSource in two ways.
 1. Account base
 2. Cost base.
- CO-PA (Controlling and Profitability analysis).
- The standard format of the CO-PA dataSource is
1 - CO-PA % CL % ERK

CL - client number

ERK - own technical name

Eg:- CO-PA DS : 1 - CO-PA - 123 - sample
CL ERK

CO-PA dataSource maintains a pool of characteristics, key figures and fields. From this pool we can select necessary charts, key figures and fields. And create custom generated CO-PA dataSource.

Step 1:- Create CO-PA dataSource using T-Code KEBØ

Logon to ECC

↳ Enter the T-Code KEBØ

↳ Choose the CO-PA DataSource
Enter

↳ Choose Operating Concern

R300 - Operating Concern IDES detail.

↳ choose 'costing-based' CO-PA.

↳ choose 'Create'.

↳ click on Execute

(U-rit datasource follows time-stamp data mechanism)

↳ Provide short, medium and long description.

Provide field name for Partitioning - BUKRS

↳ Uncheck unwanted 'characteristics from the Segment table'

↳ Check necessary 'characteristics from the line items.'

↳ Uncheck unwanted 'Value fields'

Select check necessary 'calculated key figures from the key figures scheme'

Menubar 'Info Catalog (F7)' click

Create Object Directory Entry.

↳ Create Package

↳ Click on 'Continue'

↳ Again click on Continue.

Go to datasource Menubar

↳ Click on 'Generate'

↳ Then we can get the message

'DataSource 1-CO-PA-112-TEMP Created

'Successfully'.

↳ Click on Continue

Step 2: ↳ Check the CO-PA datasource data in RSA3.

↳ Click on Extraction.

Step 3:

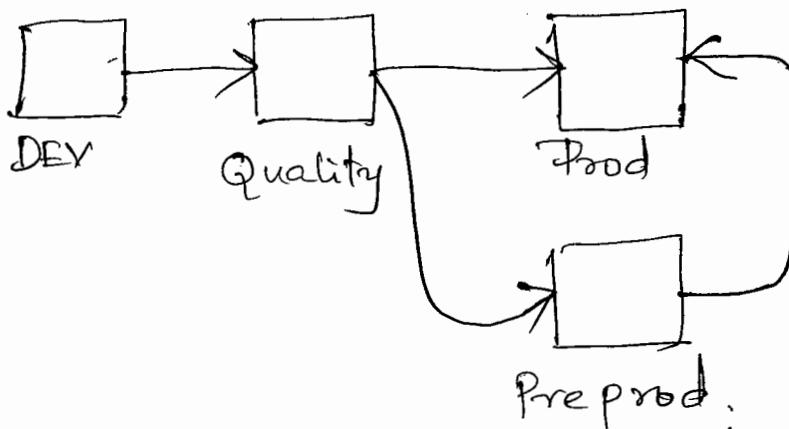
- log on to BW system.
- Go to modelling
- Double click on 'RFC Connection'
- Drop down 'SAP'
- Expand 'SAP Application Components'
- Expand 'Controlling'
- Select 'Profitability analysis'
- Right click
- Replicate DataSources.
- Choose 'S-x DataSource' from message box
- Then it will ask message box, Click on Continue.
- This Co-PA dataSource contains negative sign, then we need to assign infoSource to this dataSource.
- Select the Co-PA dataSource 1-Co-PA-112-Temp
- Right click 'Assign info Source'.
- Click on Continue.
- Click on 'Yes'
- Now, info source has been created.
- Now, the Co-PA dataSource

- logon to BI System
- Go to Modelling
- Go to Source Systems
- Expand 'SAP' and Double click on 'RFC Connection'.
- Expand 'SAP Application Component'
- Expand 'Controlling' and Select 'profitability analysis'
- Right click
- Replicate Metadata.
- choose the 'S-x datasource' click on Continue
- Select the Co-PA dataSource
- Right click on it
- click on 'migrate'
- Then choose 'With-Export' option.
- click on 'Continue'!
- Now, data source has been Created.

Transporting of Objects

In SAP BI Environment we need to transport objects from development server to Quality server and production server regularly.

In Realtime Project landscape is looks like this .



In SAP BW/BI System, we can do transport activity in transport connection functional area.

Step 1: Logon to BW/BI System.

Go to Transport Connection.

↳ Double click on obj types

↳ Select info Cubes (I want to transport my specific info cube)

↳ Double click on select objects.

↳ Go to find.

↳ Enter required info cube name and select that info cube

↳ Click on 'Transfer Selections'

↳ Select 'only Necessary objects' under grouping.

↳ Click on 'Transport'.

↳ click on 'Enter'.

↳ click on 'Continue'.

Now, transport request proposal is generated.

Step 2:- Enter T-Code SE01 (Transport Organizer)

↳ click on 'Create'

↳ Choose 'Transport of Copies'.

↳ click on 'Copy'

↳ Enter the short description. 'Emp Inf Copy'

↳ Choose the Target System, browse and select system.

↳ Select Target 'PROD'.

↳ click on 'Copy'.

↳ click on 'Save'.

↳ click on 'Include objects' at menu bar.

↳ click on 'Request browser'

↳ click on Request/Task browser.

↳ Select the request what we have selected in transport connection.

↳ click on 'Execute'.

↳ Select the request (Development/Correction)

↳ click on 'Continue' and again click on 'Continue'.

↳ Select the request, what we have created in SE01.

↳ click on 'Release Directly'.

Step 3: Logon to Target System (PROD)

↳ Enter the T-Code STMS (Transport Management System).

↳ Click on 'Import Overview' at menu bar.

↳ Double click on 'ECC/PROD'

↳ Click on refresh.

↳ Select the request what we have sent from BI system.

↳ Click on 'Import Request' at menu bar.

↳ Provide the Target system Client number

↳ Under 'Date' Tab

Choose Immediate.

under 'Execution' Tab

choose Import Either

Synchronous Asynchronous

under 'Options' Tab

Overview Originals.

Overview Objects in Unconfirmed Repairs.

Overview Objects in Unconfirmed Repairs.

↳ Click on 'Continue'.

↳ Click on 'Yes'

↳ Refresh until status green.

TASK 18 :- Extraction of data using APD (Analysis process Designer)

RSA1 - Workbench → Modelling - Sources FF/ECC Target : IC/DSO/IO

RSANLIB - New workbench (APD) - Modelling

Sources :- flatfile / Info providers (IC/DSO/IO) / Database / BEX
Table Query.

Targets :- flatfile / Direct update / Database Info object
DSO Table

APD is a new workbench, introduced in SAP BI System.

This APD is used in analysis / planning systems to load planning data.

Extraction of Info cube data into flatfile :-

Enter the T-code RSANLIB

- ↳ Left side select 'General' folder
 - ↳ Right click 'Create'.
- ↳ Now, we enter Environment
- ↳ In APD screen, from datasources
 - ↳ Double click on 'Info provider'
 - ↳ Select the required 'Info provider' name (Info cube)
- ↳ Go to 'Field Selection' Tab. Select required characteristics and key figures to the left side.
- ↳ Now, click on Continue.
- ↳ Drag and drop the filter option from the transformations.
- ↳ Double click on the filter option.
- ↳ Under field selection tab, move the

↳ Go to filter Conditions tab, here specify filter conditions from and TO.

