

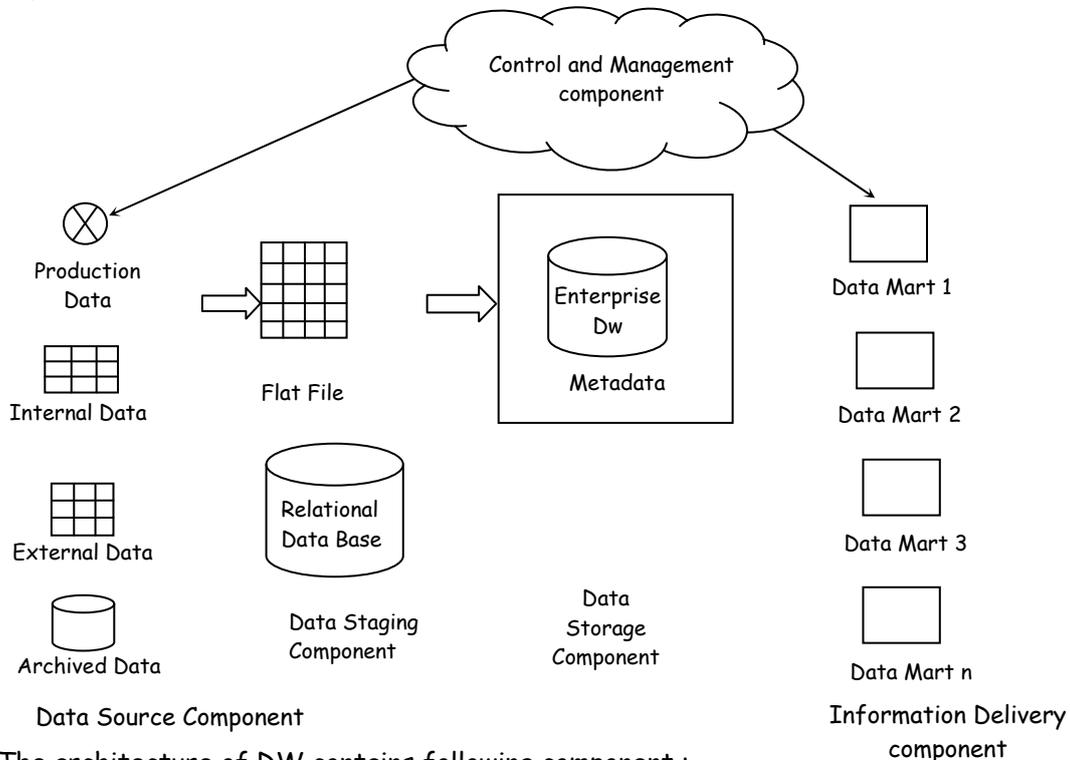
Q.1 Attempt any TWO question of the following :

[10]

Q.1(a) Explain Data Warehouse Architecture.

[5]

Ans. :



The architecture of DW contains following component :

(i) Data Source Component :

- This component is responsible to provide data that will get store inside the DW.
- It provides following types of data.
 - (1) Production Data : It is the Operational Data which is obtain from input Process & Output Component.
 - (2) Internal Data : It represent data which is obtain from employees information.
 - (3) External Data : It represent data of some other business organization which are having same business.
 - (4) Archived : It represent historical data of an organizational.

(ii) Data Staging Component

- It is also called as ETL Process.
- It extract data from data source component. Store it in the form of flat file & Relational Database, transform it into a common format & load that data into storage component.

(iii) Data Storage Component

- It contains EDW (Enterprise Data warehouse) in which all informational data will get store.
- It also contains meta data which gives additional information about the data which is present inside EDW.

(iv) Information Delivery Component

- Sometimes we can divide data from DW into different data marts in department wise, so that any one want data by referring a particular data mart they can refer or obtain corresponding data.

(v) Control & Management Component

- It is mainly used to control different component of DW i.e. it is used to check whether a particular component is having error or not OR whether all component are properly communicating or not.

Q.1(b) Differentiate OLTP database and Data Warehouse.

[5]

Ans. :

	OLTP	OLAP
(i)	It is a system which is used to managed operational Data.	It is a system which is used to manage informational Data.
(ii)	It is normally used by low level management.	It is normally used by top level management.
(iii)	It is normally use to perform Day to day transaction.	It is normally used to perform decision making.
(iv)	It manages small amount of Data.	It manages huge amount of Data.
(v)	It manages only current Data.	It manages current as well as historical Data.
(vi)	It has very less response time.	It has very high response time.
(vii)	Data will get store inside Database.	Data will get store inside Data warehouses.

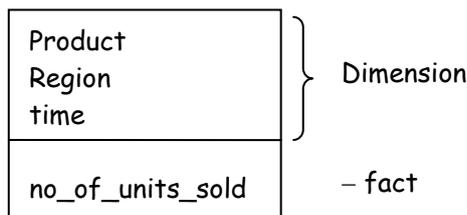
Q.1(c) Explain the various types of additivity of facts with examples.

[5]

Ans. :

- Facts should always additive in nature.
 - It means they should support one of the following types of additivity.
- (i) **Fully Additive fact** : If summation of all dimension will give some meaningful result about a particular fact, then it is called as fully additive fact.

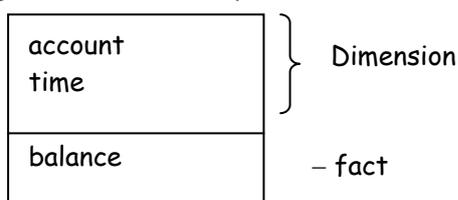
eg :



Here summation of no. of units sold of all products or all region or all time will give total no of units sold of the entire organization, hence it is fully additive fact.

- (ii) **Semi Additive Fact** : If summation of some dimension, but not all will give some meaningful result about a particular fact then it is called as semi – additive fact.