↳ click on Continue.

Drag and drop the flat file option from the data Target's area.

↳ Double click on flatfile

↳ choose 'Client Workstation' / 'Application Server'.

↳ Choose the output file from the browser and provide the filename.

↳ Choose the write mode

'Create file Again' If Already available : Overwrite.

↳ Enable the

Insert Header Row with field Names in the first row of the file.

↳ Go to 'csv' file properties' tab

Separator 

Separator Field Name / Info Object 

↳ Click on Continue.

Provide the link between the source, filter & flatfile by drag the red Colour arrow mark.

↳ Activate the APD.

↳ Provide the name of the APD and Execute the APD.

Now, the flat file has been created in our local system what we provided in the path.

Note:- APD can't be used in process chains.

TASK 19 :- Extract the data using Open Hub destination.

- OHD is a object in SAP BW/BI System.
- By using OHD, we can take info Cube, DSO, info object, multiprovider as a sources.
- We can extract the above mentioned targets data into either flatfile or database table.
- OHD is known as SAP BW system 'info Spoke'

Info Spoke :- SAP BW System.

Go to RSA1OLD

↳ Select the required target as source (DSO)

↳ Go to Menubar

↳ Tools

↳ Open Hub Service

↳ Create Info Spoke.

↳ Click on 'Info Spoke'

↳ Provide 'Info Spoke technical name'

↳ Click on 'Create'.

↳ Provide the description.

General Tab

↳ Choose Date Source as DSO

Destination Tab

↳ Provide short description.

↳ Choose file

↳ Choose the file directory as desktop.

↳ Separator is 

Info Objects Tab

↳ Move the source fields into Info spoke fields

↳ Click on Arrow,

T-CODES

- RSA1 - Administrate DWH workbench on BW System.
 - RSA101 - Administrate workbench in BW System.
 - SE11 - Create/Delete a Table
 - SE16 - Display a Table.
-

↳ Activate the info spoke

↳ Continue.

↳ click on **Dialog** on menubar.

↳ click on Continue.

Now check the file in desktop. File has created two types

1. Specification file

2. Actual file.

OHD - SAP BI System:

Enter T-Code RSA1

↳ Modelling

↳ click on 'Open Hub destination'.

↳ Select info area.

↳ Right-click, create OHD.

↳ Provide OHD name emp2 & description.

↳ Choose object type DSO & Enter DSO name

↳ Click on Continue.

Destination Tab

↳ Choose the destination type (e.g. 'Database Table')
(/BIC/OTHEMP2 automatically generated)

Field Definition Tab

↳ Select the required characteristics.

Now, under Info area OTD has created.

- ↳ Right click on OTD and click on 'Transformation'
- choose the Object type DSO
- ↳ Provide the name of the DSO ^{emp-dso}.
- ↳ Click on Continue.
- ↳ Activate the Transformations.

Right click on OTD

- ↳ Click on 'Create DTP'
- ↳ Click on Continue.

PROCESS CHAINS

- Process chains are automated system to fetch the record into SAP BI/BW System.
- In process chains, we can provide scheduling option. So that in specific time, it will fetch the records from source to target.
- First of all prepare the modeling in SAP BW/BI system and then put it into process chains.
- To create process chain T-code is RSPC
- To monitor the process chains T-code is RSPCM
- In process chains three types of views are there.
 1. Planning View
 2. Check View
 3. Log View

In planning view, we can design the process chains.

In check view, we can debug the process chains.

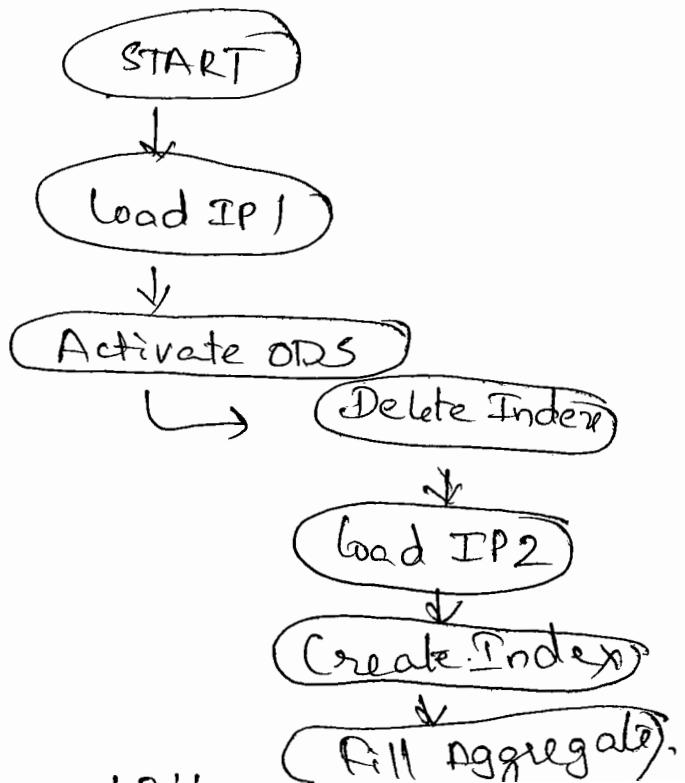
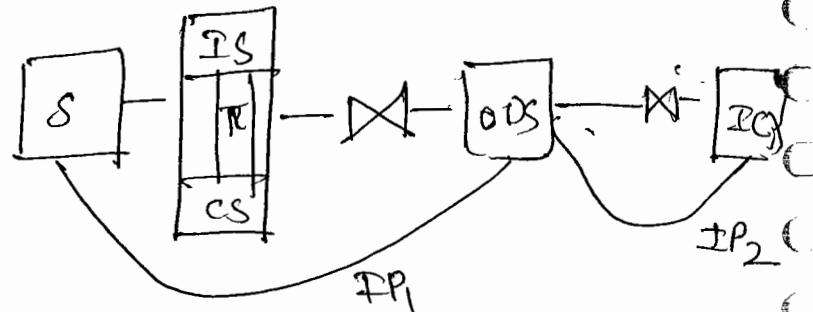
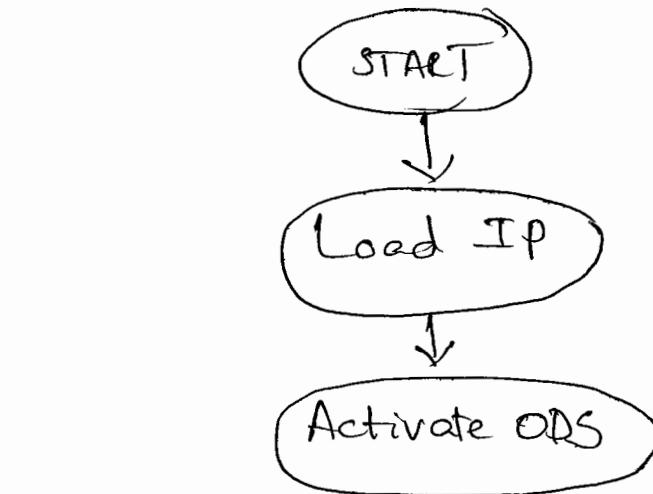
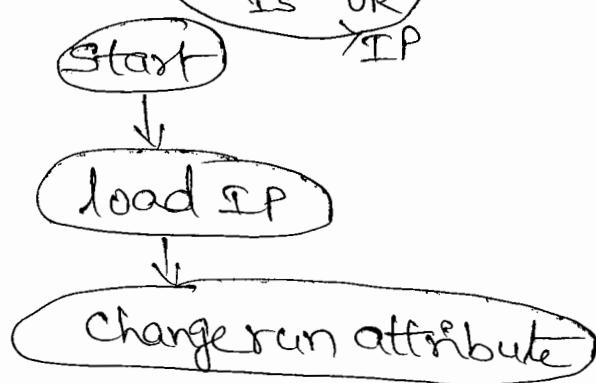
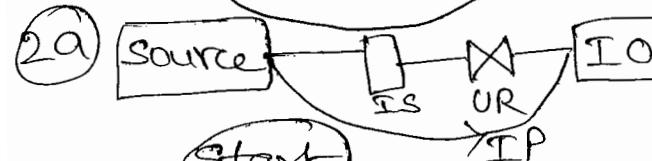
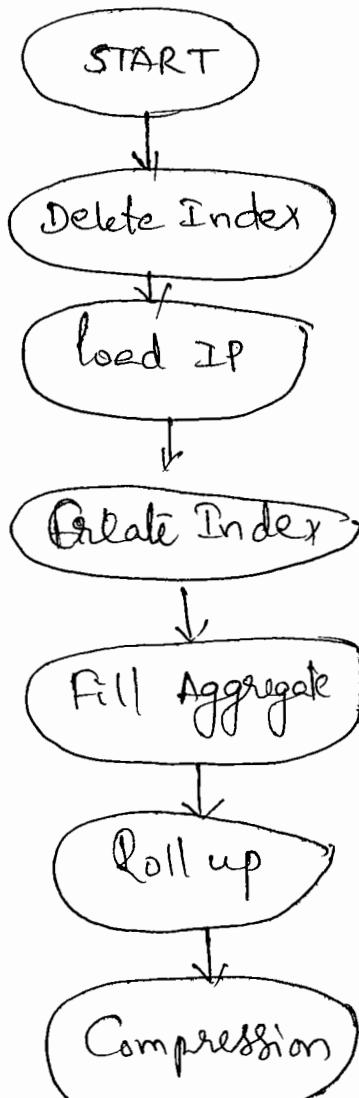
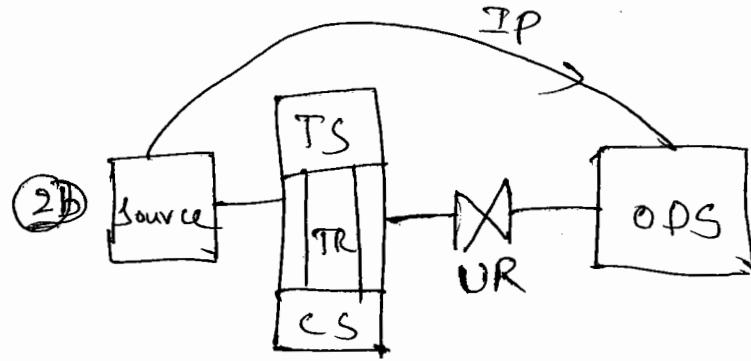
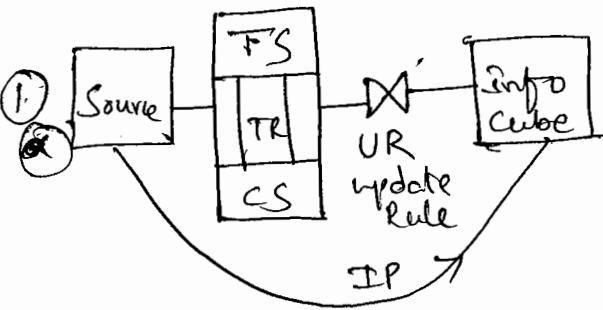
In log view, we can see when process chain was started and finished.

Process chains can't be used in local file system or client work station.

If we run the process chain, the source file must be maintained in application server.

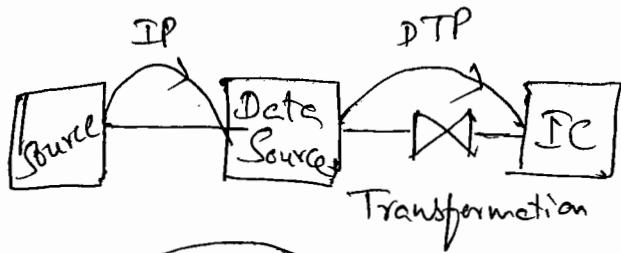
Process Chain Diagrams 1.

SAP BW System.

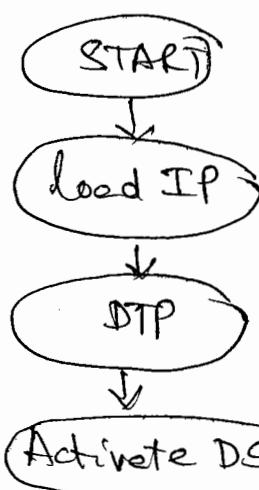
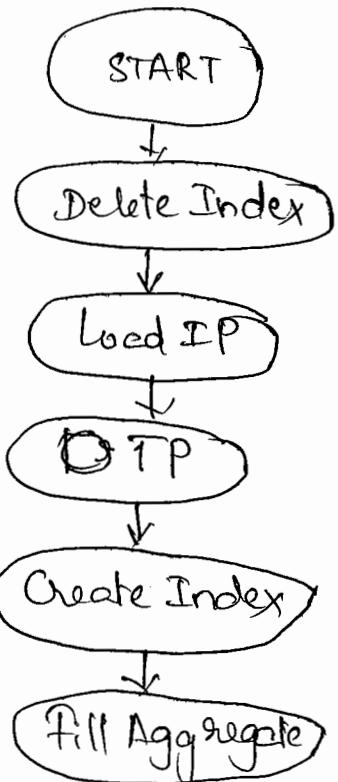
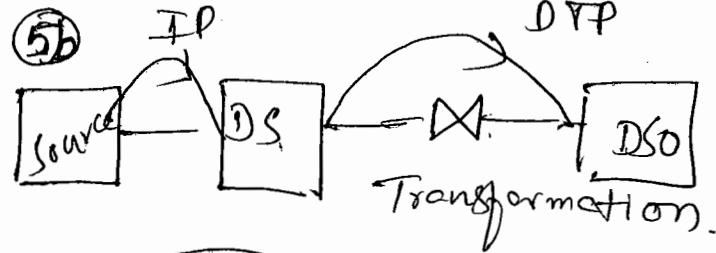