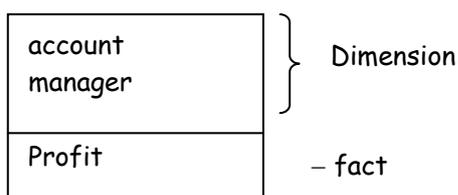
eg :



Here summation of balance of all accounts will give total balance of a Bank But summation of balance of all times does not give total balance, hence it is semi – additive fact.

- (iii) **Non – additive fact** : If summation of none of the dimension will give some meaning result about a particular fact then it is called as non – additive fact

eg :



Here summation of profit of all accounts or all manager will not give the profit of entire bank, hence it non additive fact.

Q.1(d) What are the various levels of data redundancy in data warehouse? [5]

Ans.: **Data Redundancy** : Following are different redundancy level or type of DW :

(i) Virtual or point to point DW

- It is imaginary DW in which we consider any one of the operational as DW.
- We let user perform different operation on such virtual DW.
- The main idea is we can observe different need & requirement of different user, so that all this thing can be consider while developing actual DW.

(ii) Centralize DW

If there is only one DW for entire organization & all informational Data is present inside that single DW then it is called as centralized DW.

(iii) Distributed DW

- If there are multiple DW & Data is divided into this DW, then it is called as Distributed DW. Normally we create multiple DW region wise.

Q.2 Attempt any TWO question of the following : [10]

Q.2(a) What is Listener? Write a procedure to create a listener. [5]

Ans.: **Listener**

- Listener is a service which we want to configure at server side if we want to listen or receive a request or a data from a client.
- Configuration of listener includes following steps :

(i) Operation

As we want to configure a listener here we need to select the operation "Listener Configuration".

(ii) Options

This step display four option i.e. "Add", "Reconfigure", "Delete" & "Rename".
If we want to configure the listener, we need to select the option add.

(iii) Listener Name

It is used to accept an appropriate unique name to listener for accessing it.

(iv) Protocol

It is used to select the appropriate protocol for transformation. Normally we select "TCP", as we want to transfer data in packet format.

(v) Port Number

It is used to accept a port number for transferring data, normally we use "1521" Port number, which is a default port number for TCP.

After this, a final confirmation message will get display which represent a completion of Listener Configuration.

Q.2(b) Why and how is repository and workspaces configured? [5]

Ans.: Repository & workspace are server side component of OWB.

Following are different step which we need to follow to configure repository & workspace.

(i) Database information

It is used to accept hostname (i.e. local host). Port number (i.e. 1521) & service name (i.e. Database name)

(ii) Choose Operation

We also want to configure workspace along with the repository. Hence we select the Operation "manage warehouse Builder workspace"

(iii) Choose workspace operations

As we want to create a new workspace, we select the option "create".

(iv) New or existing user

Here we select the appropriate option to create a new workspace user.

(v) DBA information

It is used to accept DBA user name (i.e. system) & its password.

(vi) **Workspace owner**

It is used to accept workspace user name, password & workspace name to access workspace.

(vii) **OWBSYS information**

OWBSYS is a schema of workspace. Here we accept it is user name & password, which will get used whenever we want to change the structure of workspace.

(viii) **Select Tablespaces**

It is used to specify different users which can access Tables inside the workspace.

(ix) **Select Languages**

It is normally used to select the appropriate base language i.e. American english for the repository.

(x) **Workspace users**

It is used to select different additional workspace user as well as create them to access workspace.

After this a confirmation message will get display which represent the a creation of repository & workspace.

Q.2(c) What is defined in the Project Explorer Window, Connection Explorer Window and Global Explorer Window in the Design Center screen? [5]

Ans.: • Design center is used to create or provide user interface to access all source Data & target data.

• Following 3 are main components of design center :

(i) Project Explorer or Project Navigator

- It is used to create different new projects to perform different operation.
- Every project contains different components among which database is most important component as it is responsible to store data of that project.
- Database component has following 2 components :
 - (a) Oracle : It is responsible to store oracle data of a particular project.
 - (b) Non-oracle : It is responsible to represent non-oracle data for a particular project.

(ii) Connection Explorer or Location Navigator

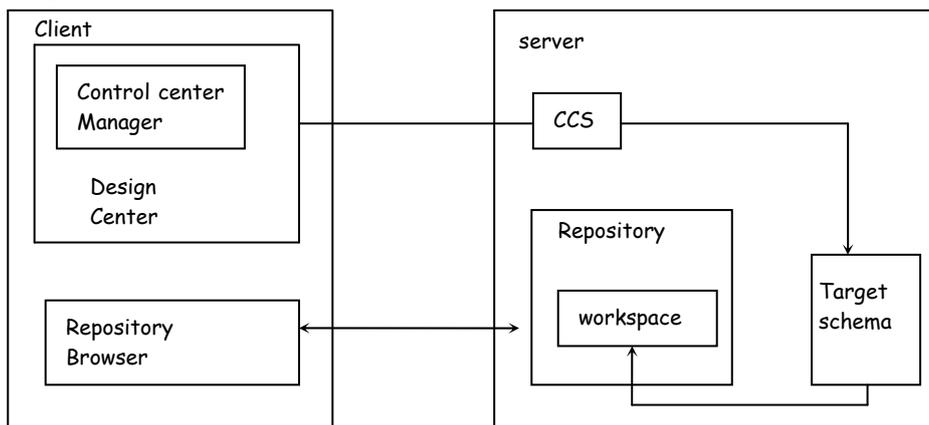
- It is responsible to establish connection among different project components.
- It is also called as Location navigator as it is used to represent location or memory for newly created module.

(iii) Global Explorer or global navigator

This component contains different object which are common to all project. It is also used to create different types of user. For different components.

Q.2(d) Explain OWB components and architecture with diagram. [5]

Ans.: OWB (Oracle warehouse Builder) is a s/w which is used to access a datawarehouse from client side, if DW is present at the server side. The Architecture of OWB contains following component :



(i) Design center

It is a client side component which is used to provide user interface to access data from different OWB components.