SAP ISL System

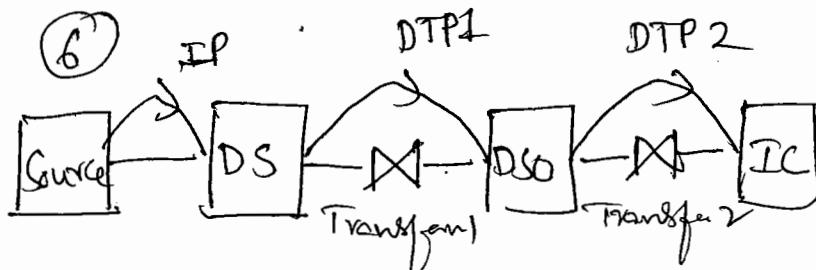
(4)



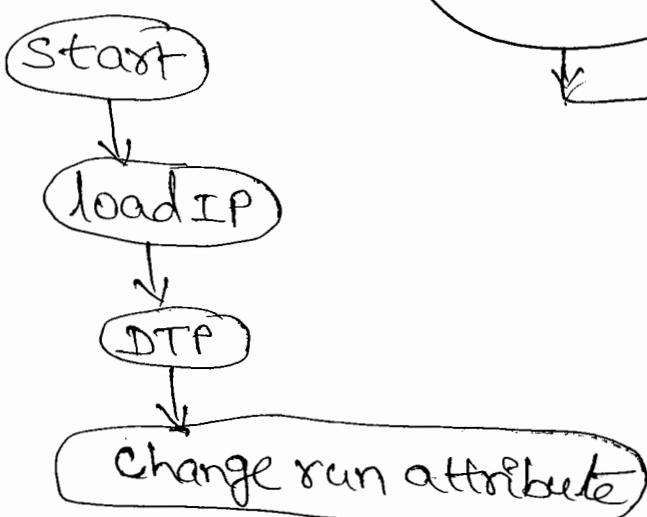
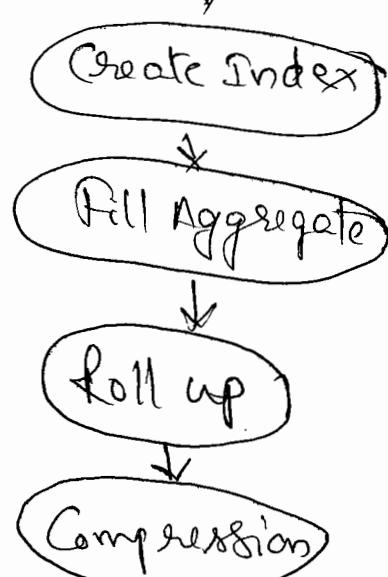
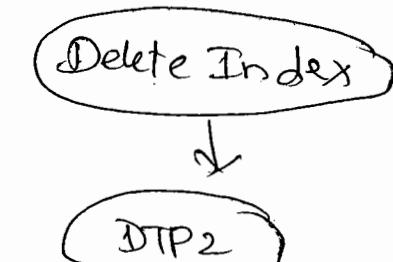
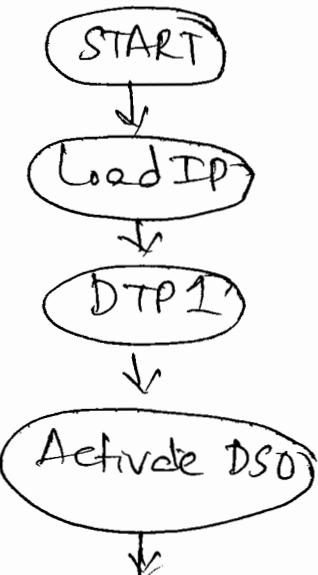
(5a)



(6)



(7a)

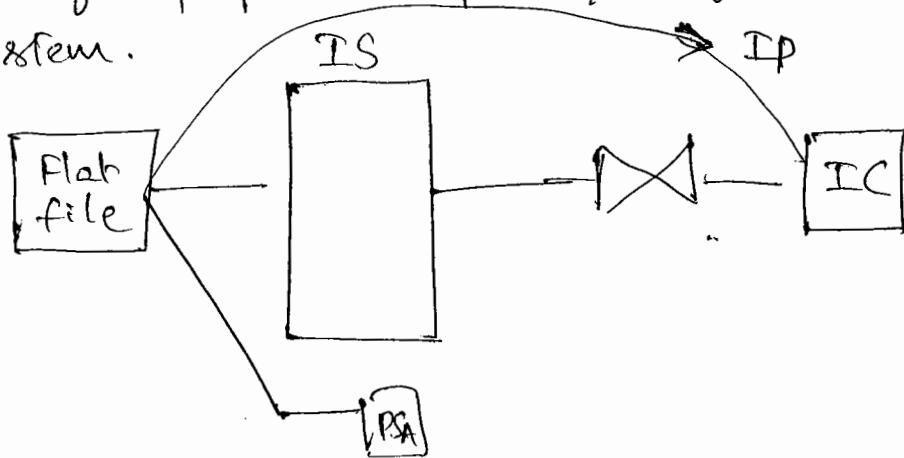


Task 20: Loading flatfile data into infocube in SAP BW system using process chains.

Let us take the following flatfile.

E NO	ENAME	Desig	sal
101	David	SE	60,000
102	Rasool	BM	90,000
103	Sandhya	Account	45000

First of all prepare the path b/w flatfile to info cube in SAP BW system.



In info package level under Extraction tab, choose Application Server (we need to copy our flatfile in application server), the path is

DIR-DATA D:\usr\sap\Dev\DEV-BM-G-S03\data

Name of the file take from the browser.

↳ Click on AL11 files.

↳ Double click on DEV DIR-DATA

↳ Select our required flat file what we have pasted here.

↳ Click on 'Copyname'

↳ Choose the file type.

↳ Save the Info package.

Assignment :- 1

Cid	CMM Level	HIC reg year	Phone
1001	3	2008	XXXX
1002	2	2009	XXXX
1003	3	1996	XXXX
1004	4	2004	XXXX
1005	2	2010	XXXX

Cid	Cname	Region	Branch	Stgcl Emp	Turn over
1001	Sysyord	North	Delhi	250	20Cr
1001	Sysyord	North	Alchabad	120	10Cr
1001	Sysyord	North	Lucknow	70	2Cr
1001	Sysyord	South	Chennai	100	4Cr
1002	Valuent	North	Noida	150	10Cr
1002	"	South	Bang	100	5Cr
1003	Strent	North	Pune	200	6Cr
1003	Strent	South	Mumbai	90	3Cr
1004	Mefasys	North	Lucknow	250	15Cr
1004	"	South	Hyd	60	4Cr
1005	Cofent	South	Hyd	60	4Cr

- ① Master data Attribute loading
- ② Transactional data - IC/PSO
- ③ Hierachial loading.

click on 'process chain maintenance' in Menu bar.

- ↳ Provide the process chain Technical name and description.
- ↳ click on 'Continue'.
- ↳ 'Insert Start process'
- ↳ click on Create 'Start process'
- ↳ provide Technical name and description.
- ↳ click on Continue.
- ↳ click on 'Change Selections'
- ↳ click on Immediate.
- ↳ click on 'Save'
- ↳ click on 'Save' the Start process Time.

- ↳ click on 'Create' 'Delete Index'
- ↳ Provide the technical name and description.
- ↳ click on 'Continue'
- ↳ choose the Object type 'Info Cube' .
- choose the object name 'info cube name' from the browser
- Goto find and search for info cube.
- Select the required info cube .
- click on 'Transfer Selection'
- ↳ Click on 'Save'
- ↳ Go 'Back'
- ↳ Continue .

Go to left side Menubar

- ↳ Click on process types -
- ↳ Expand 'Data Target Administration'
- ↳ Double click on 'fill Aggregates' process types.
- ↳ click on 'Create'
- ↳ 'Insert Initial fill of New Aggregates'
- ↳ provide technical name and description
- ↳ choose the object type 'Info cube'.
- ↳ click on 'Save'
- ↳ Go 'Back'
- ↳ Continue .

Under 'Data Target Administration'

- ↳ Double click on '(Rollup)'

- ↳ Click on 'Continue'.
- ↳ Choose the object type info cube name.
- ↳ Save
- ↳ Back
- ↳ Continue.

Go to 'Data Target Administration'.

- ↳ Click on 'Compression of the info cube'.
- ↳ Click on 'Create'
- ↳ Provide technical name and description.
- ↳ Click on 'Continue'.
- ↳ Choose the object type and choose info cube name
- ↳ Save
- ↳ Go 'Back'
- ↳ Click on 'Continue'.

Now, we have created all the required process types. Now we try to provide link b/w process types.

Rightclick on the 'START' process type

- ↳ Connect with
- ↳ Fronital Fill
- ↳ Delete index.

Remove the link b/w Delete index and Create index.

Remove the link b/w Create index and Load IP.

Rightclick on 'Delete index'

- ↳ Connect with
- ↳ 'Load Data'

Right click on 'load IT'

↳ Connect with

↳ Create index.

Right click on 'Create Index'

↳ Connect with

↳ Create index.

Right click on 'Create Index'

↳ Connect with

↳ 'Fill Aggregate'

↳ choose 'Successfull'

↳ click on 'Continue'

Right click on 'Fill Aggregates'

↳ Connect with

↳ 'Adjust'

↳ click on 'Continue'

Right click on 'Adjust' Rollup

↳ Connect with

↳ Compression

↳ click on 'Continue'

Go to Process chain menu bar

↳ Click on 'Checking View'

click on 'Activate' the Process Chain

click on 'Schedule' the Process Chain.

↳ choose Job higher priority A.

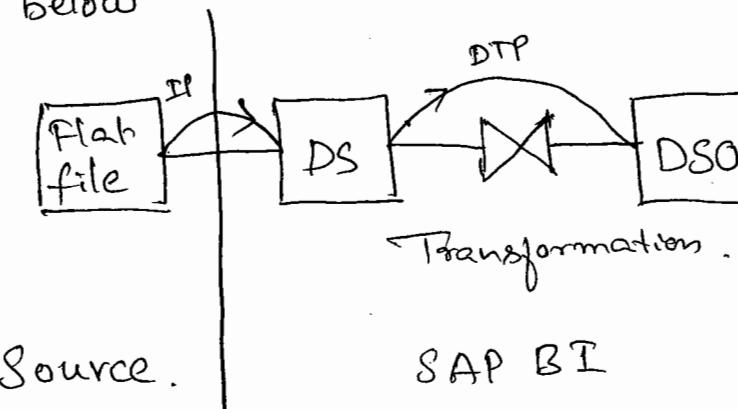
↳ Click on 'Continue'

Check the enforcement for data.

TASK 21:- Loading data from flatfile to DSO in SAP BI

Take the Sample flatfile as we are taken in TASK 20.

Prepare the modelling first b/w flatfile and DSO as mentioned below



After prepare the path b/w flatfile to DSO in SAP BI System
then try to put this into process chain.

Right click on the dataSource what we have created.

↳ Expand it.

↳ Double click on the info package.

↳ In info package menu bar

↳ Click on 'process chain maintenance'

↳ Provide the process chain technical name and description, (Emp)

↳ 'Insert start process'

↳ Click on Create provide the technical name and description of the start process time (Sta-Emp)

↳ Click on 'Continue'.

↳ Click on 'Change Selections'

↳ Click on 'Immediate' and save.

↳ Save the start process time.

↳ Back

↳ Then 'Start process type' is automatically creates remaining process types.

Load IP, DTP, DSO

↳ click on 'Check View' in menu bar.

↳ Now Activate the Process chain.

↳ Click on 'Schedule'

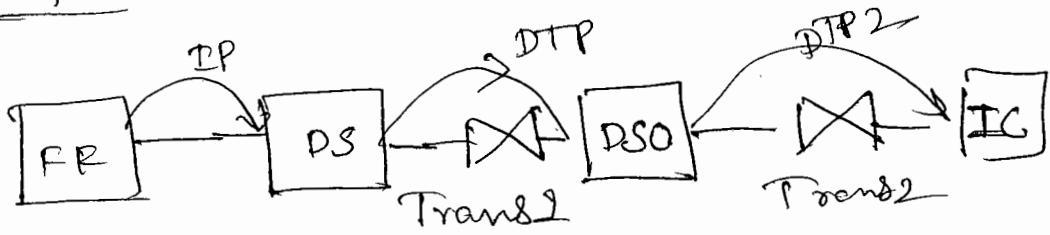
↳ Choose job higher priority 'A'.

↳ Click on 'Continue'.

Check the DSO for data.

TASK 22: Loading flatfile data into ~~DSO~~ DSO from DSO.
load data into info cube in SAP BI System.

Dataflow:



The above task Explain about process chain flat file to DSO,
Now we need to load DSO data into info cube.

So that, in process chain menu bar (RSPC)

click on 'Process types'

↳ Expand 'Load process and post processing'

↳ Double click on data transfer process

↳ Click on 'Create'.

↳ Choose the 'Target of DTP' is info cube

Enter the info cube name -

↳ Enter the source of DTP.

↳ Provide the DSO name.

↳ Click on Enter.

Extraction tab

↳ choose Extraction mode full

update tab

↳ choose 'Error handling' request green.

Execute tab

↳ Activate the DTP.

↳ click on 'Back'.

↳ click on 'Continue'.

↳ Again click on 'Continue'.

↳ Expand 'Data Target Administration'

↳ Double click on fill aggregates

↳ Click on Create

↳ Provide the Aggregates.

↳ Click on Continue.

↳ choose the object type and object name
(IC) (IC name)

↳ Click on 'Save'.

↳ Click on 'Back'.

↳ Click on Continue.

Under 'Data Target Administration'.

↳ Double click on 'Rollup'.

↳ Click on Create

↳ Provide technical name and description.

↳ Click on Continue.

↳ Choose the object type and object name

↳ Click on 'Transfer Selections'.

↳ Click on 'Next' ↳ Back ↳ Continue.

↳ In the same way one more process type 'Compression' also.

DATA FLOW MIGRATION

In SAP BW Projects, sometimes clients wants to migrate the projects to new version.

These kinds of activities comes under migration projects.