(ii) Control Center Manager

It is present inside the client side & use to create a physical view of data. It means it accept data & convert it into cubes & Dimension. After converting data it will send data to Target schema via control center service.

(iii) Target schema

It is a server side component which contains which contains ETL Process. It accept data from control center manager Transfer it into appropriate form & Load that Data into Workspace.

(iv) Repository

It is a server side component which contains metadata to provide addition information about the DW. It also contains workspace component.

(v) Workspace

It is Present inside repository & it mainly contains DW.

(vi) Repository Browser

It is a client side component which is mainly used to access repository from client side.

Q.3 Attempt any TWO question of the following :

[10]

Q.3(a) What is module? Explain source module and target module.

[5]

Ans.: Module

- Module is repository in which we can store a data.
- Module will not created automatically we need to create a module and store data into it manually.
- There are two types of modules.

(1) Source Module

- This module contains metadata which gives an additional information about the data of dataware house.
- There are three types of source modules.
 - (a) Oracle db Module : It contains metadata which is obtain from oracle data
 - (b) SQL Server Module : It contains metadata which is obtained from SQL server data.
 - (c) Flat File Module : It contains metadata which is obtained from flat files.

(2) Target Module

- It is also called as target schema.
- In OWB it accept physical data, transform it into common format and load that data into repository. Hence, it is also called as 'ETL' process.
- To handle target module, we use target user.

Q.3(b) Differentiate between relational model (star schema) and multidimensional model. [5]

Ans.: (i) Relational Implementation (star schema)

- In this we represent data with the help of star schema.
- A star schema contains a central fact table, which is surrounded by multiple dimension table.
- Following are 2 steps which can be used in Relational Implementation.

Step 1 : Identifying Dimension

- Dimension are the Data with respect to which we want to analyze fact.
For eg : If we want to analyze sale of a particular product, in a particular store (Region). At a particular time.
- Here we want to do analysis for 3 data i.e. product, store, time, hence this are Dimension.
- After getting the dimension, first we need to build Dimension Hierarchy table.

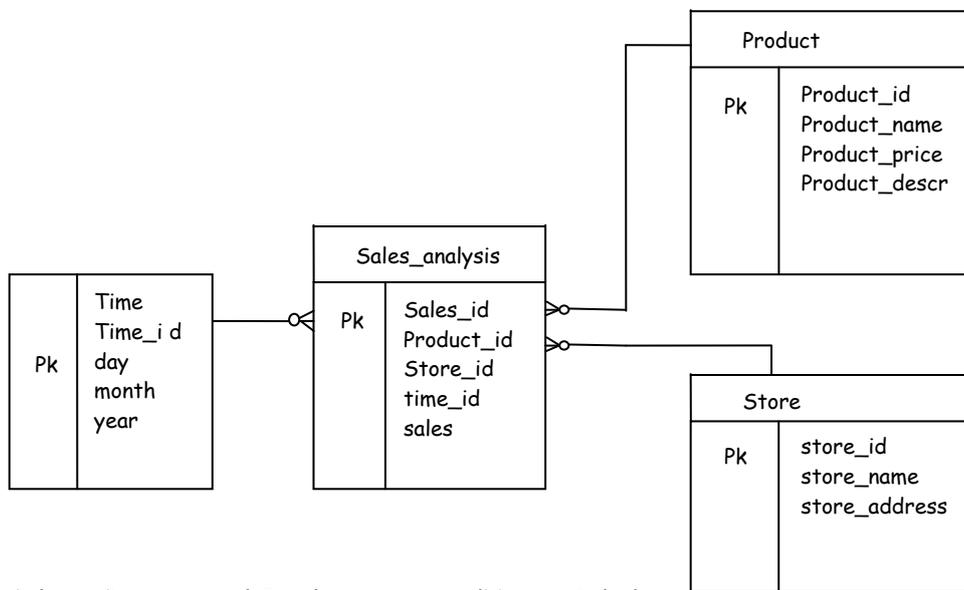
DHT

Product	Store	Time
Category	Country	Year
↓	↓	↓
Item	State	Quarterly
	↓	↓
	City	Month
	↓	↓
	area	Week
		↓
		day

Dimension Hierarchy table represent different Levels using which we can analyze dimension.

Step 2 : Identifying fact

- fact representing Data that is to be analyze.
- for eg : If we want to analyze "sale", then it will become a fact
- fact is normally placed in fact table which can be analyze using different dimension



(ii) Multi – Dimensional Implementation (Hyper Cube)

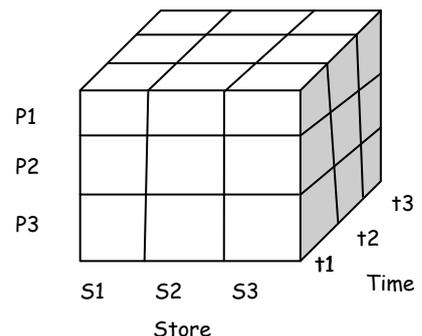
- In this to represent a data, we use multidimensional cube or hyper cube.
- Following are 2 steps which we need to perform in multidimensional implementation.

Step 1 : Identifying Dimension

- Dimension is a data with respect to which we want to analyze fact.
- for eg : we want to analyze sale of a particular product, in a particular store at a particular time.
- In this we want to analyze data for different product, stores & time, hence this are dimensions.
- As there are 3 Dimensions, we can analyze data using 3 dimensional cube.

Step 2 : Creating a cube

- After identifying a dimension we need to understand fact.
- Here we want to analyze "sale", hence it is a fact.
- "Sales" fact can be analyze using following 2 majors : Quantity & amount.
- By placing different dimension on different axis of a cube, we can create following Hypercube.



Q.3(c) Explain creating a time dimension with the time dimension wizard.

[5]

Ans.: In OWB, we can create Time Dimension to analyze "sales" wrt Time

(i) Attributes :

Attribute Name	Type
Date	DATE
Day	VARCHAR2
Month	NUMBER
year	NUMBER

(ii) Levels

Year
Quarter
Day
Week
Month

(iii) Level Hierarchy

Year
Quarter
Month
Week
Day

(1) Creation of time Dimension using Time Dimension Wizard :

Following are different step which we need to follow for creating Time dimension :

Step 1 : Name & Description

It is used to accept name of dimension (i.e. Time) & it is corresponding description.

Step 2 : Storage

In this we normally select the option "ROLAP", as we want to use Relational data & high volume of data.

Step 3 : Data generation

It is used to accept starting year, number of year & year type (i.e. calendar or fiscal year)

Step 4 : Levels

In this we need to decide different levels for which we want to analyze time dimension.

Normally we use following Level Hierarchy.

Year
Quarter
Month
Day

Step 5 : Pre Create setting

It display different Time dimension attribute along with their data types.

Step 6 : Progress Status

It displays a Status Bar which represent a progress of a creation of time dimension.

Q.3(d) What is use of canvas area in data object editor? Also explain the explorer and palette windows. [5]

Ans.: (i) It is a window which contains different object whose properties can be changed.

- It contains following 3 tabs :

(1) Relational

In this different objects of the canvas will get displayed in table format.

(2) Dimensional

In this different objects will get displayed in the form of cubes & dimensions.

(3) Business Defination

It is used to display the description of a particular object.

(ii) Explorer

It contains different object which can be dragged on canvas to change their properties.

It contains following two tabs :

(1) Available objects

It contains those objects which are currently not present on a canvas but can be dragged on a canvas to change their properties.

(2) Selected objects

It contains those objects which are currently present on a canvas to change their properties.

(3) Configuration

This component is responsible for changing a particular object which is present on canvas.

(4) Palette

It is responsible for creating a new dimension or a new cube dynamically.

Q.4 Attempt any TWO question of the following : [10]

Q.4(a) Explain the following operators: [5]

- (i) Cube operator (iii) External Table operator (v) Constant operator
(ii) Dimension operator (iv) Table operator

Ans.: (i) **Cube Operator**

This operator is nothing but a cube only. It display all the measures of a particular cube.

(ii) Dimension Operator

Dimension operator is nothing but a particular dimension. It displays different attribute of a particular dimension.

(iii) External Table Operator

It is a helper table which is use to complete a particular star schema.

(iv) Constant

It is used to provide the default values to some missing parameter.

(v) Table operator

It represent a staging Table which is used to store a copy source data to perform Transformation.

Q.4(b) Write the steps to connect source table to target using joiner operator with example. [5]

Ans.: After the creation of staging Table, to perform ETL process, we can copy source Table to a staging Table.

- For that we need to create a new mapping by right click on. "Mapping" object & selecting the option "new >> Mapping"
- It will open a mapping editor, in which we need to perform following 3 steps to perform stage mapping.

Step 1 : Adding Source Object

When we create different dimensions & a cube different backup tables will automatically get created which can be used as a source Table.

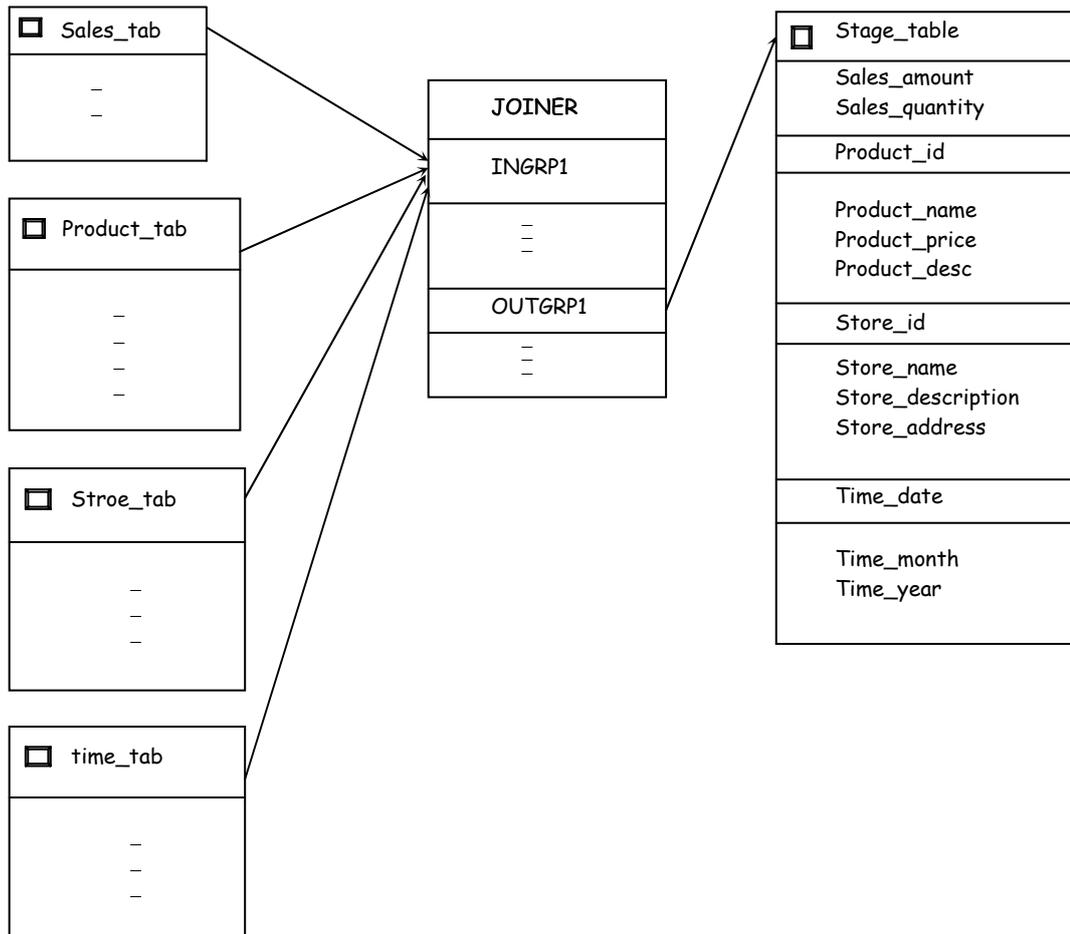
- In this we drag following 4 Tables as source Tables
 1. Sales – Tab
 2. Product – Tab
 3. Store – Tab
 4. Time – Tab

Step 2 : Adding Target Object

In this we want to copy source data to staging Table (stage Table), hence in this step we need to drag staging Table as a Target Table.