Without disturbing the data loading from source to target, we can able to convert old flow to new flow.

The following steps we need to follow for migrate 3.X flow into 7.X flow.

- 1) Migrate Transfer rules into pre transformations
- 2) Migrate update rules into Post transformations
- 3) Migrate 3.X datasource into 7.X datasource

(With Export / without Export)

TASK 23 :- Migrate 3.X Flow into 7.X flow in SAP BI Project.

- 1) Migrate Transfer rules into pre transformations ..

Logon to RSA1

↳ Modelling

↳ Info Sources

↳ Select the required info source, which we want to migrate.

↳ Expand it. Then here we can find transfer rule of this info source.

↳ Right click on the transfer rule

↳ Go to 'Additional functions'.

- ↳ click on 'Create Transformations'.
- ↳ choose 'Copy InfoSource 3: < to New InfoSource?' option.
- ↳ click on 'Continue'.
- ↳ Provide the InfoSource technical name.
Zis-prod-td-Copy-
- ↳ click on 'Continue'.
- ↳ Then we can get the message 'Transformation saved successfully'.
- ↳ click on 'Continue'.

Step 2:- Migrate Update Rules into post transformations.

- ↳ Go to info provider
- ↳ Select required info cube, which we want to migrate.
- ↳ Expand it
- ↳ Then here we can find update rules.
- ↳ Right-click on it.
- ↳ 'Additional functions'
- ↳ click on 'Create Transformation'.

Here automatically popup window shows with this option.

'Use Available InfoSource -

InfoSource Zis-prod-td-Copy.

- ↳ click on 'Continue'.

- ↳ Then we can get the message 'Transformation saved successfully'.

- ↳ Double click on the newly created transformation
- ↳ Click on 'Change'
- ↳ Click on 'Activate' the transformations.

Step 3:- Migrate 3-X dataSource into 7-X dataSource.

- ↳ Under modeling go to info Sources
- ↳ Select the required info source
- ↳ Double click on it.
- ↳ Expand transfer structure and transfer rule tab.
- ↳ Here we can observe the flatfile connection.
- ↳ Now, Go to Source Systems.
- ↳ Expand 'File' folder there double click on the required flatfile connection. Then we enter the specific flatfile connection related dataSource area.

There select the required 3-X dataSource.

- ↳ Right click on it
- ↳ Click on 'Migrate'
- ↳ Choose 'with Export' option.
- ↳ Click on 'Continue'.

Note:- without Export if we migrate 3-X dataSource into 7-X dataSource with this option, we can migrate 3-X to 7-X but we can't remigrate back ie 7-X to 3-X 136 with Export if we migrate 3-X dataSource into 7-X with

we can also re-migrate.

Then we have got the message 'data source ~~go~~ was migrated'.

Now Go to info Sources There Select Copy of the infoSource, Expand it

↳ Here we can find preTransformations with in active mode.

↳ Double click on it.

↳ click on 'change'

↳ 'Activate' the transformations.

A) Master data :-

- Master data, we can load into info object characteristic
- After load the records in master data, we can delete entire records from the info obj characteristic by following approach.

Right click on info Obj characteristic.

- ↳ click on 'Maintain master data'
- ↳ Then we can see master data information
- ↳ Select the individual records and go to menu bar click on delete.

This is for selective data deletion.

Right click on info Obj characteristic

- ↳ Click on 'Delete Masterdata'.
- ↳ Click on 'With SIDs'.
- ↳ Delete.

B) Info Cube :-

Right click on Info Cube

- ↳ Click on 'Manage'
- ↳ Go to 'Request' Tab. select the particular request id, we want to delete and click on delete.
- ↳ Click on 'Refresh'

c) DSO:

In DSO, internally data is available in two tables. Active data table and change log table. If you want to delete the request from the Active data table and change log table, we need to follow below approach.

Right click on the DSO

↳ click on 'Manage'.

↳ Go to 'MENU' bar, Select 'Environment'
'Delete change log Data'.

↳ Choose 'Older than' ^{Eg:} 10 Days.

↳ click on 'Start'.

↳ click on 'Refresh'.

↳ Go back

↳ Go back

↳ Select the request

↳ click on 'Delete'

↳ click on 'Yes'

↳ click on 'Refresh'

↳ Change the status Green.

↳ click on 'OK'.

d) Open hub destination:-

In OHD, we can move the infocube/DSO data to flatfile or database table. Then the particular file will be created in local system.

The following approach, we need to follow to delete the data in OHD.

Rightclick on Target InfoCube/DSO

↳ Manage

↳ Click on 'DataMart' Status, under
request tab.

↳ Select the ODI request and delete

↳ Continue.

How to delete the data from InfoCube if we are loading

from DSO :

Rightclick on the Source DSO

↳ Click on 'Manage'

↳ Click on 'DataMart' Status,

↳ Delete the request,

DEAN - Reporting

In SAP BI Projects, to generate reports we are using reporting tool as 'BEX' (Business Explorer).

If we want to create a report on top of SAP target, first of all we need to create a query on top of target using query designer.

The following are the Options, we can put in Query Designer.

Create a Report on top of Info cube :-

Create a query on top of info cube :-

Log on to Go to Start

↳ Programs

↳ BEX

↳ click on 'Query designer'

↳ Provide the Credentials

Click on Query

↳ Click on 'New'

↳ Go to 'Info areas'

↳ Enter the info cube name

↳ Click on OK

↳ Click on 'Rows/Columns'

Drag and Drop Required Characteristics into Rows panel,
Required Key figures into Column panel.

Go to Menubar

↳ Click on 'Query properties'

↳ In properties windows, click on 'Advanced' tab

Go to menubar

↳ click on 'Save All' -

↳ Provide the technical name and description.

↳ click on 'Save'.

Now, query has created successfully on info cube.

Let us execute this query of analyser of BBX -

Go to Start

↳ Programs

↳ Business Explorer

↳ click on 'Analyser'.

↳ click on 'Open' left side panel.
↳ 'Open Query'

↳ Provide the password

↳ click on 'OK'.

↳ Go to 'Favourites'

↳ Select the required query what we
Created Now.

↳ click on 'Open'.

↳ Then we can see the output in analyser.

tree characteristics:- tree characteristic is a report level filter.

If we place some characteristics into tree characteristic panel in query designer. It simply hide these characteristics information in report. At the runtime we can able to see data from these characteristics.

Filter Filter is a static in query designer...

- Filter option, we can apply only characteristics.
- Drag and drop the required characteristics into filter panel of query designer
- Right click on the characteristic and click on 'Restrict'.
- Here select the required values move to the right side and click on 'OK'.

Conditions:

- Condition is the filter apply to only key figures.
- In query designer menu bar
 - ↳ click on Conditions.
 - ↳ Conditions panel will open.
 - ↳ Right click on the Conditions pane and click on new Conditions.
 - ↳ Click on 'New'
 - ↳ Select the key figure which we required
 - ↳ choose the operator. (Equal To)
 - ↳ Choose Values
 - ↳ click on Transfer.
 - ↳ click on 'OK'.

Exceptions!: Exceptions are the alerters in reporting. By using Exceptions we can provide color coding to the specific records. We can create Exceptions on Key figure values based on specific cell restrictions (Characteristic Value).