Step 3 : Connecting Source Table to Target Table using JOINER

- Here we want to copy data from source table to staging Table & for copying the data, we need to join them.
- To join different Source Tables to a Staging Table, we use JOINER, hence we need to drag JOINER on the mapping window.
- We need to connect all Source table to joiner & then joiner to staging Table, to perform a mapping.



Q.4(c) What is staging in data warehouse? List the advantages and disadvantages of staging. [5]

Ans.: ETL stands for Extraction Transformation & Loading :

- In this we transfer data from one form (source data) to another form (target data).
- It is a mechanism by which we can extract the source data, transform it into target data & load it at target side.
- The main Problem of ETL is it is very difficult to transform data if source data & target data are in different format or are from different vendors.
- To solve this problem we use the concept of "Staging".
- Staging is a mechanism in which we extract source data, create its copy & store that copy in temporary table (staging table) perform transformation on that table & after successful transformation load that data at target side.
- Staging has following advantages :
 1. It is normally used when source & target data are from different vendors.
 2. It is normally used when we want to transfer large amount of data.
 3. It is normally used when lots of transformations are involved.

4. If we do not stage data then the original copy of data will get lost.
5. If we do not stage data & in between the transformation, if some failure occurs then the entire data will get lost.

Disadvantages of staging are :

1. It takes high response time, as transformation is not direct & storing data inside a staging table takes lots of time.
2. It takes large amount of memory for implementing staging table.

Q.4(d) Discuss in detail the constraints tab in the Data Object Editor in OWB. [5]

Ans.: Constraints

It is used to set following 4 types of constraint to a particular attribute.

(i) Primary Key

It represent that a particular attribute is a primary key of a staging Table.

(ii) Foreign Key

It Represent that a particular attribute is a foreign key i.e. primary key of some other table.

(iii) Unique Key

It Represent that a particular attribute is an unique key, unique key is a primary key which can not be use as a foreign key to some other Table.

(iv) Check constraints

It Represent that a value of a particular attribute will fall under a particular Range.

Q.5 Attempt any TWO question of the following : [10]

Q.5(a) What is expression operator? Explain the mapping of a data field SALE_DATE to a numeric field DAY_CODE by applying TO_CHAR() and TO_NUMBER() functions through expression operator. The string format for TO_CHAR() function is 'YMMDD'. [5]

Ans.: Sales Cube Mapping

- This mapping is normally used to convert a staging table into a sales cube.
- For that we need to Right click on "Mapping" & select the option "New → mappings".
- It will open mapping editor in which we need to drag staging table as a source table & sales cube as a target table.

(i) Sales cube Attributes

- A sales cube normally contains following 2 types of attribute :

(1) Measures attribute

It Represent different measure using which we can count a particular fact

eg : amount

quantity

(2) Dimension Attribute

It Represent primary key & business identifier of different dimensions

eg : Pid – primary key

pname – Business Identifiers

sid – primary key

sname – Business Identifiers

date – Primary key

data_dim_day_code – Business Identifiers.

(ii) Mappings

- In sales cube mapping we can perform following 3 types of mapping

(1) Measures Attributes Mapping

- As Measures Attributes are in number format, there is no Requirement of any special transformation operator, we can directly copy them into their corresponding sales cube attributes.

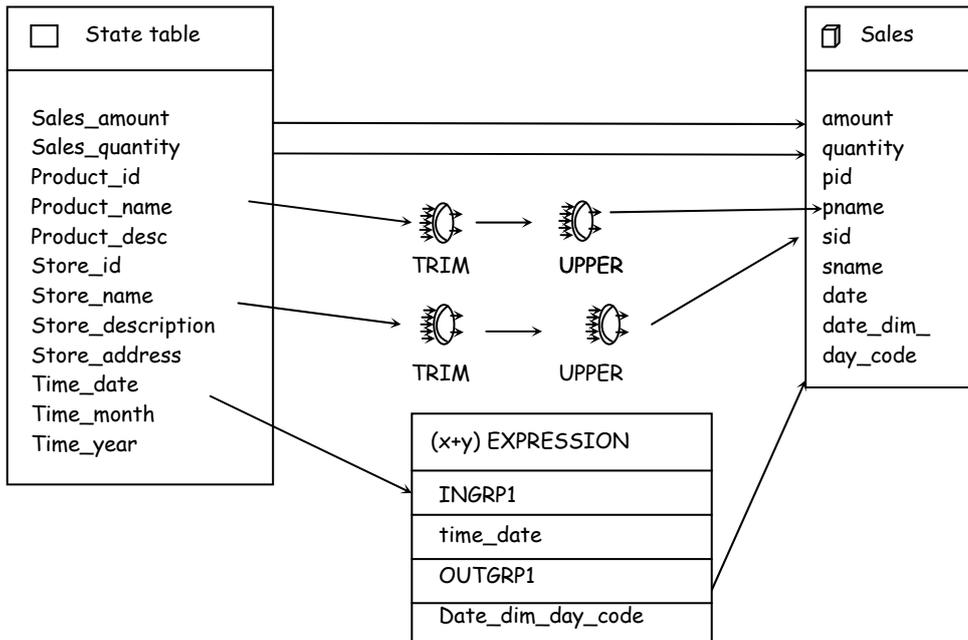
(2) Product & Store Dimension Mapping

- We can transfer Product_name into pname & store_name into sname using TRIM & UPPER Operators

(3) Time Dimension Mapping

- Here we can convert Time – date into date_dim_day_code using EXPRESSION Operator
- When we use expression operator it will use expression Builder using which we can convert a date into a Number.
- In expression Builder window we need to type following expression to convert Time_Date into Date_dim_day_code.

To_Number (TO_CHAR (INGRP1. Time_date, 'yyyymmdd'));



Q.5(b) Write the steps for validating and generating in Design Center and Mapping [5] Editor.

Ans.: Validation

- Validation means checking for the errors.
- Using OWB we can create different objects as well as different mappings, using validation we can check whether those object or mappings are having error or Not.
- Validation can be used in following 2 locations :

(i) Design center

- To validate only object in design center first we need to open a design center window
- after this we need to Right click on a particular object which we need to validate an select the option "Validate"
- It can display a validation Result window which display one of the following message.
 - (1) Validation successfully
It Represent that a particular object does not contain any kind of error.
 - (2) Validation with errors
It Represent that a particular object is having some errors.
 - (3) Validation with warning
It Represent that a particular object is having few problems but they are not critical, hence they can be use.

(ii) Editors

(1) Data Object Editor

We can Validate Data Object editor, by click on an icon "Validate", which will perform validation of all the object present inside Data Object editors.

(2) Mapping editor

We can validate Mapping editor, by click on an icon "Validate", which will perform validation or we can also press a function key "F4" to perform validation of mapping editor.

*** Generation :**

- generation Represent creation or development.
- using OWB we can create different objects as well as different mappings
- When we create an object OWB uses DDL, & when we create a mapping OWB uses PLISQL.
- If we want to view code of a particular object or mapping it can be done using generation tool.
- generation can be used in a following 2 location :

(i) Design center

- To generate an internal code of any object in design center, we need to Right click on that particular object & select the option "generate".
- It will display an internal code of selected object.
- For eg : If we generate a code of a staging table, we will get following Result.

```
CREATE TABLE "STAGE _ TABLE"
{
  "AMOUNT" NUMBER,
  "QUANTITY" NUMBER,
  " PRODUCT_ID" NUMBER,
  "PRODUCT_NAME" VARCHAR 2 (20),
  "PRODUCT_DESCRIPTION" VARCHAR 2 (50)
  "STORE_ID" NUMBER,
  "STORE_NAME" VARCHAR 2 (20),
  "STORE_ADDRESS" VACHAR 2 (30),
  "STORE_DESCRIPTION" VARCHAR (50),
  "TIME_DATE" DATE,
  "TIME_MONTH" NUMBER,
  "TIME_YEAR" NUMBER
}
```

(ii) EDITOR

(1) Data Object editor

- To generate the code of data object editor first we need to open it & click the icon "generate", which will generate code for different object in Data Object editor.

(2) Mapping editor

- To generate the code for mapping editor, first we need to open a particular mapping editor & click the icon "generate" or by pressing function key "FS", we can generate the code of that particular mapping editor.

Q.5(c) Write a short note on Control Center Manager.

[5]

Ans.: Control Center Manager :

- It is a client side component of OWB, which is mainly used to perform deployment.
- When we open control counter manager, it contains following 2 types of window.

(i) Object Details

It contains following different Tabs :

1. **Object** : It contains a list of object of a design center, which can be deployed
2. **Design Status** : It consist of following 3 option :
 - (i) New – It Represent that a particular object does not under gone deployment process
 - (ii) Unchanged: It Represent that deployment of a particular object has been done, but the physical object does not under gone any changes.
 - (iii) Changed : It Represent that physical object after deployment has under gone different changes.
3. **Deploy Action**
It Represent a particular action or operations that has been perform on a physical object after deployment.
4. **Deployed**
It Represent date & time of deployment
5. **Deploy status**
It Represent status of the deployment, which can be one of the following.
 - (i) Not Deployed : It Represent that the object does not get deployed.
 - (ii) Success : It Represent that the object has been successfully Deployed.
 - (iii) Error : It Represent that the deployment process of the particular object is having few error.
6. **Location**
It represent memory location of the deployed object
7. **Module**
It Represent name of the project in which deployed took place.

(ii) Control Center Jobs

It is mainly used to represent a summary which indicates which objects successfully deployed & which are not.

Q.5(d) What is Transformation Operator? How is UPPER() transformation function used? [5]

- Ans. :**
- It is the mapping in which we perform transformation on staging table & load the data at the product dimension table.
 - For that to create a new mapping, we need to Right click on "Mappings" & Select the option "New >> Mappings"
 - It will open mapping editor on which we need to perform following 2 step to perform product mapping.

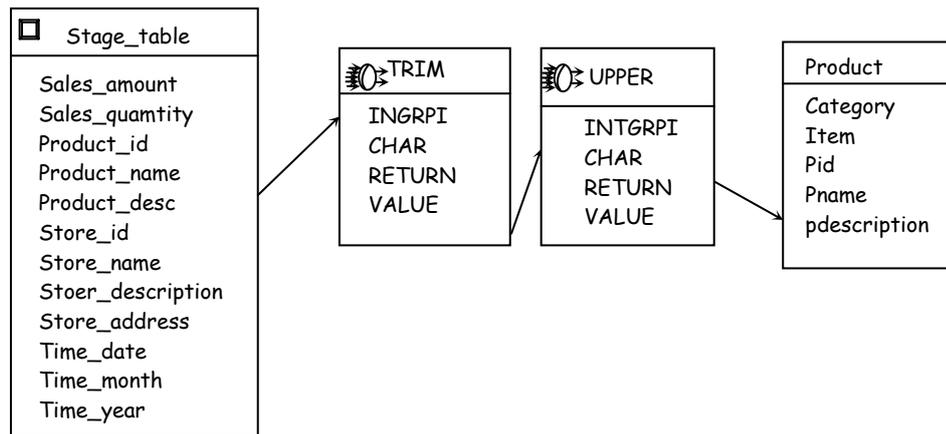
Step 1 : Adding Source & Target Tables

- In this we want to perform transformation on staging table & load the data at product Dimension table, hence here staging table will be our source Table & the product Dimension Table will be the Target Table
- Here we need to Drag staging table & product Dimension table as a source Table & Target Table Respectively on a mapping editor.