Cell restriction!: Cell restriction is one of the option in Exceptions.

Go to Query designer Menu bar

↳ click on Exceptions.

↳ Then Exception panel can open.

↳ Right click on Exception panel

↳ Click on new exception.

↳ Double click on the new exception

↳ Click on 'New'.

↳ Choose Alert level

↳ choose Operator. and choose the Value

↳ Click on 'Transfer'

Go to Definition Tab

↳ choose the required key figure.

↳ Go to 'Cell restriction'.

↳ Click on 'New'.

↳ choose characteristic

↳ choose Operator.

↳ choose Value

↳ Click on Transfer.

↳ Click on 'OK'.

Restricted Key figure :-

This is also one type of filter. Restricted key figure can be represent as a separate column with specific characteristic value restriction. i.e put a filter on characteristic value with a reference to specific key figure.

If we create this under info provider level in query designer, is called as restricted key figure. This is also called 'global variable'.

If we create this under columns level in query designer, is called New Selection. This is also called 'local variable'.

In Columns panel

- ↳ Right click on the Key figure structure.
- ↳ click on 'New Selection'.
- ↳ Double click on it.
- ↳ Provide the description & technical name.
- ↳ Select the particular key figure, drag and drop to the right side.
- ↳ Select the particular characteristic, drag and drop to the right side.
- ↳ Right click on characteristic.
- ↳ Click on 'restrict'.
- ↳ Select the required values into selection.
- ↳ Click on 'OK'.
- ↳ Click on 'OK'.

Calculated Key figure

It can be represented as a separate column in report level. If we create this under info provider level it is called Calculated key figure is known as Global Variable.

If we create this under columns level it is called 'New formula'. It is called as Local Variable.

In column's level

- ↳ Right click on key figure structure
- ↳ Click on 'New formula'.
- ↳ Provide the technical name & description.
- ↳ choose the formula on available key figures according to requirement.
- ↳ Click on 'OK'.

Cell definition :-

We can ~~restrict~~ modify particular cell values for the report. Cell definition is intersection between Column structure and rows structure.

To define a cell, must be maintained structure in columns and in rows.

To Create a cell definition, Two structures must be needed, those are mandatory.

Let us take the following info cube.

ZPID	ProdName	ZCS	ZDSDS	ZFS	ZGM	ZRB	ZRS	ZWS
1101	LCDTV	40,000	30,000	35,000	10,000	32,000	45,000	25,000
1102	Washing	30,000	30,000	32,000	5,000	26,000	35,000	28,000

Open the BEX Query designer

- ↳ Click on 'New'
- ↳ Click on 'Info areas'
- ↳ Enter the required SAP target.
- ↳ Click on 'Rows/columns'.
- ↳ In Rows panel Right click.
- ↳ Click on 'New Structure'.
- ↳ Go to the Columns panel Right click.
Click on 'New Structure'.
- ↳ Drag and Drop the characteristics into free characteristic panel.
- ↳ In Columns panel
Create two selections. One is CY-Actual,
CY Actual retail. with Product id restriction
with 1101.
- ↳ Now Create New formula CY Actual percentage(%).
In this formula write like this
'CY Actual' %.A 'CY Actual Retail'.
- ↳ Now, Go to Menubar
click on 'Cells'
In CY-Actual retail cell, Right click on it
↳ Click on 'New Selection'.
In this new selection drag and drop the
Retail Sales into selection and drag and drop
Product id into selection with restriction of
Product id 1102.
- Do the same procedure for all the remaining
cells of CY Actual retail Column.

↳ Save the query and check the query information in report.

Cell reference:- By using this Option, we can ~~also~~ hide the data for particular cell.

In Query designer, cells panel

- ↳ Select cy Actual - Column first two cells
- ↳ Right click on it
- ↳ click on (cell reference)
- ↳ Go to Display Tab, click on Hide only option.

Help cells:- By using help cells, we can able to write the formula to the particular cells-

Right click on the Help cells

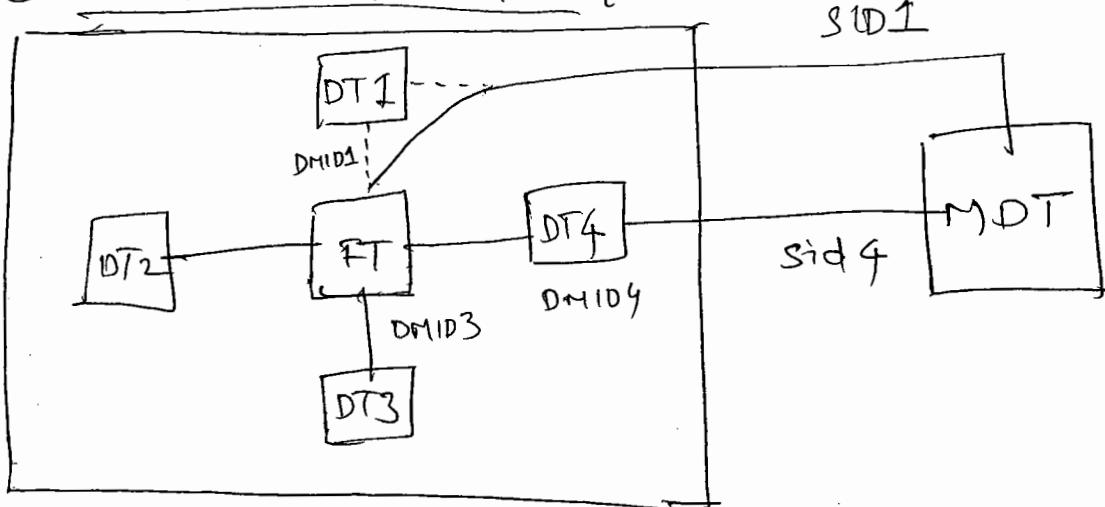
- ↳ click on 'New selection'

ADVANCED MODELING

To improve the loading performance, improve the reporting performance, we need to maintain some properties on top of infocube. These activities comes under Advanced modeling.

Performance Issues:-

① Line Item dimension :-



In infocube, DMID is a join b/w dimension table and

fact table, dimension table and master data table.

SID is a join b/w dimension table and fact table if more than 20%.

If the data in the dimension table is more than one, assign dimension

If the data is fact table data, then we can assign dimension of the fact table data.

table as line item dimension.

Table as line item & when we assign dimension table as line item dimension.

When we assign, ~~minimum~~
to a base view and the no. of joins can be

It will become view and in

reduced to 1.

The prerequisite to create dimension table as line item dimension, there must be only one characteristic by making line item dimension, we can improve reporting performance.

High Cardinality and Granularity

This is also used for improving performance in info cube.

If we contain particular characteristic data contains more than 20% of the fact data table data then we can assign place that characteristic into one dimension table and assign it as High Cardinality.

Once we make the high cardinality for the dimension table, then that table becomes view. The no. of joins can be decreased to 1.

Aggregates:- Aggregates are mini cubes or baby cubes within the info cube.

Aggregates we can create only on characteristics.