Step 2 : Transforming source Table to Target Table using Transformation Operator

- Here to perform transformation on a staging table we use transformation operator.
- First we need to Drag TRIM (use to Remove white spaces) & then UPPER (convert the text into upper text character) to perform transformation.

For eg : We convert product_name into pname using TRIM & UPPER operators.



Q.6 Attempt any TWO question of the following : [10]

Q.6(a) What is Recycle Bin? Describe the features of warehouse builder Recycle Bin window. [5]

Ans.:

- It provides different Tools or features, which are used to manage different changes in OWB.

• Following are different MetaData change Management Tool :

(i) Recycle Bin

- It is a tool which is normally used when we delete a particular object.
- To delete an object, we need to right click on it & select the option "delete".
- Normally deleted object will get stored in a particular location or Repository called as "Recycle Bin".
- From Recycle Bin if we Restore a particular object it will get Retrieve at its Original location.

Q.6(b) Explain the export feature of Metadata Loader. [5]

- Ans.:**
- It is mainly used to transfer an entire project from a one machine to another
 - If we want to transfer a project, we need to right click on it & select the option "Export".
 - It will open metadata Export window, in which we can export a particular project, which will create .mdl (Metadata Loader) file of that particular project
 - We need to transfer that file from source machine to destination machine.
 - At the Receiving end we need to open design center & import that MDL file which will transfer or Retrieve the entire project at Receiving machine.
 - When we Retrieve the project all its object as well as mappings will get transfer as it is.

Q.6(c) What is the difference between ROLAP and MOLAP? [5]

Ans.:

	ROLAP	MOLAP
(i)	It normally used when DW contains Relational Data	It used when DW contains Relational as well as non-Relational data
(ii)	It contains Analytical server	It contains MDDDB server
(iii)	It create cubes dynamically	It contains prefabricated cubes
(iv)	It is very easy to implement	It is difficult to implement
(v)	It has High response time	It has less response time due to prefabricated cubes
(vi)	It require less amount of memory	It require Large amount of memory

Q.6(d) What are the different operations that can be performed on a snapshot of an object that is created? [5]

- Ans.:**
- Using this tools we can create a copy of a particular object in its current form.
 - To create the snapshot copy of the object we need to Right click on that object & select the option "Snapshot".
 - Following are different step which we need to follow to create Snapshot Copy.

Step 1 : Name & description

It is used to accept name of it's Snapshot & its corresponding description, it also accept a type of a snapshot.

- Snapshot has following 2 types :

(i) Full

In this the Snapshot copy of the entire object including all component will get created. It requires more memory as compare to Signature type.

(ii) Signature

In this the snapshot of only important component of an object will get created. The importance of an component is Recognized by number of times that particular component undergone changes if a component has been frequency change it will be consider as important one & if it has been rarely change it is less important.

Step 2 : Components

In this we need to select the cascade option which represent that snapshot will get store inside folder

Step 3 : dependency

It is used to select dependency depth of a snapshot which represent upto which level the snapshot of related components will get created.

After the creation of snapshot we can perform following operation on snapshot copy :

- (i) Delete : It is used to delete a snapshot copy.
- (ii) Change to signature type : It is used to change the type of a snapshot.
- (iii) Restore : It is used to Restore a snapshot copy for the original object.
- (iv) Compare : It is used to compare 2 snapshot with each other.

Q.7 Attempt any THREE question of the following :

[15]

Q.7(a) Differentiate between Star Schema and Snowflake Schema.

[5]

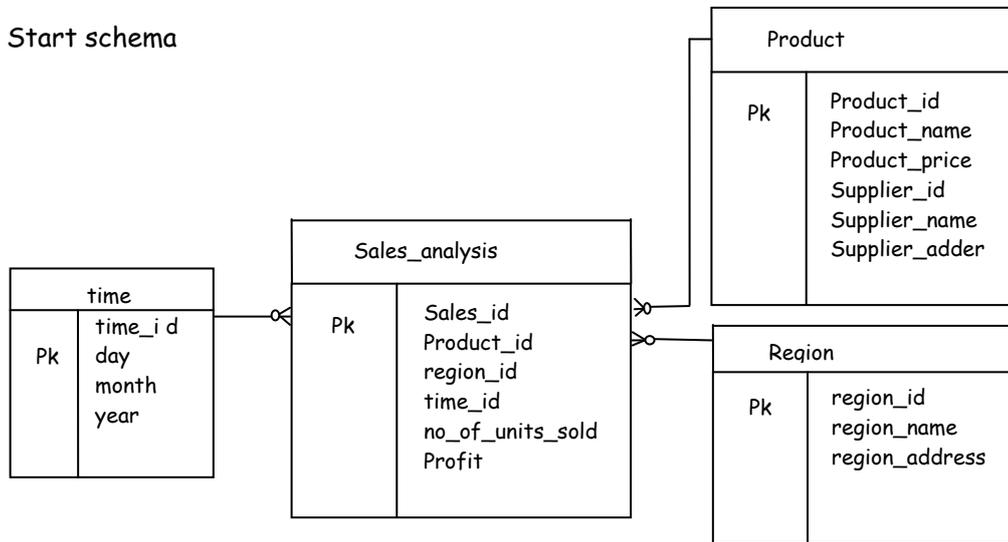
- Ans.:**
- To design multi dimensional cube we normally use star schema & snowflake schema.
 - In start schema there is one fact table, which is surrounded by multiple dimension Table
 - Fact Table contains following data :
 - (a) Primary key of fact table.
 - (b) Foreign keys of fact table.
 - (c) Facts which are to be analyze.

Dimension table contains following data :

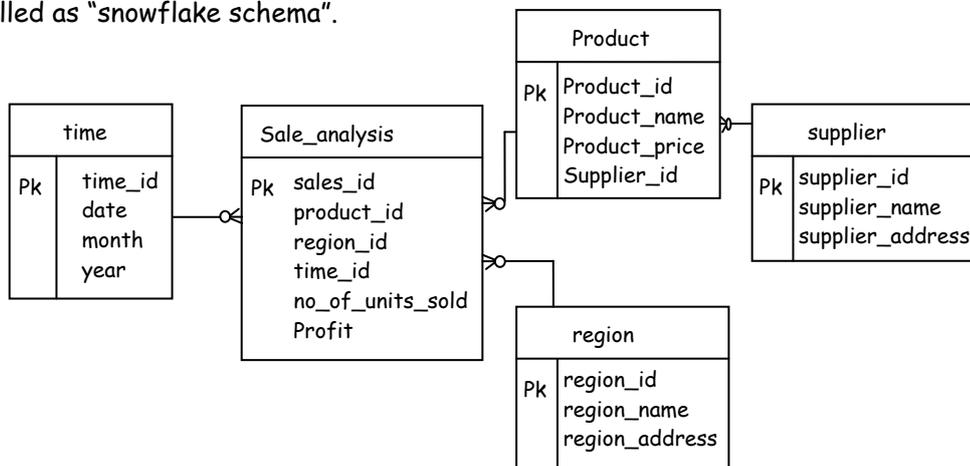
- (a) Primary key of dimension table.
- (b) Other attributes of dimension table.

eg : suppose we want to analyze number of units sold & profit of a particular product. In a particular region, at a particular time.

Start schema



- Sometimes different dimension table contains unnormalized data i.e. different types of data.
- To Normalize it we can create separate dimension table, which create a new structure called as "snowflake schema".



Q.7(b) What is the relationship between OWBSYS and Oracle Warehouse Builder? [5]

Ans.: **DBA information :** It is used to accept DBA user name (i.e. system) & its password
Workspace owner : It is used to accept workspace user name, password & workspace name to access workspace
OWBSYS Information : OWBSYS is a schema of workspace. Here we accept it is user name & password which will get used whenever we want to change the structure of workspace.

Q.7(c) Differentiate Surrogate identifier and Business identifier with suitable examples. [5]

Ans.: **Surrogate key**

- DW contains different data, which is extracted from multiple operational databases
- In different operational databases every table contain a primary key in which different digit may represent different significant. But when different operational databases are combine in DW, such primary key can not be use as a unique key for DW.
- In such cases we need to map an additional primary key for a particular operational database key, so that it can be uniquely identified. In such cases we need to map an additional primary key for a particular operational database key, so that it can be uniquely identified such primary key is called as "surrogate key".

Q.7(d) List and explain the use of various windows available in mapping editor. [5]

Ans.: (i) Mapping editor is used to perform ETL process.

(ii) It is a window in which we need to bring source data as well as target data to perform the transformation.

(iii) It has following components :

(a) Mapping

It is a window which consist of source object target object & operators which connect source object to target object to perform transformation.

(b) Explorer

It contains different objects which can be drag on mapping window to perform the transformation.

It contains following two tabs :

(a) Available objects

It contains those objects which are not current available or present on a mapping window but can be dragged on a mapping window to perform transformation.

(b) Selected objects

It contains those objects which are currently present on a mapping window.

(iv) Configuration

It is responsible for changing the properties of source & target objects.

(v) Palatte

It contains different operators which are used to perform different transformations.

(vi) Bird's eye view

It is used to display the entire mapping window at a single glance.

Q.7(e) What is object deployment? Explain the functions of Control Center Manager. [5]

Ans.: **Deployment :**

Deployment is a tool using which we can convert different logical objects into physical objects.

- In OWB when we create a particular object or mapping they only get created logically but they do not have any actual existence, so to create different objects & mapping actually or physically we use deployment

- Deployment can be done using following 2 steps :

Step 1 : Control Center Service :

- Deployment Operation is a performed by control center manager which creates physical objects & store them in target schema.
- for that we need to start control center service, which allows different object to get store at the server side.
- Control Center Service need not be start if Client & server is Represented by a single machine.

Step 2 : Deployment in Design Center.

- After starting control center service we can deploy objects in design center & for that we need to Right click on an object & select the option "Deploy", this Operation Convert that logical object into a physical Object.

Q.7(f) Explain data density and data sparsity with example. [5]

Ans.: • In case of multi dimensional cube, it is not necessary that every cube contains data

- Based on that we normally use following 2 terms :

(i) Data density : The total number of populated cube are called as Data Density.

(ii) Data Sparsity : The total number of non-populated cube is called as Data Sparsity.

- We cannot avoid data sparsity but following are 2 Reasons which may increase Data Sparsity.

1. Increase number of Dimensions

If we increase the number of Dimension to analyze a particular data there are more chances to get more spars Data.

e.g. : suppose we want to analyze units sold for different products.

P ₁	P ₂	P ₃
10	20	30

If we analyze same data using 2 Dimension i.e. product & region we will get more amount of spars Data.

	P ₁	P ₂	P ₃
R ₁	5	20	0
R ₂	5	0	20
R ₃	0	0	10

2. Decrease the Level of Dimension Hierarchy

If we decrease the Dimension Hierarchy level of a particular Dimension there are more chances to get data sparsity.

eg : suppose we want to analyze number of units sold for different years, we get following kind of data.

Y ₁	Y ₂	Y ₃
10	20	30

If we Decrease Level of time Dimension & if the same data has been analyze for quarterly basis there are more chances to get spars Data.

	Y ₁	Y ₂	Y ₃
q ₁	5	10	0
q ₂	5	10	0
q ₃	0	0	30
Q ₄	0	0	0