When we Create Aggregates:-

- if info cube contains large amount of data.
- if info cube contains more no. of navigation attributes.

We can create Aggregates on Navigation attributes also.

We can activate or deactivate the aggregates.

There is no limit to create aggregates in info cube.

Aggregates can create only on info cube.

Aggregates can improve reporting performance.

If we create more no. of aggregates, performance can be decreased.

If we create the Aggregate on characteristic, then it can sum up all key figure values.

Rollup:- Once Create the aggregates, immediately, we need to perform 'Rollup' on info cube.

- if Rollup is not perform on info cube then the info cube data can be displayed in the report before aggregate creation data.
- The data can't be shown after aggregate creation in info cube. So if we create the rollup on aggregate it can show the data in report.

Compression:- Compression is also called Collapse.

The path F fact table of info cube is /bic/Fcdf $\text{cdf} = \text{info cube name}$

E fact table of info cube is /bic/Ecdf

In info cube, there are two fact tables. One is F fact table, two is E fact table. Once data is loaded into info cube primarily data is present in F fact table. If we compress the info cube the data moved from F fact table to E fact table.

Compression of info cube is nothing but deletion of the request.

To reduce the memory size of the info cube

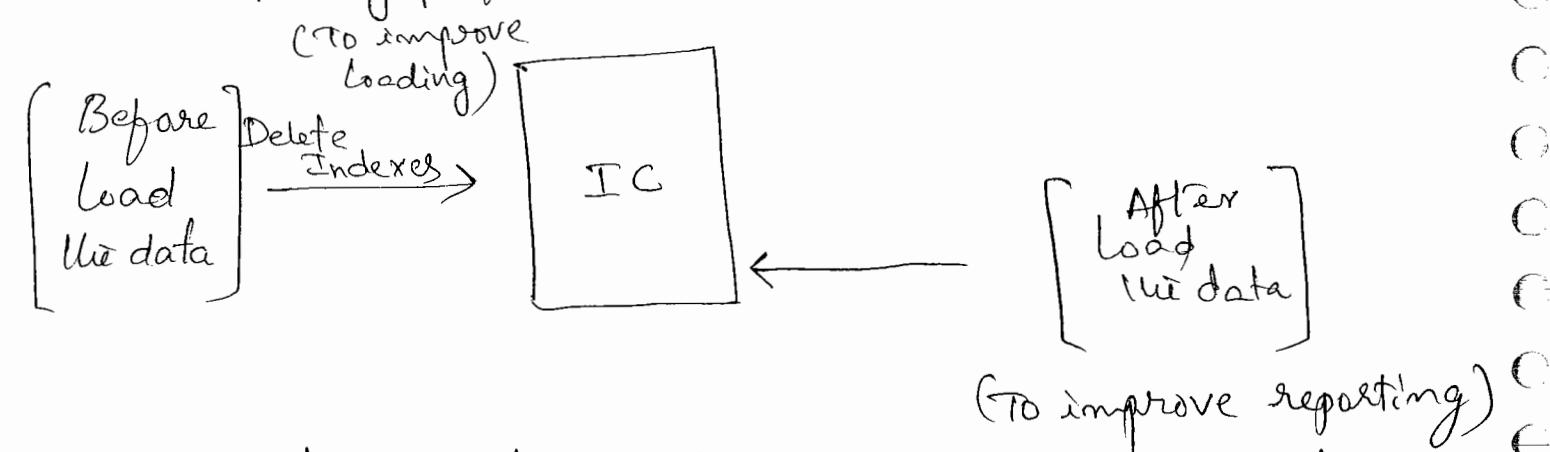
If we load the data into info cube, those records can be stored in info cube with request ids. These request ids occupy some space in info cube. If we delete the request ids from info cube so we can increase the memory space. This process is called compression of the info cube.

Compression is used to improve loading

performance of the info cube.

Indexes: Indexes we can create only on info cube.

- Indexes are used to improve loading performance and reporting performance.



- Whenever load the data into info cube, we need to delete the indexes to improve the loading performance.
- Whenever generate the report on info cube, we need to create the info indexes to improve reporting performance.
- Initially when we create the info cube it contains primary indexes.
- Primary indexes follows linear search i.e record by record search.
- To improve the loading performance into info cube, we need to delete the primary indexes.
- After data is loaded then we need to create the indexes. That index is called secondary indexes.
- Secondary indexes follows binary search i.e O,1 search.
- Before compression secondary index follows bit map search.
- After the compression secondary index follows b-tree search.

Compare to bit map B-tree search is very fast.

Right click on info cube

↳ Manage

↳ Go to 'Performance' Tab.

↳ Create index.

↳ we can create, delete and repair index.

Partition! - Partitioning we can create only on info cube.

Partitioning is used in reporting performance. To do partitioning we are using the following time characteristics.

1. OCalmonth/Month (OCALMONTH)

2. OFiscalyear/Period (OFISCPER)

Before load the data into info cube only, we can create partitioning. But after load the data we can't create partitioning.

While create the infocube, place the required characteristics into dimension table and place the required key figures into key figure folder & place the time characteristics OCALMONTH/ OFISCPER into TIME dimensions.

Go to menu bar

↳ Extras

↳ DB Performance.

↳ Partitioning

↳ Select the time characteristic
OCALMONTH/ OFISCPER .

↳ click on continue.

In Value range POPUP window, we need to provide from and to value.

Format has to give.

From 01.2013 To 12 2013

- ↳ Provide the maximum no. of partitions say 4
- ↳ click on Continue.
- ↳ Activate the info cube.

Repartitioning :-

- Repartitioning. we can perform only on ~~info cube~~ SAP BI System.
- Once we load the data into info cube, we can't perform repartitioning in SAP BW system.
- To partitioning the info cube, the following time chars must be present in info cube.
OCALMONTH, OFISCPER
- Repartitioning includes 3 Options.
 1. Add partitioning.
 2. Merge partitioning.
 3. Complete partitioning.

Add partitioning :- if we want to increase no. of partitions then we choose add partitioning.

Merge partitioning :- if we want to reduce no. of partitions then we choose merge partitioning.

Complete partitioning :- if we want to create complete custom partition then we choose this method.

Right click on infocube

↳ Repartitioning.

↳ choose processing options

Add, Merge or Complete

↳ click on initialize.

↳ click on 'Yes'

↳ Specify the MMYY

↳ click on Continue

↳ click on immediat

↳ click on 'Save'

↳ click on 'Monitor'

↳ check the status of the partition.

Remodeling :- Once the data is loaded in infocube, we can't remodel this in SAP BW System.

Whereas in SAP BI System, even data is loaded into infocube, we can also remodel the cube.

RC on info cube

↳ Additional functions

↳ Remodeling

↳ click on Continue.

↳ Provide the Remodeling rule.

↳ click on Create.

↳ provide the description of the rule

↳ Click on Transfer

↳ click on left side menu bar

↳ 'Add an operation to list'

↳ add, delete & replace

- ↳ choose one of the option Add/Delete/Replace chars/KFs
- ↳ Save the remodeling rule.
- ↳ click on Schedule
- ↳ click on 'start immediately'.

Assignment:

