Raj

TABLEAU LEVEL-I Notes

By Prazval

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DATA :- Anything which is understandable by the system is known as data or the stored representation of events and objects is known as data.

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Eg:- Data

1	Anu	Tab 26
2	Sandeep	Tab 26
3	Ajay	Tab 26

Eg:- Information

SID	SNAME	BATCHNO
1	Anu	Tab26
2	Sandeep	Tab26
3	Ajay	Tab26

INFORMATION :- The meaningful data is known as Information or anything which is understandable by the humans is known as Information

Eg →

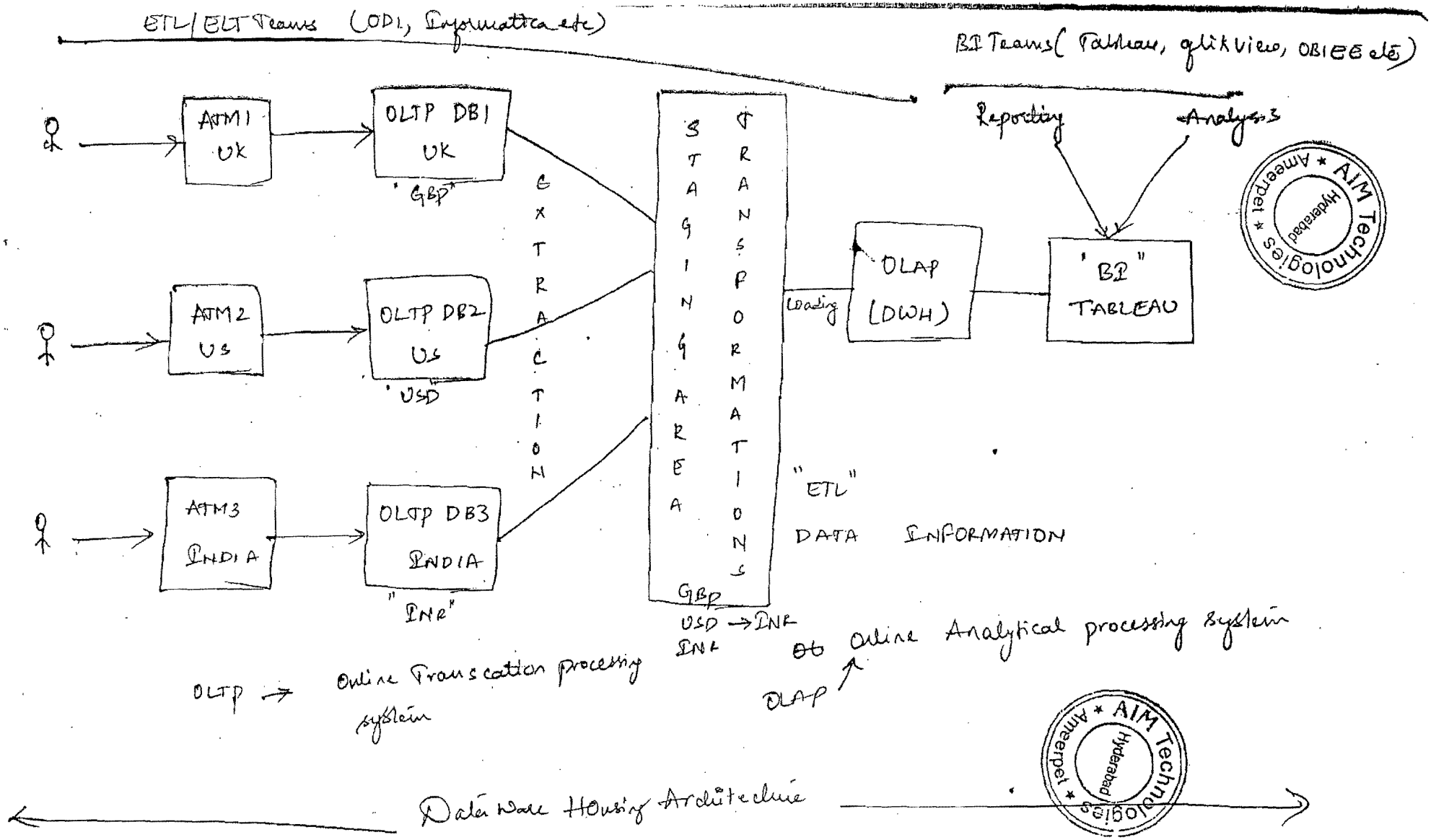
SID	SNAME	BATCHNO
1	Anu	Tab26
2	Sandeep	Tab26
3	Ajay	Tab26

→ Meta data + → Data = Information

METADATA :- The descriptive information about the information system and its contents is known as metadata. → It defines the type of data we are storing.

Data Ware Housing Architecture :-

Use Case :- City bank is operating in India, US, UK, the goal of the city bank is everyday they want to know their business in India, US, UK and they want to compare one country business with the remaining countries.



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Components of Data Ware House :-

→ Data Ware house primarily contains 5 components :-

1) OLTP
2) ETL
3) Staging area
4) OLAP / Data Ware house
5) BI

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1. → OLTP :- OLTP stands for online transcational processing system it stores the day to day business transcations.

2. → ETL :- ETL stands for extraction, transformation, loading. It is the process of converting the data into information with the required transformations and validations.

3. → Staging Area :- Staging area is the separate dedicated area to perform the required transformations.
   - It can store the data only for the temporary period of time

4. → Data Ware House :- Data Ware house is the process of converting the raw data into valid information and ~~there~~ with the help of ETL and thereby performing required reporting and analysis, with the help of BI.
   - It is the permanent location to store the information.
   - It is also known as OLAP.
   - OLAP stands for Online Analytical processing system

→ As the data ware house is giving the required information to perform required reporting and analysis. so, it is known as OLAP.

5. BI :- BI stands for Business Intelligence.

- BI is the process of incorporating the intelligence on the information stored in the data ware house, by performing required reporting and Analysis.

(Interview)

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OLTP	OLAP
1. Source of data :- Any (user Interface)	1. All OLTP's
2. Purpose :- To run the business	2. To Analyze the business
3. Amount of data Contains less Amount of data	3. Contains huge amount of data
4. processing speed It's fast	4. It is Considerably slower due to huge amount of data
5. Operations :- On OLTP's frequently performs • Inserts • Updates • deletes } transactions	5. on OLAP's we frequently performs. "Select" operation
6. DB size upto 500GB	5. from 20TB to 20PB. ↓ Tera bytes. ↓ peta bytes

19.11.15

→ Diff b/w OLAP and OLTP

OLTP	OLAP
1. Source of data	→ All OLTP's, any source system
2. Purpose: To run the business systems	→ To analyze the business
3. Operations: frequently performs Insert update, Delete	→ Select operations
4. Processing Speed: It is faster	→ Comparitively slower as it contains huge amounts of information
5. Amount of data: Contains less amount of data	→ contains huge amount of data
6. Storage: It stores the transcations Temporarily	→ Permanent storage location
7. DB Size: upto 500GB	→ upto 10PB

→ Tableau is DWH application

Tableau :- Will connect it to any kind of data

, VZQL :-

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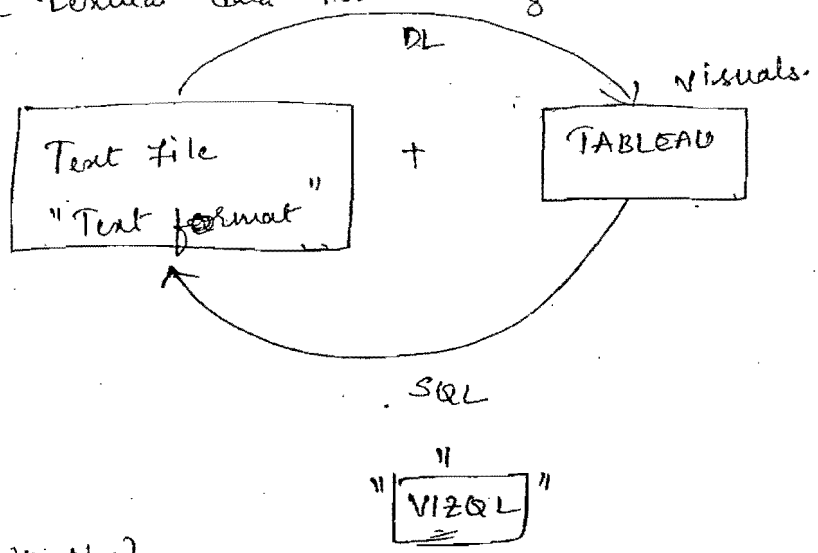
TABLEAU:- Tableau is the business Intelligence application which allows the users to create interactive, dynamic Visualizations, with the help of "VIZQL"

→ **VIZQL:-** VIZQL stands for Visualization query language.

Note:- VIZQL = SQL + DL

→ VIZQL is a combination of structured query language (SQL) which is used to communicate with the data and descriptive language (DL) which is used to convert the textual data into visualizations.



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* (certification)
Note:- VIZQL is dynamic in nature.

Note:- VIZQL is the patent query language by the Tableau Corporation

Properties / characteristics of Tableau:-

(1.) **Visual Analytics:-** In Tableau each and every analysis we can able to perform in the form of visuals with the help of brand new features like "Sets", "Visual groups", "new marks card", "VIZQL" etc.

② Fast performance :- Tableau with it's state of arts features like performance recorder, Tableau data Engine (TDE), fast graphics etc gives us atleast 10 times faster performance than any other BI platform currently.

③ Any Data :- Tableau can able to connect to structured, semi-structured data like databases, data Ware House, Online data like Salesforce, Big Data, files etc

④ Business Integration :- Tableau is tightly coupled with any kind of Business domain. It means it can able to analyze any domain data like Sales, finance, Health Care, retail etc without any difficulty

⑤ Reporting + Analysis :- Tableau is the single Platform that can able to perform both the data reporting and data analysis

⑥ Self Service BI :- In Tableau even the end clients can able to work with the application and perform the required changes very easily, because Tableau was designed by keeping end clients in mind, but not the developers

⑦ Web and Mobile Authoring :- In Tableau after building the visualizations we can able to share them across the mobiles and even we can integrate them with the help of website, Blogs. automatically.

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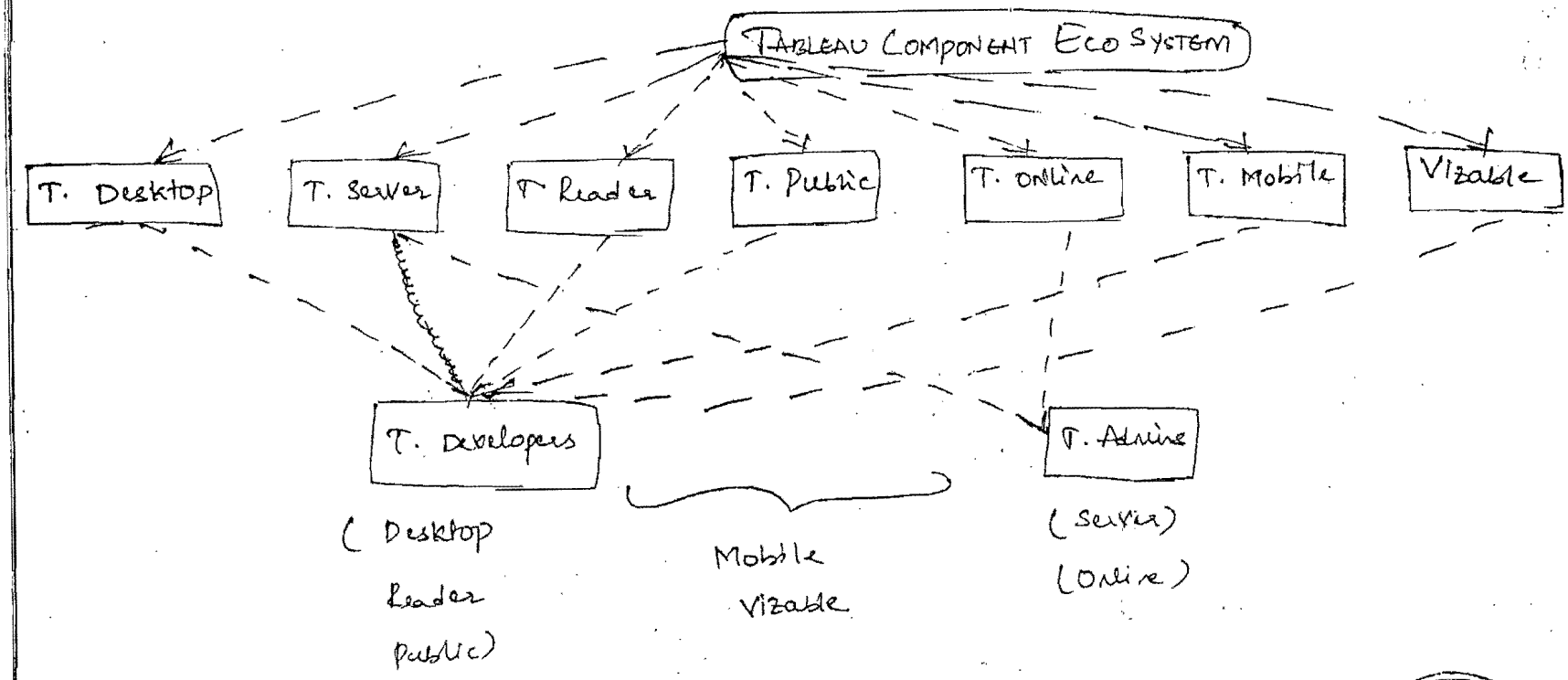

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→ Tableau Eco system contains 7 different components

1. Tableau Desktop :- It is the core component for all the Tableau developers. It is the place where the complete development will takes place in Tableau.

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2. Tableau Server :- It is the core component for the Tableau admins. The complete security, automation (scheduling), integrations etc will be performed at the server level.

3. Tableau Reader :- It is the free application from Tableau Corporation. It is used to share the visualizations built on Tableau Desktop locally.

4. Tableau Public :- It is another free application which allows the users to share their visualizations publicly to anyone (Global sharing)

5. Tableau Online :- Using Tableau Online it is possible to perform the rapid fire business intelligence in the cloud.

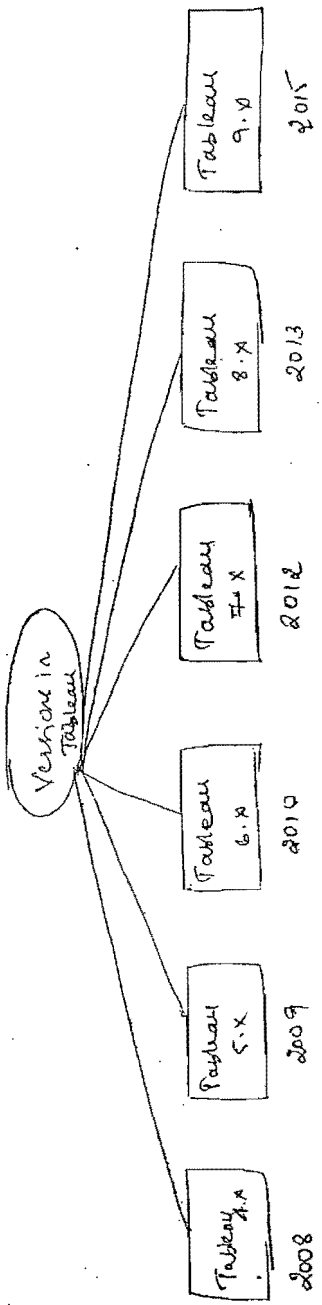
* Note :- Tableau desktop, Tableau server, Tableau Online are available as a trail products for 14 days. They are not free.

6. Tableau Mobile :- This application is available from Tableau 9.0. It allows the users to access the visualizations built on Tableau desktop over the mobiles.

7. Vizable :- It is the new application from Tableau which allows the users to perform visualization building and development at the level of Tablets. It came into market in the month of October 2015

"Version history is available in Tableau guru.blogspot.com"

→ The word Tableau is ~~derivd~~ derived from french word "Tablex" which means picture or platform



T. Desktop — 30 + Scenarios

T. Server — 10 + Scenarios

10 – 15 days.

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SCENARIO 1:- T. Desktop Installation

→ Pre-requisites :-

1) Operating system :- from T. Desktop 8.2 it is supporting Both the Windows and MAC platform

2) Windows Platform Supporting OS:- Windows Vista, 7, 8, 10, Server 2008, 2008 R2, 2012, 2012 R2
(from Tableau 9.0)

Note:- from Tableau Desktop 8.3
Windows XP3, Vista 7, 8, 10, Server 2003, 2008, 2008 R2, 2012, 2012 R2

Note 2:- upto T. Desktop 8.1, It has supported only windows platform.

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3) RAM:- Minimum 512 MB or (more)

3) Processor :- INTEL, AMD

4) Hard Disk :- Minimum 20GB (or) More

Editions :-

5) Personal Edition :- It supports connectivity to 6+ Data sources Excel, Text, Access, TDE files, Windows Azure, OData (Kind of datasource)

6) Professional Edition :- It ~~towards~~ supports connectivity to 40+ data sources files, DB's, DWH's etc.

6) Data Base :- Independent of Database

7) Trail period :- Availability only for 14 days

8) Download Locations :- 2 locations

1) www.tableau.com/esdalt.

2) Accessing AIM FTP Server

Step ① :- Connect to IBALL Network (Password is TAB2450A44.

Step ② :- open any browser and enter

ftp://192.168.1.253:46.

Username : AIMODIFTP

Password : Aimtech123

Step ③ :- click on Installation folder and download

T. Desktop 8.1, 8.3, 9.0, 9.1, 9.2

Installation Steps :-

Step ① :- Click on set up file

Step ② :- Accept the agreement and click on install.

Note :- For students Tableau is giving 1year license Version from the following location

www.tableau.com/academic/students

Note :- At the time of installation tableau will create one folder known as My Tableau Repository in the documents directory

Tableau Repository :- Tableau repository is the centralized component of the T. Desktop. It is the location where the complete information of the Desktop will be stored in the form of multiple folders.

Note :- The complete VizQL log will be stored into the logs folder, of the Tableau repository.

Note :- Repository level differences b/w Tableau 8.x & 9.x are

Tableau 8.1	Tableau 8.2	Tableau 8.3
8 folders	8.1 folders + Styles	Same as 8.2

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Tableau 9.0, 9.1, 9.2

8.3 + "2 new"
(Connectors, ~~Tableau Online~~
TabonlineSync line)

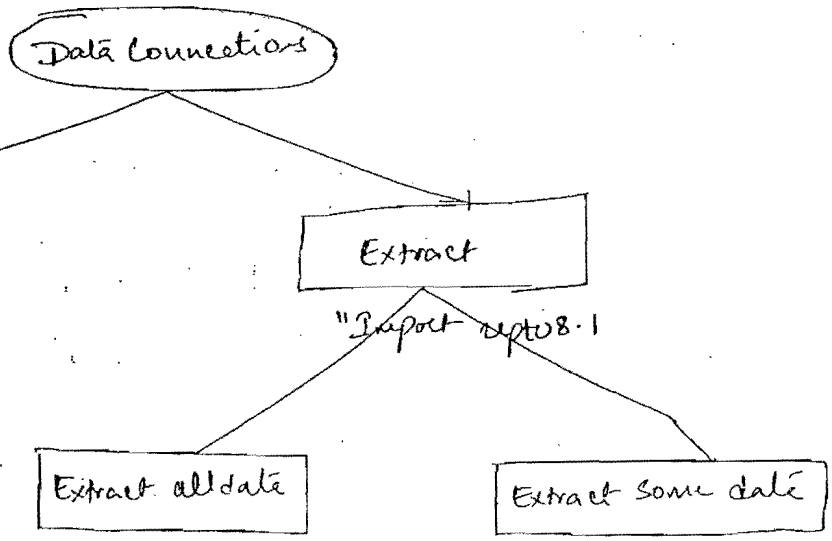
SCENARIO 2:- DATA CONNECTIONS IN TABLEAU:-

→ In Tableau we have 2 types of data connections

1. Live connection
2. Extract connection (Import upto 8.1)

→ Extract connection is again divided into 2 types

1. Extract all data
2. Extract some data



1) LIVE CONNECTION:- In Live Connection Tableau will creates a live communication path b/w the data source and the Tableau.

→ Live communication path means, whatever the modifications or data changes in the data source will be automatically reflected into Tableau with a refresh

Task 1:- Creating a live connection in Tableau.

Step ①: Create a text file with the following data

Location	Jobs
Hyd	500
Banglore	1000
Chennai	600
Pune	450

→ Text file

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Step ②:- Open Tableau desktop 8.3 click on connect to data and select text file, Technology.

Step ③: Select the above text file, and click on open.

Step ④: Select the connection as live and enter the connection name as live. Click on goto worksheet.

Step ⑤: Click on view data.

Step ⑥: Add a new line of data in the text (Pune, 450) and save the changes

Step ⑦: Click on view data (data not updated yet)

Step ⑧: Right click on the live connection, click on refresh and click on view data. (data got updated)

Task 2:- Creating an Extract connection:

Step①:- Click on "connect to data" and select text file

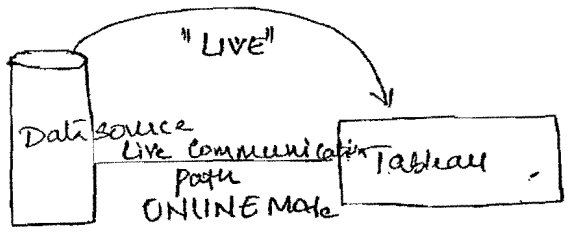
Step ②:- Select the above file and click on open

Step ③:- Select the connection type as extract and enter connection name also as Extract and click on "goto worksheet"

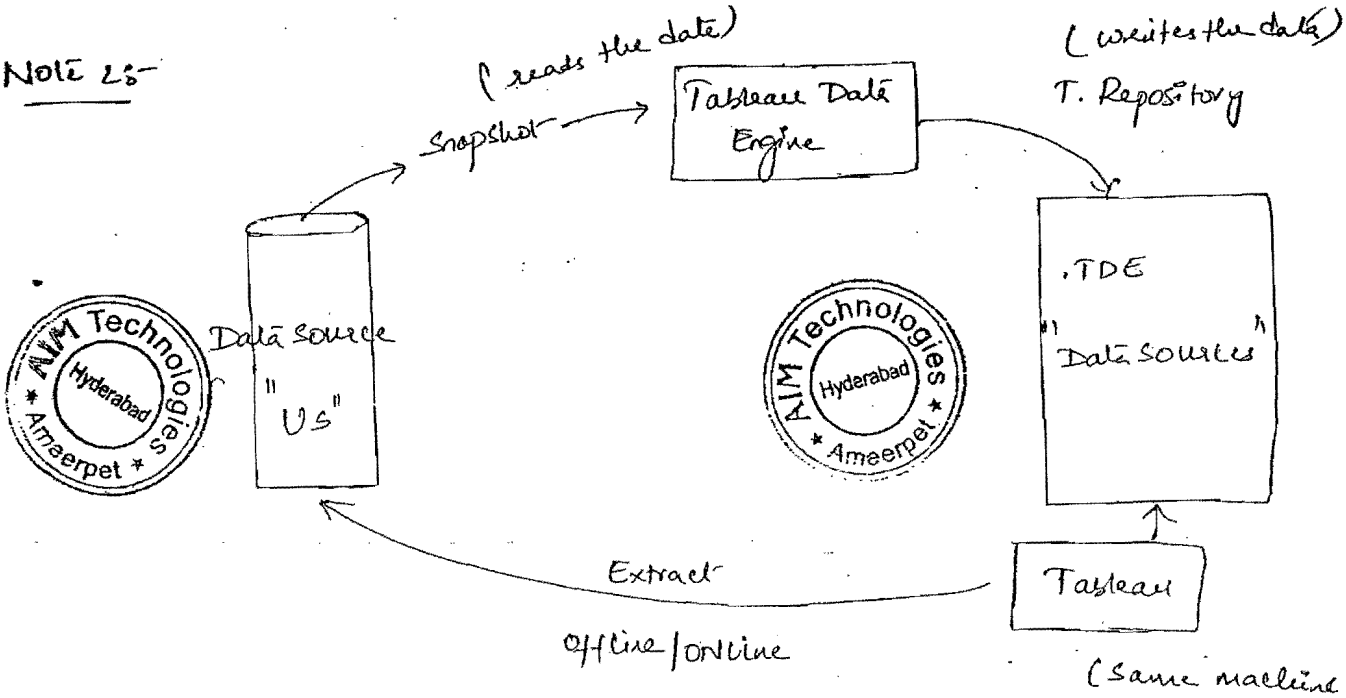
Step ④: It automically creates a .tde file and saves it into the datasources folders of the Tableau repository.

Step ⑤: Click on view data

Note 1:-



Note 2:-



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Note:- In the extract connection, Tableau will connect to the data source and it takes the snapshot and it places that snapshot into a power component known as Tableau data Engine

→ Tableau data Engine reads the data from snapshot and it will write that data into a new file known as Tableau data extract. (.tde)

→ Everytime Tableau will connect to the .tde file in the same m/c but not the actual data source.

Note:- In Extract connection as Tableau is accessing .tde file it is possible to connect in the online aswell as

offline mode.

Note:- Live connection is possible only in the ONLINE Mode.

TABLEAU DATA ENGINE:- Tableau data Engine is the high ~~pow~~ performance analytical database on our m/c, which is having in-memory functionality

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→ In memory functionality means make use of the primary memory (RAM memory) at the data time of performing the operations and after completion it will store the o/p file in the secondary memory (disk space)

Task 3:- Refreshing or Getting data changes in the extract connection.

Step ①: Add a new line of data in the ~~text~~ file previous task text file and save the changes.

Step ②: Click on View data. (Data not updated yet)

Step ③: Right click on the connection select extract and click on Refresh

Note:- When we refresh an extract connection it will runs the complete mechanism again, it will clear the existing content of the tde file and writes the new data from snapshot.

Note:- When we refresh the extract file every time it will not create a new tde file, it will make use of the existing tde file.

Step ④: In the warning window click on [yes] and click on View data (Data got updated.)

Note:- Live connection will be indicates with "" and extract connection will be indicates with

Task4:- Testing the size of the .tde file.

Step ①: Download the test data file from the ftp.

Step ②: From Tableau connect to the test data file in the "extract" connection mode and save the .tde file.

Step ③: Check the .tde file size

Note:- .tde file size is the local data copy.

.tde file size is always 3-12% when we compare with the actual file size because in tde file everything will be stored in the binary format and in the columnar way

Task5:- Converting Live → Extract and Extract to Live Connections

Step ①: To convert live connection to extract right click on the connection and click on extract data

Step ②: In the extract data window click on extract.

Step ③: Save the tde file and the connection will get changed to the extract.

Step ④: To convert Extract → Live right click on the extract connection, and uncheck "Use Extract".

★ (Interview)

Note:- When we convert extract connection to live Tableau just changes the connection type, .tde file will remains same.

Note:- .tde file is the re-usable component.

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Note:- Live connection is preferable in 2 cases.

1) If the data in the datasource is changing frequently.

Eg:- (Stock data)

2) While connecting to the high performance databases.

Note:- Extract connection is preferable in the following cases.

(i) While connecting to the low performance databases (for

Eg:- files → Text, Excel, Access. etc.

(ii) If we want to connect in the offline mode.

Note:- When we connect to the files like EXCEL or text, Tableau gives us slow performance in the "Live connection", to improve the performance, we can use the Tableau data Engine with the help of Extract Connection.

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Test Cases:-

Case 1:- Changing connection to extract, with the changes TDE file name

Result:- unable to open the extract file

Solution:- we need to relocate the extract file

Case 2:- Refreshing the Extract connection, after deleting the extract file

Result:- unable to open the extract connection

Solution:- we need to regenerate the extract file

Case 3:- Testing extract connection, after changing the location of TDE file

Result:- unable to open the extract file

Solution:- We need to relocate the extract file

[Interview]

→ What is live connection and when we have to use it?

→ What is an extract connection and what are the benifits of it?

→ What is .tde file and how it differs with the TDE?

→ What is the tde file size in your project?

Ans (In b/w 2G to 20GB) (Real time)

→ What are the differences b/w live and extract connections

LIVE	EXTRACT
① CONNECTIVITY :- Online	→ online and offline
② Data source dependency :- it is dependent on the data source	→ Independent of the data source
③ .tde usage - It is independent of .TDE file	→ Dependent on the .TDE file
④ Refreshing Mechanism :- We need to refresh the connection	→ we need to refresh the extract file
⑤ Refreshing Type :- Incremental	→ full refresh (By default) (Incremental also is possible)

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→ Tableau Data Engine (TDE):-

Tableau data engine is the high performance analytical database on our machine. It makes use of the memory on-fly.

- After completing the ~~work~~, TDE will release its memory
- TDE gets automatically installed along with the desktop installation

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→ Interview Questions :-

1. What are the different ~~types~~ types of data connections available in Tableau?
2. What is a Tableau data Engine & and where it is located?
3. What is TDE?
4. What are the different refreshing mechanisms available in Tableau?
5. Compare live connection with import?
6. How to work in the offline mode in the Tableau? How it works?

→ TDE :- Tableau data extract files have the .TDE extension. Extract files are the local copy of the entire data source that used to data, work offline & improve database performance

Scenario-3 :- Dimensions & MEASURES:-

In the DWH, always the information gets stored in the form of Master & Transaction table.

DWH → ETL+BI.

(i) Master :- The table which contains the information about the business is known as Master table.

Eg:- Products table contains the business in the form of Supermarket, Courses table in the college, Employee table in any organisation, etc will act as the "Master-Table"

- Master table will always contain the unique information. To maintain the unique information it always contain a "primary key".
- Note :- Master = Primary key + Textual information

(ii) Transaction Table :- The table which contains the metric information is known as Transcation table.

- Metrics are nothing but the integers (or) the numbers which are used to analyze the business.
- So, metrics are the measuring points of any business

* Note :- The relationship between "Master" and a "transcation" is Master always act as a parent and Transcation act as a the child because without any business, no transcation will exisist

* So, transcation is a combination of foreign keys + Numeric information.

(iii) Differences between Master & a Transcation :-

- The chance of using the master as a dimension is 99% & as a measure is only 1%

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- The chance of using transcation as a measure is 99% and as a dimension is 1%
- So, master is nothing but a dimension whereas transcation is nothing but a measure

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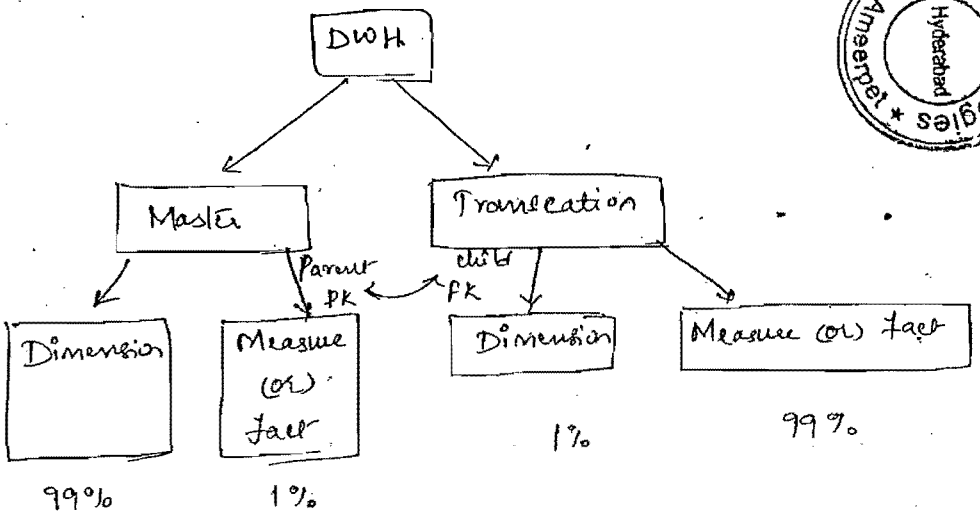

→ DIMENSIONS :- Dimension is in which angle we are analyzing the business (or) seeing the data.

- With the help of dimension, we can able to analyze any business in multiple angles.

Eg:-

Product	Country	Sales
A	U.S.	100
A	India	120
B	U.S.	125
B	India	140

→ Measure

Dimensions

* Here the Sales can be analyzed using a Product / Country angle

* So, in simple, dimension is nothing but which data we want to see

→ **Measure** :- Based on what metric we want to analyze the business is known as measure

Eg:-

Product	Country	Sales	Profit.
A	US	100	10
A	India	200	20
B	US	120	30
B	India	140	40

Dimensions

Measures

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→ **Types of Dimensions** :- The dimensions are divided into 9 different types

1. Slowly changing Dimension (SCD)
2. Rapidly changing dimension (RCD)
3. Unchanged Dimension (UCD)
4. Shrunken Dimension (SD)
5. Junk Dimension. (JD)
6. Conformed Dimension (CD)
7. Degenerated Dimension. (DD)
8. Role playing Dimension. (RPD)
9. Inferred Dimension. (ID)

(1) **Slowly changing Dimension (SCD)** :- If the data in the dimension is changing over a period of time then such a kind of dimension is known as "SCD."

Eg:- Student of the Employee

(2). Rapidly changing Dimension:- If the data in the dimension is changing rapidly (or) frequently then such a kind of dimension is known as "RCD".

Eg:- Age (Age will change each and every sec, min & hr.)

(3) Unchanged Dimension:- If the data in the dimension is unchanged or the values in the UCD are constant, and they won't change any time. So, it is called as "Static Dimension".

Eg:- Traffic Signals; Data growth.

(4) Shrunken Dimension:- The subset of one dimension is known as shrunken dimension.

Eg:- quarter is the shrunken dimension of the year
month " " " " quarter
Week " " " " month.

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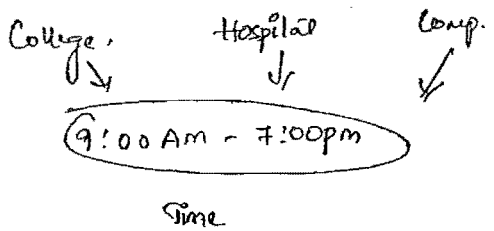
(5) Junk Dimension:- Junk means unwanted (or) unrelated. If the dimension containing the unrelated information, then it is Junk dimension.

(6) Conformed Dimension:- If one dimension is commonly shared by the multiple business areas then such a kind of dimension is known as Conformed dimension.

Eg:-



(7) Degenerated Dimension :- The dimension which contains only primary keys without any textual information is known as degenerated dimension

* It is the only dimension table which is not having its own dimension table.

Pk + Textual info.
✓ ✗

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(8) Role Playing Dimension :- If one dimension is playing multiple roles in the fact table or if one dimension key is attached to multiple foreign keys in the fact then such a kind of dimension is known as "Role playing dimension".

Eg:- Flipkart

Date of order
Date of service
date of shipment
date of delivery

"date" is playing multiple roles.

(9) Inferred Dimension :- The empty dimensions are known as "Inferred dimensions". It is commonly used in ETL.

- As the Inferred dimensions do not contain its own primary keys, we will create the artificial primary keys known as "Surrogate keys".

Inferred dimension = PK + Textual Info.
✗ ✗

→ Generally

BI	ETL
↳ UCD's	Inferred
↳ SCD's	degenerated
↳ Role playing	Junk
↳ Shrunken	RCD's
↳ Conformed	

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→ Types of Measures:- 1. Additive Measure
2. Semi-additive measure
3. Non-additive measure

* Note:- As the measure being a number, on the measures we will commonly apply a kind of funcs known as group/aggregation functions like SUM, AVG, MIN, MAX, COUNT

1. Additive Measure:- If the measure is supporting the aggregation with all the dimensions then such kind of measure is known as additive measure

Ex:-

Customer
Branch
Date
Sales

Here on the Sales if we apply any aggregation to group the values it gives the meaningful o/p's for all the dimension Sales is an additive measure

2. Semi-Additive Measure:- If the measure is supporting the aggregations only on few of dimensions but not all of them such a kind of measure is known as Semi-additive measure

Ex:- Bank.

Date
customer
current-Balance

(iii) Non-Additive Measure:- If the measure is not giving us any meaningful o/p's after applying the aggregation with the list of all dimensions then it is known as non-additive measure

Eg:- 0.0001 - decimals
1% - percentage
11/1000 - ratios etc

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* Currency → (Additive) → Always *

→ Surrogate keys are the artificial primary keys which are used in the data ware house.

→ In ~~addition~~ the data ware house, natural primary keys they wont work. We have to make use of these Surrogate keys which will act as the dimension table primary keys.

→ Fact Table :- Collection of facts, is known as fact table. Based on the types of facts, fact tables are divided into 3 types

(i) Cummulative fact table.
(ii) Snap shot fact table.
(iii) Factless fact table.

(i) Cummulative fact table :- If the fact table is containing only the additive facts then such a kind of fact table is known as cummulative fact table.

- It contains the periodic information like year-wise total sales, state-wise average revenue, etc

(ii) Snap Shot Fact Table:- If the fact table containing only semi-additive & non-additive facts then such a kind of fact table is known as snapshot fact table.

- It contains instant information like day-wise discounts, week-wise margins etc.

(iii) Factless fact Table:- If the fact table is containing only the keys without any facts (or) numerics then such a kind of fact table is known as factless fact table.

→ Types of Schemas:- In the DWH, 3 types of schemas are available.

DWH
- Dimensions
- Measures (or) facts

- Schema is a collection of dimensions & the facts.

(i) Star Schema

(ii) Snowflake Schema

(iii) Mixed (OR) Galaxy Schema

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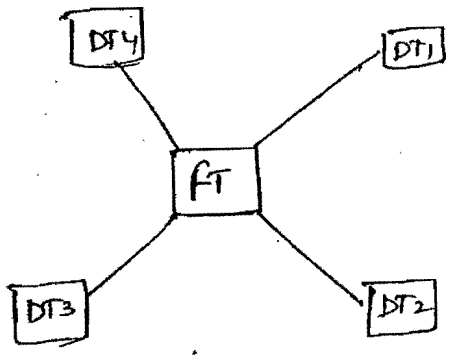
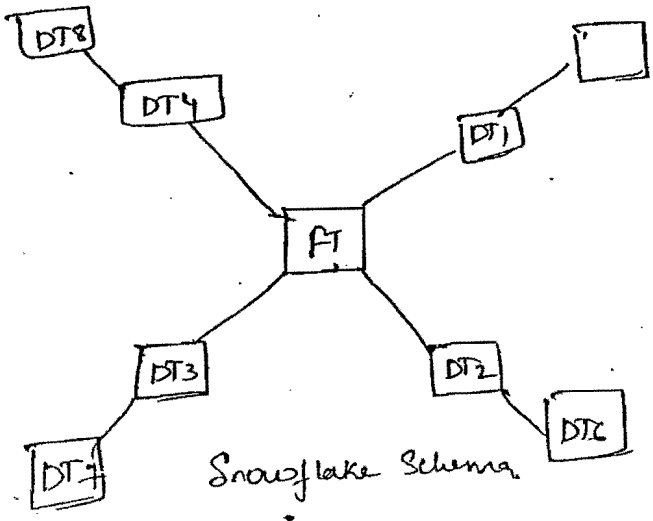
- The schemas can be designed using dimensional modelling.
- Dimensional modelling is the arrangement of the dimensions & the facts inside the DWH as per the requirements.

* Note:- Schema is nothing but collection of dimensions and the facts.

(i) Star Schema:- If all the dimension tables are directly attaching to the fact table then such a kind of arrangement is known as star schema.

Star Schema





Snowflake Schema

(ii) Snowflake Schema:- If all the dimension tables are not directly attached to the fact table then such a kind of arrangement is known as snowflake

- In snowflake there is direct relationship between one dimension & the other dimension.

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Interview Questions

(1) Which Schema is best in performance

Ans Star Schema as it contain less no. of tables. Always the star schema is good in performance because star schema contains lesser no. of tables so the data selection will be faster

(2) Is it possible to convert snowflake to Star Schema or not?

Ans Yes, it is possible to convert snowflake to star by grouping all the dimensions into a single logical logical dimension but that approach is not recommended as it degrades the performance.

(3) What is dimensional Modelling & what are the different ways available

Ans 3 types → Star, snowflake, Mixed.

(4) What are the different types of schemas available in DWH & which schema is good in performance & why?

(5) which schema you have implemented in your recent project.?

Ans Always the Snowflake because of the complexity of my client's database (or) Business we designed snowflake

(6) What is a dimension & what are different types of dimensions available?

(7) What is a conformed dimension and give an example.

*(8) which dimension is not having its own dimension table?

Ans Degenerated dimension

(9) What is Inferred dimension?

(10) What are the different types of facts (or) measures in DWH.?

(11) What are the different types of fact tables available?

(SCENARIO 4) :- TABLEU DESKTOP ENVIRONMENT:-

1) DATA SECTION

2) SHELVES

(i) COLUMNS SHELF

(ii) ROW SHELF

(iii) Filter Shelf

(iv) Pages Shelf

3) Marks Card

4) Toolbar

5) SHEET (Note:- Analytics from Tableau 9)

1) Work Sheet :- Smallest work space

2) DashBoard :- Collection of multiple worksheets

3) Story Board :- " " " worksheets & DashBoards

Note:- From Tab's' Workspace windows are not available.

6) Show me

7) Status Bar

8) Active Area / Work Area (Drop field here)

9) Menu Bar

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→ The Tableau desktop environment is mainly divided into 2 sections namely,

(i) Data Section

(ii) Work book Section

→ With the help of data section, the data connections will be created.

→ With the help of Workbook Section, the complete work in the Tableau to be performed

→ <u>WorkBook</u>:- In Tableau, workbook files are much similar like MS-Excel workbooks

- The Workbook is the container for all work in the Tableau
- To create a new work book click on file, & select new or use Ctrl + N.
- The Work Book contains
  - (1) Data Section
  - (2) Tableau workspace

(1) <u>DATA SECTION</u>:- In the data window of Tableau, 4 different types of data tabs are available

(a) Dimensions

(b) Measures

(c) Sets

(d) Parameters

(2) <u>Tableau Work Space</u>:- It is the work area in the Tableau desktop. The Tableau work space contains of multiple components like

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1. Shelves
2. Mark Cards
3. Tool bar
4. Sheet { Worksheet, Dashboard, Storyboard }
5. Show me
6. Workspace Controls
7. Active area
8. Status Bar
9. Menu

(1) SHELVES :- It is the place where in Tableau all the data fields will be placed. In Tableau desktop 4 diff types of shelves are available

(i) Column Shelf (iii) Pages
(ii) Row Shelf (iv) filter

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(2) Marks Card :- It is the container for all the diff kinds of pre-defined charts in the tableau.

- It contains legends (color, size), detail & Tool tip, Text

* Note :- Well Known objects are called as legends. In this Color & Size are the legends

- With the help of marks card in the Tableau desktop any visualization can be developed

(3) Tool Bar :- It is the area where the list of diff tools are available

Tool Bar Options :-

(i) Undo & Redo :- With help of undo & Redo, we can navigate to the previous / next step

(ii) Save:- If we click on Save button, Tableau will save the workbook into the workbook folder of the Tableau repository

(iii) Connect to data

(iv) New:- With the help of this, new Worksheet / Dashboard / Story board will be created.

(v) Duplicate Sheet:- It creates the copy of the existing worksheet

(vi) Clear Sheet:- It removes the content of the existing sheet temporarily until we save the changes.

(vii) Auto update:- With the help of this, the updates of data fields can be controlled & paused

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** Note:- Auto update is automatically functioned [It is mandatory to keep the Auto update (Play), or else "show me" will not work]

(viii) Run update:- Once if you pause the auto update & if you want to perform the update manually then this option will be used

(ix) Swaping:- To interchange the data fields in the columns & rows shelves automatically then swaping option will be used.

(x) Sorting:- Sorting will arrange the visualization either in ascending / descending order.

(xi) Abc:- It will display the values in the visualization. Abc is also known as "Show Label".

(xii) Show / Hide Cards:- With this option, all the shelves and mark cards can be hided / unhided.

(xiii) Screen Filtering option:- With this option, the visualization in the Tableau can be displayed in multiple ways.

(4) SHEETS:- In Tableau desktop, the sheet can be either Work Sheet/ dashboard / Story board. These sheets will hold the individual development

(i) Work Sheet:- It is the smallest development component in the Tableau desktop. The initial development should be performed at the Worksheet level.

(ii) Dash Board:- It is the collection of multiple worksheets in Tableau. In dashboard, all the individual work will be contained.

(iii) Story board:- It is the new feature from 8.2. It is the collection of multiple worksheets & the dashboards.

(5) SHOW ME:- It is the area where the list of diff pre-defined charts are available.

- In show me, some charts will be in the active mode & some are inactive.
- Active mode charts indicates that they support the data fields in columns & rows, whereas inactive mode charts they won't support.

* Note:- Once if you pause the auto-update it is not possible to use "show me"

- Show me is the alternate approach to make card.

(6) WORK SPACE CONTROLS:- To navigate from one page to another page in the workspace these controls will be used. There are 4 diff types of controls available

(i) Home
(ii) connect to data
(iii) Sheet Tab
(iv) workspace

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(i) Home :- It will navigate to the home page from other pages

(ii) Connect to data :- It will navigate to the connect to data pages from other pages

(iii) Sheet Tab :- It is the place where all the sheets will be arranged in the form of tabs. This control will navigate to the sheet tab from the other pages.

(iv) Work Space :- This control will navigate to the work space from other pages.

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(8) Active Area :- It is the optional to the shelves, columns & rows shelves where we can drag & drop all the data fields

(9) Status Bar :- At the bottom of the page each & every sheet, Tableau will display the status in the form of bar.

(SCENARIO 4) :- NOTE POINTS :- [2.12.15 Dec]

* (1) Analytics tab in the data window is the new feature from Tableau 9.

* (2) Tableau workspace controls are not available from Tableau 9.

* (3) From Tableau 9 to navigate from work space to the start page in tool bar Tableau icon is available

SCENARIO 5 :- BUILDING Basic Visualizations in Tableau :-

Pre-requisites :-

→ (1) Super Store Data available in start page

→ (2) Tableau Desktop 8.3.

Task 1 :- ~~Continuous Total Sales~~ new :- Display continuous with total sales :-

Step 1:- Identify the dimensions and measures

→ Dimensions → Measures

• Continent • Sales

Step 2:- Drag Continent from Dimensions into rows, Sales into columns.

Step 3:- To color the Visualization drag continent and drop it into color.

Step 4:- To show the Values click on Abc in Tool bar.

Task 2:- Display Category wise average order quantity, color with Category and size with order quantity.

Step 1:- Dimension Measure

Category ~~Order~~ order quantity

Drag Category into rows and order quantity into columns

Step 2:- change the aggregation of order quantity to average by right clicking on order quantity, select the measure and select average

Step 3:- Drag category and drop it into color.

Step 4:- Hold control button drag average order quantity from columns and drop it size.

Step 5:- Click on Abc and sort it ~~into~~ in the ascending order

Step 6 Note:- Coloring the Visualization is known as Color Encoding and Sizing the Visualization is known as Size ~~En~~ Encoding.

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Task3:- Display country wise maximum profits and color code with profit.

- Drag country into rows and profit into columns
- Right click on profit and change aggregation to maximum
- Hold control button drag max profit and drop it into color.
-

Task4:- Display year wise total profits and encode with profits.

- Drag order date into columns and profit into rows
- Drag profit and drop into size colour & size
- click on Abc

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**Note:- while dealing with dates, Tableau will display highest date part by default

Day - date part 1
month - date part 2
year - date part 3

Task5 :- Display month wise average discounts and color code with year

- Drag order date into rows and discount into columns.
- Right click on the order date into rows and select month
- Drag order date into color and label and Average discount into label
- click on label in the marks card in Text click on edit and decrease the font size

Task6:- Display customer segment wise minimum shipping cost.

Task7:- Display state-wise average sales and profit color with ~~country~~ state ~~state~~ and size with sales

**Assignment

Task 6:- Display customer Segment with minimum shipping cost

- Identify Dimension and measure

Dimension → Segment

Measure → Shipmode

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- Drag and Drop Segment in the Rows
- Drag and Drop Shipmode in the column
- Right-click on the Shipmode → Select → Minimum

Task 7:- Display state-wise average sales and color with Country and Size with Sales

- Identify Dimension and Measure

Dimension → State

Measure → Sales

- Drag and drop State in the rows.
- Drag and Drop Sales in the columns
- Right click on Sales → ~~Select Measure~~ Measure → Average
- Drag the State onto the Color in Marks Card
- Drag the AVG(Sales) By holding Control Button and drop it on the Size

3. Dec. 2015

SCENARIO 5 :-

Task 6:- Display country wise no. of orders

- Drag country into rows, order ID into columns,
- Change the aggregation of order ID to count Distinct
- Color Code the Visualization with order ID.

* Note:- Count will count all the values, whereas Count Distinct will count only the Distinct values.

Both the count and count Distinct ignores the nulls the values.

Eg:-

Location	JObs
Hyd	100
bang	null
chennai	100
pune	null

Count (JOb)	Count'd (JOb)
2	1

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Task7:- Display Category wise average shipping cost, and add the title, Caption, Summary Information.

- Drag Category into rows, & shipping cost into columns
- change aggregation to average
- To show title, Caption, Summary click on worksheet tab and Select Show Title, Show Caption, Show Summary

SCENARIO 6:- (Working With Multiple Dimensions)

→ In Tableau to work with the multiple dimensions, we are having 2 ways

1. Nested Table
2. Small Multiple.

NESTED TABLE:- In Tableau "Table" is a collection of fields in the row shelf and the column shelf (or) Complete Visualization is known as a Table.

→ If we place one dimension inside the other dimension then it is known as Nested Table.

Rules to Build Nested Table :-

1. Identify inner and Outer dimensions.
2. Place all the inner dimensions inside the outer dimensions.

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Task 1 :- Display year-wise, quarter wise, total profit

- ~~Drag~~ Identify Inner, Outer Dimensions
- Year - outer dimension, quarter - inner dimension.

{1-level nesting}

- Drag year, quarter into columns, Profit into rows and color code with profit.
- To show the Values only for minimum and maximum, click on Label in marks Card. In marks-to-label select minimum or maximum.

Task 2 :- Display department wise, Customer segment wise shipmode wise no. of customers.

{2-level nesting}

- Drag Dept. Customer segment and ship mode into rows
- customer ID into columns
- Change the aggregation to count distinct and color code with customer segment.

Task 3 :- Display year-wise, quarter-wise, month-wise, day-wise average discounts.

{3-level nesting}

- Drag order date and drop it into rows for 4 times.
- Drag discount and drop it into label of marks card.

* **Note :-** Maximum level of nesting possible in tableau is 15, because max we can place upto '16' dimensions in the rows and column shelf. (n-1)

Assignments-2

Task 1:- Display year wise, month wise average profits

Task 2:- Display dept wise, category wise, total quantity order

Task 3:- Display country wise, state-wise, city wise, postal code wise max. profits in the form of Text.

Task 4:- Display year wise, continent wise, container wise average margins.

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iball (wifi)

→ ftp://192.168.1.253:46

User name:- AIMODI FTP

Password Aimtech123.

Doubts:- Assignment-1

→ Task 6, → did not find shipping cost in measures

Assignment-2

→ Task-2 → did not find dept.

→ Text means Abc?

→ Task 4 - did not find continent & margins

→

Dec-3rd

Assignment-2

Task 1:- Display year-wise, month-wise, average profits.

- Identify Dimension and measure
- Dimension - year, Month, Measure - profit
- Outer dimension - year
  inner dimension - quater, month {2 Level nesting}
- Drag and drop order date stime - year, quater, month in the row shelf.
- Drag and drop profit in columns → Right click → Measure → Avg
- Save the workbook (with the title)

Task 2:- Display dept. wise, category wise, total quantity order.

- Dimension
  ↳ Dept.
  ↳ Category
  Measure
  ↳ quantity
- Outer Dimension → Dept.
  Inner " → Category {1 Level Nesting}
- Drag & Drop Dept. & Category in row shelf
- Drag and drop quantity in column shelf
- Save the Workbook.

Task 3:- Display country-wise, state-wise, city wise, postal code wise max. profits in the form of text.

- Dimension → Country, State, City, Postal Code
- Measure → profit
- Outer Dimension → Country
  Inner Dimension → State, City, Postal Code {3 Level Nesting}
- Drag and drop Country, State, City, Postal Code in row shelf

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- Profit in the column shelf
- Right click on Profit → Measure → Max.
- Tool bar → Click on Abc for Text
- Save the Workbook

Task4:- Display year-wise, Continent-wise, average margin

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Dec 4th

→ If we breakdown the Visualization into multiple parts by multiplying the dimension with measure. then such a kind of Visualization is known as small multiples dimension

→ It is also known as panel chart

Rules to build small multiples:-

1. Identify small multiple Dimensions, normal dimensions.
2. place the small multiple dimension along with measure

Task11- Display year-wise sales in every quarter

1. Drag order date into rows, sales into column
2. Drag order date and drop into columns and change the date level to quarter & color code with sales

Task2:- Display continent wise total profits in every Customer Segment.

- Drag continent into rows and profit into columns
- Drag Customer Segment and drop it into columns.

*Note:- In Tableau it is not possible to place a dimension to the right side of the measure, because all the measures are independent of the dimensions.

*Note → Even though if we try to place any dimension to the right side of the measure tableau automatically places it its left.

Task3:- Display Category-wise, shipmode-wise, shipping cost per region

*Note: Shortcut to findout no. of Panes (or) Panels.

With Nested Table

no. of values in small multiple dimensions * no. of measures * no. of values in the nested table dimensions except the inner most dimension.

5 * 1 * 17 = 85

With only 1 Dimension:-

no. of values in small multiple dimensions * no. of measures

- Drag Category shipmode into rows, shipping cost into columns
- Drag region and drop it into columns

Task 4:- Display country-wise, dept.-wise no. of customers in each Customer Segment

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- Drag country, dept. into rows, customer ID into columns and change aggregation to count distinct
- Drag customer and drop it into columns
- Color code with no. of customers
- Select → Edit colors → click on Reverse → Apply → OK

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Task5:- Display year-wise, month-wise, Item-wise average discounts in every department and continent

- Drag order date into rows for 2 times and select year & month
- Drag item and drop it into rows and discount into columns.
- Drag dept. & continent into columns

Assignments-3-

Task1:- Display quarter-wise, month-wise no. of orders in every category.

Task2:- Display month-wise, week-wise average order quantity in every state.

Task3:- Display country-wise, state wise, city-wise max. profits in every month and region.

Task4:- Display Dept. wise, Category wise, container-wise, item wise total sales in each month and customer segment.

Dec 6th

SCENARIO 7:- Parts of the Data View.

1. Table → Complete visualization (or) collection of fields & rows & Cols
2. Header → Values across the dimension
3. Axis → Values across the measure
4. Pane → Subset/subpart of Table
5. Cell → subset/subpart of pane (Each & every part as cell).
6. Field Label → field names (Ex: continent, Country)
7. Marks Card, Legends (Color & Size → well known objects)
8. Title, Caption, Summary

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Label: Piece of information

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SCENARIO 8:- Working with multiple measures.

→ In Tableau to work with the multiple measures we are having 3 ways:-

At visualization Place

1. Individual axis. → Seperate axis + Separate Pane
2. Blended axis (or) axis blending. → Single axis + Single Pane
3. Dual axis → seperate axis + Single Pane.

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1. Individual axis:- If we represent each and every measure with a separate axis & separate Pane then such a kind of chart is known as individual axis chart.

- In Individual axis charts Tableau will create a separate marks card for every measure.

Task 1:- Display year-wise, total sales, total profits.

- Drag and drop order date into columns, sales into rows
- Drag profit and drop into rows
- Tableau automatically creates individual axis.
- Click on sales marks card, drag sales and drop it into color.
- Click on profit marks card, drag order date & drop it into color
- Drag the color window and drop it into the right of the Visualization. It is known as organising the work space.

Task 2:- Display continent wise, customer segment wise total profits, average profits, min profits, max profits. color code the Visualization with continent.

- Drag continent, customer segment into rows. Profit into columns
- Drag profit and drop it into columns for 3 times and change the aggregation to average, min & max
- Drag continent and drop it into color of the all marks card

Doubt

Task3:- Display year wise, month wise, Total profits
Average profits
Max profits
Min profits

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- Drag order date and drop it into columns for 2 times.
- Drag profit and drop it into rows for 4 times, change the ~~aggregation~~ aggregation of 3 profits to Average, Maximum and Minimum.
- click on all drag profit and drop it into color.

* Note :- In Individual axis charts, Tableau will display each and every measure on a separate pane and with the separate axis.

* Note :- No. of Marks cards in the individual axis charts is n+1. (n = no. of measures)

2) Blended axis (or) Axis Blending :- Blending means mixing. If we combine multiple measure axis into a single axis then it is known as blended axis.

Task1:- year wise, total sales and total profits in the form of blended axis.

- Drag year into columns and sales into rows.
- Drag profit and drop it into existing axis.
- Tableau automatically performs axis blending by using Measure names and Measure Value fields.

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* Note:- In Blended axis Tableau will combine multiple and analyze multiple measures on a single axis and on the single pane

Blending Internal Mechanism:-

→ Before blending:-

Sales

Profit

Dragging profit and drop it into existing sales axis

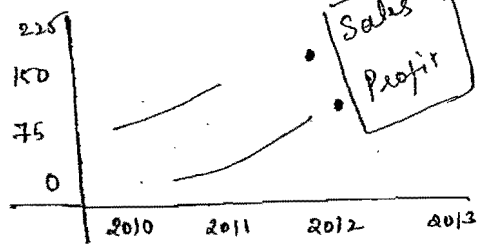
→ During blending:-

Measure Names = Sales, Profit (It contains names of combined measures)

Measure Values = Sales Values + Profit Values.

(It contains Values of Combined measures)

→ After Blending:-



→ Measure names

Note:- Measure Names and Measure Values are the default fields created by the Tableau with every data source in the Tableau work book.

Task :- Display customer segment wise, Category wise total Sales and average discounts in the form of blended axis.

- Drag customer segment, Category into rows, & sales into columns
- Drag discount and drop it into existing axis.
- Hold Control button drag measure names and drop it into color.

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Note:- Blended axis contains only one marks cards, because of only single ~~axis~~ measure Value axis.

Note:- In Blended axis we can Combine Measures with different Scale & units also.
(for eg; Sales, discounts)

Task :- Display year-wise, month wise total sales, average sales, min sales, max sales. In the form of blended axis.

- Drag order date and drop it into rows for 2 times and set the date level as year, month
- Drag sales and drop it into columns. and change the aggregation to average
- Drag sales again and drop it into existing axis.
- Change the aggregation of sum of sales in the measure values to min

- Again drag the sales and drop it into measure values and change the aggregation to maximum.
- drag sales and again drop it into measure values

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(3) DUAL Axis:- Dual axis compares two measures with separate axis but on the same pane.

Task 1:- Display year wise, total sales and profits. In the form of dual axis

- Drag order date into columns and sales into rows.
- Drag profit and drop it into other end of the sales axis.
- Tableau automatically creates a dual axis chart.

Note:- To maintain same scale on both the ends, right click on the 2nd axis and select synchronize axis.

- Right click on profit axis and uncheck show header
- Right click on sales axis click on edit axis and remove the sales title.

~~How to display multiple measures~~

Note:- With the aces synchronization and hiding the 2nd axis we can display multiple measures with multiple marks cards by containing only single axis and only single pane.

Task 2:- Display continent wise, department wise, no. of customers, no. of orders with single axis and on the single pane and color no. of customers with year and no. of orders with department

- Drag continent and department into columns, orderID into rows and change the aggregation to count distinct
- Drag customer ID and drop it into other end of the axis and change the aggregation to count distinct
- Right click on customer ID axis and select synchronize axis and uncheck show header to hide the axis.
- Hide the title for first axis.
- Click on orderID marks card drag dept. into color
- Click on customer ID marks card and drag orderdate into color.

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Note :- Using dual axis at a time we can compare only '2' measures

Note :- On dual axis max we can create upto '4' axis, but we can compare only '2' measures

Task 3 :- Design a dual axis chart with 4 axis

- Drag continent into columns and sales into rows
- Drag profit and drop it into other end of the axis.
- Drag order quantity into columns
- Drag discount and drop it into the other end of the axis.

Task 4 :- Display continent wise, sales and discounts in the form of dual axis

- Drag continent into columns, sales into rows.
- Drag discount and drop it into other end of the axis.

→ *Note:- Dual axis is more appropriate (efficient), if we want to compare two measures having different scale of units.

→ *Note:- Blended axis is more appropriate if we want to compare two measures having similar scale of units.

→ *Note:- Individual axis is the default way ~~to work~~ with multiple measures

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Assignment - 4

1. Display month wise, week-wise, average discounts, average order quantity in all possible ways. (1, 2, 3)
2. Display ship mode-wise, quarter wise, shipping cost, average unit price, in all possible ways (types) (1, 2, 3)
3. Display region wise, customer segment wise no. of customers, no. of orders in all possible ways (1, 2, 3)
4. Display country wise, year wise, total sales, total profits, average sales, average profits, min sales, min profits, max sales, max profits in all possible ways (1, 2, 3) Dual axis is n't possible

Dec

Combination charts:- If we combine multiple charts in a single ~~(Visualization)~~ Worksheet then it is known as combination charts.

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→ Combination charts are possible with the ~~multiple~~ Marks cards

→ Therefore we can create combination charts with "individual axis" and "Dual axis".

Task 1:- Display Continent-wise total sales & profits in the form of bar & line charts. Color code Bar and line chart. Color code sales with continent and profit with profit itself

- Drag continent into columns, sales and profits into rows
- Click on sales card and select bar, click on profit card and select line
- Drag continent and drop it into color of sales card
- Drag profit and ~~profit~~ drop it into color of profit card.

Dual axis :-

- Drag continent into columns and sales into rows.
- Drag profit and drop it into other end of sales axis.
- Click on sales card and select bar, profit card → select line
- Drag continent into color of sales card, profit in color of profit card

Task 2:- Display Individual axis :- year-wise, month-wise, total sales in the form of bar and average discounts in the form of area charts color discount with dept

- Drag year and month into columns, sales and discount into rows.

- Click on profit marks card and select bar, click on discount and select area.
- Drag dept. and drop ~~it in the~~ into the discount card.

Dual axis:-

- Drag year and month into columns, discount into rows, sales into other end of the axis
- click on discount card and select area chart, Sales card and select bar
- ~~(Sales card and select bar)~~

Tasks:- Display category wise total sales → Bar
Average sales → Circle
Max. sales → Area
Min sales → square

*NOTE:- If the no. of charts are more than '2' then the combination charts are possible only with the individual axis.

- Drag category into columns, sales into rows for 4 times and change the aggregation of sales to average, Min, Max.
- Click on Sum of sales marks card and select bar, drag category into color
- click on Avg sales marks card and select circle, drag dept. into color; average sales into size and increase the size
- click on min. of sales marks card and select square,
- Click on max of sales marks card and select area, drag max of sales into color
- for all the marks cards select label as min/max.

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Assignment-5

Task4:- Display dept. wise, shipmode wise, total shipping cost → Bar,

average discount → Line

Total order quantity → Circle

No. of customers → Area

No. of orders → Square

Total profit → pie chart.

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Task5:- Design a Visualization in Tableau with the following prototype.

		2010			2011			2012				2013			
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4
North	Sales	100															
	Profit	10															
South	Sales	150															
	Profits	20															

First Way:-

→ Drag year quarter into columns, regions into rows

→ Drag profit into rows.

→ Drag sales & drop it into existing axis.

→ Drag Measure Values from rows and drop it into label of the marks card.

→ Drag Measure Names from color and drop it into rows

Second Way:-

→ Drag year, quarter into columns, region into rows.

→ Drag sales and drop it into label of the marks card

→ Drag profit and drop it into visualization.

Third way:-

→ Drag year, quarter into columns, region into rows

→ Drag measure names from dimensions and drop it into rows, measure values from measures and drop it into Label of the marks card

→ In the data view select, Sales and profits and select "keep only" in the tool tip.

Task C :- Design a visualization with the following prototype and color code with measure names

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Asia Australia Europe

2010 2011 2012 2013

Q1

for Total sales
Avg. profits
No. of customers
total order quantity

Technology

Office supplies

→ Drag continent, year into columns, department, quarter into rows

→ Drag measure names into rows, measure values into Label.

→ In Measure names, select Sales, profit, no customer ID, order quantity and in the tool tip select keep only

→ In the measure values, change the aggregation of profit to average and customer ID to count distinct.

8/12/11

Combination Axis charts :- [SCENARIO :-7]

Multiple charts + Multiple axis

↓

Line + Bar charts + (Individual + Dual + Blended)

→ If we combine multiple chart types (line + Bar chart etc) and multiple axis (Individual axis, Dual axis, Blended axis) then it is known as combination axis charts.

Task 1:- Display Category-wise total sales & total profits in the form of Bar → Single axis

Avg. discounts → Line → Dual axis

Order quantity → Circle → Individual axis

No. of customers → Area → Dual axis

- Drag Category into columns, sales into rows, Drag profit into existing axis
- Drag discount and drop it into and other end of the axis.
- In Measure Values marks card select bar and Discount marks card select line.
- Drag order quantity and drop it into rows, customer ID into other end of the axis and change the aggregation to count distinct
- In order quantity marks card select circle, in customer ID marks card select area
- ~~Display Min & Max Values~~

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Real Time Scenario Eg)

Task 2:- Display month-wise Total shipping cost, Avg unit price →

Dual axis → Bar + Line Char

Average order quantity → Individual axis → Square

Margin → Dual axis → Circle

Total Sales & Total profits → Blended axis → Bar chart

No. of orders → Dual axis → Circle

- Drag order date into columns and change the date level to month.
- Drag shipping cost into rows, unit price into other end of the axis
- Shipping cost Marks Card → Select Bar, Unit price → Select Line
- Drag order quantity and drop it into rows and change the aggregation to average
- Drag the Margin and drop it into other end of the order quantity axis
- click on order quantity marks card, select square, margin marks card select circle.
- Drag Sales and drop it into rows, drag profits and drop it into existing Sales axis.
- Drag order ID & drop it into other end of measure value axis and change the aggregation to count distinct.
- click on Measure values marks card and select bar, order ID marks card and select circle

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Behaviour of Dimension :- (Dimension → Blue color)

→ Dimension always contains discrete values.

→ Discrete values means each and every value will be independent of the remaining values.

Behaviour of Measure :- (Measure → green color)

→ Measures always contains continous values.

→ Continous values means each and every value will be dependent on the remaining values.

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Data types in Tableau :-

Dimensions :-

1) Abc - Textual ~~data~~ dimension
2) Globe - Geographical Textual dimension
3) Calendar - Date dimension
4) Calendar + clock → Date + Time Dimension.

Measures :-

1) # → Number fields
2) Globe → Geographic Numeric fields

Note :- Visual clue for a dimension is Blue
" " " " Measure " Green.

Note 2 :- It is possible to convert text, Geographic dimensions into Measures

Note 3 :- It is possible to convert Measures into dimensions and even we can convert Behaviour to discrete

Note 4 :- It is not possible to convert date, date + Time dimensions ~~to~~ into Measures. But we can convert the behaviour to continous

Note 5:- If we convert any field from dimension to measure or measure to dimension the behaviour of the field will change

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Note 6:- To convert any field, right click on any field and select convert to dimension or measure. depending upon the field type.

Note 7:- If we convert field to continous or discrete the behaviour of the field will change but it will exsist in the same place

Note 8:- If we right click on any date field tableau will display two date parts 1) discrete date part
2) Continous date part.

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Dec 9th

SCENARIO 9:- GEOGRAPHIC ANALYSIS :-

→ Geo means Location. If we indicate the locations graphically in the form of a map, then such a kind of analysis is known as Geographic Analysis.

→ To plot any map we need Latitude and Longitude fields for the required locations.

→ Tableau automatically generates latitudes and longitudes for the default geographic role fields

→ If the field is not having the default geographic role then we need to obtain Latitude and Longitudes manually using custom Geocoding because Tableau cannot autogenerate those fields.

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Default Geographic Roles:-

1. Area Code
2. CBSA / MSA
3. Congressional Districts

} US only

4. Cities
5. Countries
6. Counties
7. States / Provinces
8. Zip Codes / Postal Codes

} (US & International)

Map Types:- In Tableau, we are having two types of maps

1. Symbol Maps
2. Filled maps.

1. Symbol Map:- If we indicate each and every geographic location with a symbol like circle or square on the map then it is known as symbol map.

2. Filled Map:- If we indicate each and every geographic location with a filled portion then it is known as filled map.

Task 1:- Display country wise sales in the form of map.

- Click on country geographic field
- Drag sales and drop it into color, size and label.
- In the label select "Selected".
- Add a title with the following text "Click on country to view the sales".

Filled Map:-

- Click on country geographic field
- In the Marks card select filled map.
- Drag sales and drop it into color & label. & country into label.
- In label "click on "selected".

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Task 2:- Display country wise total sales and total order quantity in the form of a map.

- Click on country geographic field
- Drag sales into color and label, order quantity into label.
- Click on label and click on "selected" and edit the text by "sales" and "order quantity" label.

Task 3:- Display country wise sales every year in the form of a map.

- Click on country geographic field

- Drag sales, ~~country into~~ into color and label, country into label.
- Drag order date and drop it into rows, Tableau will break down the map into multiple parts which is known as small multiple map.

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Task 4:- Display country wise, total order quantity in every department and customer segment.

- Click on country geographic field, drag order quantity into size, label and color.
- Drag department into rows and customer segment into columns.

Task 5:- Display country wise sales → Symbol Map.
" " profits → filled Map into a single worksheet

Combination Maps: If we combine both the symbol map and filled map in a single work sheet then it is known as combination maps.

- Combination maps can be designed in the form of single pane which is known as Dual axis maps and in the form of separate panes which is known as Individual axis maps

Task 1:- Design a combination map to display country wise sales in the form of symbol, profits in the form of filled map in a single work sheet

- click on country geographic field, drag sales into size and label
- Drag latitude from measures and drop it into rows, Tableau will generate multiple marks cards.
- click on first latitude marks card and removes "sales" from size and label. Drag profit into color.

Single Pane Combination Map / Dual axis Combination Map :-

- click on country geographic field
- Drag latitude and drop it into rows
- click on first latitude drag profit and drop it into color
- click on second latitude drag sales and drop it into size
- Right click on the second latitude and select "Dual axis".

Task 2:- Display Country wise order quantity for every department in the form of pie chart and no. of customers in the form of filled in the single pane.

- Click on country geographic fields drag latitude from measures and drop it into rows.
- click on first latitude marks card and drop it into color and change the aggregation to count distinct.
- Click on 2nd latitude, select "pie chart" drag department into color and order quantity into size and angle
- Right click on the 2nd latitude and select dual axis.

Allocating angles in pie chart { a = 100, b = 200, c = 300 }

$a = \frac{100}{600} \times 360 = 60$

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Task 3 :- Display country wise Sales in the form of filled,

(2) profits in the form of circle

(3) order quantity in the form of square

(4) discount in the form of filled.

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- Click on country geographic field
- Drag latitude and drop into rows for 4 times.
- Click on the first latitude drag sales into colour and
- ~~select~~ click on second latitude drag profit into size & select circle
- ~~and select~~ click on 3rd latitude drag order quantity into size and select square
- click on the 4th latitude, drag discount into color. ~~and~~

10/12/15 NESTED DUAL AXIS :-

→ If we place one dual axis inside the other it is known as nested dual axis

→ In maps it is possible to create the nested dual axis

Task 3:-

→ Design a nested dual axis map for country wise total

Sales → filled map

Total profits → circle

Tot. order quantity - circle

~~Tot. order~~

no. of customers - square

- click on country geographic field.
- from measures, drag latitude and drop it into rows ~~and for~~ 3 times

- Click on first latitude drag sales and drop it into color
- Click on 2nd latitude drag profits and drop it into size
- Click on 3rd latitude drag the order quantity and drop it into color
- Click on 4th latitude drag the customer Id and drop it into size and change the aggregation to count distinct
- In the row shelf right click on fourth latitude and select dual axis.
- In the row shelf right click on 2nd latitude and select dual axis.

Test Case 1:- Checking the fields with different names but having geographic values.

Ex data:- A, B, C, D, E

India, Telangana, Hyderabad, 500082, Aim Technologies

Output:- Tableau identifying the fields as "Text" (Abc) fields

Solution:- Set Geographic role manually.

Test Case 2:- Checking the fields with Geographic names but having different values

Eg:- Country, State, city, postcode, and dress

A, b, c, d, e

Output:- Tableau identifying the fields as geographic fields but we cannot plot the map as it is Unknown Value

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Solution:- To plot them in the form of map use the alias name manually.

Test Case 3:- Checking the fields with geographic names but having different geographic values.

Eg:- Country, state, city, Post Code, address.

, Telangana, Hyd, India, 100, AimTechnologies

Output:- Tableau identifying the fields as geographic fields but we cannot plot them in map.

Solution:- To plot them in the form of map, set geographic roles manually.

→ To set geographic roles manually, right click on field, → geographic role → required role

Test Case 4:- Checking the fields with mismatch names having same geographic values.

Eg:- ~~Contry~~ Cntry, Ste, Cy, Pcode, address.

India, Telangana, Hyd, 500 82, AimTechnologies

Output:- Tableau identifying the fields as "Text" (Abc) fields

Solution:- Set the geographic role manually

Note:- Tableau identifies the geographic fields completely based on field names

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Note 2:- If the field is having different geographic values and if we want to plot them in the form of map, right click on field → go to default properties → aliases → and set as required alias

Note 3:- In Tableau while performing the evaluations it will make use of alias names

Note 4:- The most frequently occured issue with maps is unknown values. To handle unknown values click on unknown indicator in the view, select edit locations and set the required location

Nothing is left

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3/5

→ New map Features from Tableau 9 :-

1. map search

2. New map selections.

   (i) Lasso

   (ii) Radial

   (iii) Rectangular

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3. To get background map options from 9.2 we have to click on "map" & we have to click on "map layers". where as upto 9.1 we have to click on map & map options.

4. So map layers is the new feature from 9.2

5. From 9 we have the followings "Background maps"

   1. TABLEAU

   2. OFFLINE empty page

   3. WMS SERVER

   9(9.0, 9.1)

   From 9.2

   1. TABLEAU 2. OFFLINE 3. MAP SERVICES (New Feature from 9.2)
      (i) WMS server (ii) map Box maps

→ BACKGROUND MAPS: 3 types

upto Tableau 8.1:

1. online 2. offline 3. wms server.

In 8.2, 8.3:

1. online:- 2 types < Tableau / Tableau Classic

2. offline

3. wms server.

Note: If you create .tms file higher version of tableau by default it isn't possible to import in the lower version of tableau.

• Still if you want to import in the lower versions open the tms file using notepad & change the version to required lower version.

12th Dec'15

Background Maps:- In Tableau we are having three types of background maps

1.) Offline
2.) Online
3.) WMS Server.

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1) **Offline:-** In offline Tableau gets the background map from the local machine. It doesn't require any internet connectivity.

→ Offline maps will be located in the following location

C:\Program files\Tableau\Tableau 8.3\Local\Maps

2) **ONLINE:-** In online Tableau gets the background map from the remote Tableau servers. It requires Internet connectivity

→ from Tableau 8.2 in online mode we are having two servers

1. Tableau
2. Tableau Classic.

→ from Tableau 9.0 they have integrated all the features of Tableau & Tableau Classic into a single server Tableau. So, from Tableau 9.0 only Tableau Online option is available

3) **WMS Server:-** WMS stands for Web Map Service Server using this option we can connect to third party servers.

Note:- To change the background map options click on "map" select background map and check either "Offline" or "Online" or "NEO WMS". (NASA Earth observation - NEO).

Task1:- Adding a WMS Server.

Note:- NEO WMS (NASA Earth Observation) is the free mode WMS server available

- Open google and enter "NEO WMS" and open any link, copy it.
- click on map select background maps and select WMS Server
- click on add and paste the URL, click on Ok.
- click on country geographic field, click on map select background maps and select NEO WMS.

Note:- To the maps we can add three types of map options

1. Background Style
2. Map layer
3. Data layer.

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→ To add different layer for WMS click on map and select map options and select any one map layer

Task 2:- Creating a tms file.

Note:- ~~Creating~~ tms stands for Tasklau map Source file

Note 2:- WMS server connections can be exported in the form of a tms file which gets stored into the map sources folder of the Tasklau Repository

- Click on map, select background maps and select WMS servers.
- In WMS server window click on Export

and click on save.

Note:- If we generate a tms file that will be used across multiple workbooks. which means tms files are re-usable files.

- Open a new workbook click on map → backgrounds → Wms Servers.
- Click on import → select the tms file and click open.
- Build any map and to use ~~no~~ wms background map click on map → background maps → Neo wms.

  And to use it as default → set as default.

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* **Note:-** Tms file will be stored in the xml format.

Note:- tms file cannot be shared across multiple machines

Note:- When we delete the wms server connection background automically get changed to default background map.

Note:- ".tms connection can be shared in ".twbx" file for only that workbook but ".tms" cannot be shared

* See some Points in 75 Page

4/16 Deepthi's

SCENARIO 10:- FILTERS:-

→ Filters will display only the required data by hiding the unwanted data

Advantages :-

1. O/p contains only the required data, so the analysis would be faster
2. It saves our time

→ 3. Filtering Levels:-

In Tableau filtering can be performed at two levels

1. Work sheet Level

2. Data Source level. (New feature from 8.0)

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1. Work Sheet Level :-

→ If we perform filtering at the worksheet level tableau will add filter to only that work sheet by dyault.

→ 2. Data Source Level:-

→ If we perform filtering at data Source level tableau will apply that filter to all the sheets uses that datasources

Different filtering ways at the Work sheet Level:-

→ 1. Header - values across-mDimension

2. Marks card

3. Data View - Collection of fields (Rows & Columns)

4. Using filter shelf

5. quick filter

6. Context filter

7. Cascading filter

8. Parameter filter

[Filters]

Work Sheet Level | Data Source Level (New from Tableau 8)

- Header
- Marks Card
- Data view

] Statical type (manual Filter)

- Filter Shelf → Filtering Dimension, Filtering Measures, Filtering Dates (Cratual, Geographic)
- Quick filter
- Context filter
- Cascading filter
- Parameter filter

Task 1:- Display even year sales

• At Header Level :-

→ Drag order date and drop it into rows.

→ In the year header select 2010, 2012 and select Keep only.

in the Tool tip

→ Drag sales and drop it into rows.

Marks Card level:-

- Drag order date into column and color
  In the color window select 2010 & 2012 and select Keep only
- Drag sales and drop it into rows.

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Data View :-

- Drag Order date into columns, sales into rows.
- In the data view Select 2010, 2012 and select keep only.

Task 2:- Display only the continents whose name is starting with 'A' and their profits.

Header Level:-

- Drag continent into rows in the Header, select only continent names starting with A
- In tool tip select keep only.
- Drag profit into columns.

Note:- performing filtering at the data view level, Marks card level, Header level is not recommended if the field contains huge amounts of data; and always use filter shelf to perform filtering.

Filtering at the filter shelf:-

→ At the filter shelf we can perform filtering dynamically by passing the required conditions in three different ways.

1. Filtering text, geographic dimension
2. Filtering date, date + Time dimension
3. Filtering Measures

1. Filtering Text, Geographic Dimension :-

Task 1 :- Display all the customers whose name is starting with 'A'

- Drag customer name into filter, in the filter window select "wild card" enter the match value as 'A' and select "starts with" click on "Apply" and click on "Ok".
- Drag customer name into rows and sales into column

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Note :- Wild Card search is not case sensitive in Tableau

Note 2 :- Searching the i/p string based on single character or group of character is known as wild card search.

Task 2 :- Display all the customers whose name is not starting with 'A'

- Drag customer name into filter click on wild card select the match value as 'A' and select "exclude", click on "Apply" click on "Ok"
- Drag customer name into rows.

Task 3 :- Display all the customers whose name is ending with D.

- Drag customer name into filter, click on wild card, enter the match value as 'D' and select "ends with".
- Drag customer name and drop it into rows.

Task 4 :- Display all the countries whose profit is more than one lakh.

- Drag the country and drop it into filters, click on condition select "by field" and select "profit", "sum" greater than 100,000 click on "Apply" click on "Ok"

- click on country geographic field, drag profit into size and label.

Task 5:- Display the item-wise discounts whose discounts are less than 8%.

- Drag item into filter click on "Condition" select by "field" and select discount average less than 0.08. click on "apply" click on "OK".
- Drag item into rows and discount into columns.

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Task 6:- Display all the lossable customers.

- Drag customer name into filter click on "condition", select by field" and select profit sum less than zero. click on "Apply" click on "OK".
- Drag customer name into rows and profit into columns.
- Right click on profit, select default properties, number format select, currency custom and select two decimal places.

Task 7 :- Display all the countries whose total sale more than 5 lakhs and no. of customers more than 75.

- Drag country into filter click on "Condition" select by formula"

  Sum ([Sales]) > 500000 AND COUNTD ([Customer ID]) > 75

- click on country geographic field, drag sales into "size" and "label", customer ID into label and change the aggregation to Count distinct

Note: LAST/NEXT 'n' days = Anchor Day + LAST/NEXT 'n-1' Days

Ex: Last 3 Days = Anchor Day + Last 2 Days

Note: For all the date parts week, month, Quarter, Year the logic is same.

Task8:- Display top ten countries based on profits

- Drag Country and drop it into filter click on "Top" select by field and select "top 10" "profit" "sum", click on apply, click on OK.
- click on Country geographic field, drag profit into color and Label.

Task9:- Display bottom '15' Countries based on Sales

- Drag Country and drop it into filter, click on "Top" select by field and select "Bottom 15" "Sales" "sum" click on "apply", click on "OK".
- click on Country geographic field, drag sales and drop it Color

Task10:- Display top 20 Customers based on highest profits

- Drag customer and drop it into filter, click on "Top" by field and select "Top 20", "profits" → "Maximum." click on apply, click on OK.
- Drag customer into rows, profits into columns and color.

Task 11:- Display only east and west region sales

Doubt

- Drag region into filter
- click on "general" click on "None" select only east and west click on "apply" click on "OK".
- Drag region into rows, sales into columns.

Discrete: Every value is independent of Behaviour remaining values

7/4/16

13th Dec

Filtering Date, Date + Time dimensions :-

Continuous:- Every value is depedent of remaining values

→ 2 Ways

1. filtering the ~~dimension~~ discrete Dates
2. " continous dates.

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→ In Tableau filtering can be done in two ways.

1. Discrete date filtering
2. Continous date filtering.

1) Discrete date filtering:- If we want to perform filtering of the date parts independently, then it is known as discrete date filtering

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2) Continous date filtering:- It can be performed in two ways.

1. Range of dates :- If we want to perform filtering within the start date and the end date then use range of dates

2. Relative dates :- If we want to perform filtering for the specific period for Example last three months, last four years etc then use relative dates

Task1:- Display even year sales.

- Drag the order date and drop it into filters select year and click on next
- Select 2010, 2012, click on apply and click on ok.
- Drag the order date into columns and sales into rows.

Task2:- Display the country wise sales in between 1st Jan 2013 to till date. (In super store)

- Drag order date and drop it into filters, select range of dates and click on next.

Task: Display Country wise Sales in b/w 1 Jan 2013 to 31 March 2013

- In range of dates select the starting date as 1/1/2013 and end date as 12/31/2013 (as current date or last date in the super store), click on apply, click on ok.
- Click on country geographic field, drag sales into color & size.

Task 3:- Display the customer wise quantity order upto 31st Dec 2012

- Drag order date and drop it into filters, select ending date and select the date as 31/Dec/2012.
- Drag customer name into rows and order quantity into columns.

Task 4:- Display Continent-wise shipping cost from 9th March 2013.

- Drag order date and drop it into filters, select starting date and select the date as 9th March 2013.
- Drag continent into ~~rows~~ rows and shipping cost into columns.

*Note:- Range of dates is inclusive

Note 2:- While performing range of dates filtering, if we know only ending date select "ending date" and select the required date. Tableau will take the start date as the first date available in the data source

Note 3:- Similarly if we know only the starting, select as starting date option and set the required date. Tableau will take the ending date as last day available in the data source

Task: Top 3 months across the Superstore based on profit. Display all orders of Superstore whose Avg. Dis > 5%

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Every Quarter Year Week Quarter Year

Task5:- Display last 45 sales of the super store

- Drag order date and drop it into filters select relative dates and click on next.
- Select days and select last 45 days, ~~select~~ in anchor set the day as 31st Dec 2013. click on apply, click on ok.
- Drag customer name into rows, sales into columns.
- Drag the order date and drop into rows before customer name and select exact date discrete by rightclicking on it.

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Task6:- Display the last ten days sale of every Category in november 2013.

- Drag order date and drop it into filters, select relative dates and click on next.
- Select days and select last ten days and anchor as 30th Nov 2013. Click on apply and click on ok
- Drag order date and drop it into rows, select exact date discrete.
- Drag Category into rows and sales into columns.

Note:- To handle the null dates, use the "special tab" in the Continous date filtering.

Task7:- Display the last 6 month sale for all the countries in super store

- Drag order date and drop it into filters select relative dates and click on next.
- Select months and select last 6 months. and anchor as 31st Dec 2013. click on apply and click on ok.
- click on country geographic field, drag sales and drop it into color & size

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Alternate Way :-

- Drag order date and drop it into filters select month year and click on next. and select last 6 months in the year 2013.
- Click on country drag sales and drop it into size and color..

14.12.14

~~Task: Display all Customers whose name Starts with 'A' and Total profits >10000 & among the list display Top 10.~~

→ Filtering the Measures :-

→ In Tableau Measures can be filtered in two ways

1. Filtering the Individual Values
2. Filtering the aggregates (grouped) Values

Task 1 :- Display continent wise total Sales whose sales is more than 5 Lakhs

- Drag continent into rows, & sales into columns.
- Drag sales & drop it into filters. click on sum and click on next
- click on atleast and enter the Value as 500,001; click on apply click on ok.

Task 2:- Display Continent wise individual sales translations whose Value is more than 1Lakh.

- Drag continent into rows and Sales into columns.
- Drag sales and drop it into filters click on "all values" and click on next.
- Select atleast and enter the Value as 1,00,001.
- Click on Analysis (Task bar) and uncheck aggregate measures to remove the aggregation.

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*Note:- Eliminating the aggregations is specific to one work sheet.

Task 3:- Display the item wise individual discounts inbetween 15% to 25%

- Drag the item into rows discount into filters
- Select "all values" and click on next.
- Select "Range of values" and enter the Value as 0.15 & 0.25, click on apply, click on OK.
- Drag discount and drop it into text of the marks card.

Task 4:- Drag the Category wise each and every quantity order (<) less than 100

- Drag category into rows order quantity into filters select all values and click on next.
- Click on atmost and enter the Value as 99.99, click on apply, click on ok

Note: Always it is recommended to avoid [illegible] on the data to improve the performance.

- Drag the order quantity into text of the marks card and remove the aggregation

Note:- To eliminate the null numbers we can use "special" option in the filter window.

**Note:- It is not recommended to perform filtering on the measures, as it contains huge amounts of data.

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Quick FILTERS:- Quick filter allows the users to add required dynamism and interactivity to the visualizations

Note:- quick filters can be added on any field even though of the field is not part of the visualization

Task 1:- Display continent wise sales and add a dynamic selection for

1. Continent
2. year
3. Sales.

and allow single value selection for continent, range of values for sales and selection of any year should exclude that year from the visualization

- Drag continent into rows, sales into columns
- Right click on continent, sales and select show quick filter
- Right click on order date and select show quick filter
- click on drop down (Right most corner) for the continent and select single value list.
- Click on drop down for sales and select range of values
- Click on drop down for year and select exclude values.

Note:- Changing the default properties is known as Customization.

- Click on drop down for the continent filter, select customize and uncheck "Show All Value".

Note:- To hide the options in the quick filter click on dropdown in the quick filter and customize the required option.

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15.12.2015

CONTEXT FILTERS:- In Tableau by default two filters will act independently it means the o/p of one filter will not depends on the o/p of the 2nd filter.

→ If we want to make one filter depending on the other filter then we have to use context filter.

Rules to perform Context filtering:-

1. Identify Dependent and Independent filters
2. Make the Independent filter as Context

Task 1:- Display top 10 items in the furniture department based on sales

→ Drag item into rows and Sales into columns

→ Drag department into filters, select furniture click on apply.

→ Drag item into filters, select top 10 (Sales)(Sum)

→ By default it will show only top3 items, because two normal filters will queries independently.

→ To achieve the requires of perform context filtering

→ Identity dependent, Independent filters

→ dependent filter = top 10 products

Independent filter = department

→ Right click on the department and click on "add to ~~text~~ context"

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Note 1:- If we define "context" on any field all the normal filters will queries the context filter output but not the actual datasource. so, normal filter will be dependent on the context filters.

Note 2:- Context filters will appears in the grey color and they will always on the top of the filter shelf

~~Normal filtering~~

Diagram → next ~~fil~~ Page

Task:- Display all Customers whose name Starts with 'A' and total profits > 10000 & among the list display Top 10.

Steps: Drag Customer to filters → Select wild Card, Starts with 'A'

Select Condition tab → By field → Sum (profit) > 10.

Select Top tab → By field → Top 10 Sum (profit)

→ Apply & Ok.

NOTE:- By formula option in Condition tab of dimension filed field is different in Tableau 8x, Tableau 9x

In Tableau 8, It will open a New window

Whereas In Tableau 9, It is different in 9.0 & from 9.1

from 9.1 it Contains ~~automati~~ auto formula Completion

Normal Filtering Behaviour

Top 2 Products in ~~dept.~~ D1 Dept

Dept.	products	sales
D_1	P_1	100
D_1	P_2	150
D_1	P_3	140
D_2	P_{11}	120
D_2	P_{22}	130
D_2	P_{33}	145

filter-1

Dept = D_1

Dept.	Products	sales
D_1	P_1	100
D_1	P_2	150
D_1	P_3	140

filter-2

Total 2 products

Dept.	Products	sales
D_1	P_2	150
D_2	P_{33}	145

Final O/P

Dept.	Prod	Sale
D_1	P_2	150

Context filtering

Context filter

Dept = D_1

Independent filter = Dept.

Dependent filter = products

Context filter o/p

Dept.	Products	Sales
D_1	P_1	100
D_1	P_2	150
D_1	P_3	140

Normal filter

Top 2 Products

Normal filter queries the context filter but, not the actual data source

Final O/P

Dep	Prod	Sale
D_1	P_2	150
D_1	P_3	140

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Task 2:- Display Top 3 months in the year 2013 in Asian Continent based on profits.

Note:- If we have the multiple context filters multiple context filters will work independently, and the normal filter will queries the multiple context filter o/p

- Identify the independent and the dependent filters
- Drag continent and drop it into filters select Asia.
- Drag year into filters select 2013
- Make the both year and continent as "context filter"
- Drag month into filters, select Top '3' profit sum.
- Drag the order date into rows and select the format as month year.
- Drag profit and drop it into text.

Task 3:- Display bottom 10 customers (order quantity) based on total order quantity in the Consumer Segment for the quarter Q1 in the year ~~2013~~ 2012.

- Drag customer segment, year, quarter into filters
- Select customer segment as consumer, year as 2012 and quarter as Q1. and add context to the '3' filters
- Drag customer name into filters select bottom 10 based on the order quantity.
- Add a quick filter on the customer segment

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filter o/p in the form of MS access file.

Advantages of Context filter :-

→ It is very useful to perform the dependent top 'n' filtering

→ It will improves the performance as the normal filters will queries only the context filter o/p but not the actual data source

→ It reduces the amount of data to be queried so automatically it is going to improve the performance.

Drawbacks :- (Interview question)

→ Context filters will create some temporary tables to store the context filter o/p,

→ If the amount of data is high it will consume the disk space

Note :- If the datasource is a database then Tableau will create temporary table in that database, and if the datasource is files (Excel, text, Access) (it is upto version 8.x) then Tableau will creates temporary table as MS-Access table. From version 9 irrespective of the datasource it is storing the o/p in the form of MS-access file.

Drawback :-

→ If we have more no. of context filters each and every normal filter will queries all the context filters, so it will increase no. of queries to be executed and also amount of data to be queried.

NOTE :- To remove the context filter behaviour from the field, right click on context filter field + Remove from Context.

16.12.15 Filter Sharing Options :-

→ In Tableau at the worksheet level, the filter can be shared in 3 ways :-

1. Current sheet (By default)
2. Specific sheets (New in Tableau 9.0)
3. All using that Data source

Upto Tableau 7.0

1. Local (To only that sheet).
2. Global (To All Sheets in that Data Sources)

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Task1:- Design 4 sheets in Tableau 1.

1. year sales
2. year + quarter sales
3. year + month sales
4. Continent sales.

- Apply the year filter to all the sheets except continent and share Continent filter to all the sheets.
- Create 4 sheets 1. year sales
  2. year + quarter sales
  3. year + month sales
  4. Continent sales
- Click on year sheet drag order date into filters, select year and select only 2013, click on apply
- Right click on year in the filters, click on apply to worksheets and click on selected worksheets, select year + quarter, and year + month sheets.
- Click on continent sheet and add a quick filter on the continent, Right click on the continent in the filter shelf click on apply to worksheets and select "all using this data source".

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Note:- If we create a new worksheet Tableau automically adds the shared filter on the data source.

Task2:- Design 3 sheets

1. Country Sales
2. State "
3. City Sales.

Apply the country filter across the state and city and state filter across city.

→ Design 3 maps in three worksheets 1. country sales, 2. state-sales, 3. city - sales

→ ~~Add~~ you click on country sheet, Add quick on country.

→ click on drop down in the quick filter, click on apply to worksheets and click on selected worksheets, select state and city sheets

→ Similarly Add a quick ~~on~~ filter on state and share it to the city sheet.

→ Create a dashboard and place the 3 sheets

Note:- Quick filters cannot be shared across the multiple datasources

Note 2:- quick filter is specific to one datasource

Parameter:- Parameters allows the users to pass their own values dynamically

→ In Tableau we can able to create the different types of parameters like

1) Integer
2) Float
3) String
4) Boolean
5) Date
6) Date + Time

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→ depending on the data type of the parameter, we can pass the values in three ways

1. All
2. List
3. Range

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Task1:- Display the Top N customers based on sales

→ Drag customer name into filters, click on "Top", select by field select "Top" and create a new parameter, enter the parameter name as "Top N", Allowable values as "All" and click on OK.

→ select "Sales Sum", click on apply, click on OK.

→ Drag customer name into rows, sales into columns.

→ In the parameter enter 10. It is going to show top 10.

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Task2:- ~~Bottom N Countries~~ Display the bottom 'N' countries based on Profits

- Drag country and drop it into filters, click on 'Top' select by field, select bottom and click on create a new parameter enter the parameter name as bottom 'N' and allowable values as 'All'. click on OK
- click on Country geographic field. Drag profit into size and label

Task 2:- Display all the customers whose sales is more than the user selection

- Create a parameter, with name "Sales Limit" of Type "~~Flat~~" float

- Drag customer name and drop it into filters click on condition, select "by formula"

  Sum([Sales]) > [Sales_Limit].
  ↓
  Parameter

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- Drag customer name into rows, sales into columns and color and show the sales limit parameter
- In the parameter enter the value as 1,00,000 and check whether all the customers ~~profi~~ sales amount is more than 1,00,000 or not.

Task 3:- Display the country wise profits inbetween the user selection of start date and end date in the form of calender.

- create two parameters. 1. start date, 2. End date of Type date
- Drag order date and drop it into filters, select individual dates and click on next
- Select by formula " [order date] >= [start_date] AND [~~end~~ date]
  ^
  [order date] <= [End_date]

- Click on country geographic field and drag profit ~~and~~ o into color and label.

Task 4:- Display the dept. wise category wise total sales dynamically on the selection of the user.

- Create a parameter with the name "department" of type string and allowable values as list. In list of values enter furniture, technology, office supplies. and click on "ok".
- Drag the department and category into rows, sales into columns show the department parameter.
- Drag the department and drop it into filters, click on condition select by formula [Department] = [Dept] or [Dept] = 'All'.
- In Parameter select any department and check the o/p.

Note:- Parameter evaluation is case sensitive

Note:- parameters will not support multi value selection.

Task 5:- Display category-wise, ~~sub~~ item-wise order quantity and display all the categories except the selection of the user.
Add Groovade Selections 1. None (Display all values) 2. All (Exclude

- Create a parameter name with Category of type "string" and allowable values as "List", and click on add from field and select category
- Drag category, item into rows, order quantity into columns
- drag category into filter, click on condition select by formula

  [Category] <> [Parameters].[Category] AND [Parameter].[category] <> 'All'

- In the Category parameter, select any value and check the o/p.

  1. None (Display all values)
  2. All (Exclude all value)

Note: we can use same parameter across multiple data sources

Note: If we use same parameter across multiple sheets or multiple data sources. If change value on one sheet it will automatically get changed in the remaining sheets also.

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V. Imp in Interview

Filters

- Worksheet-level
- Data source filters (from tableau 8.0)

1) Adding filters to Data view
   - We can filter
     1) Data
     2) Header
     3) Marks card
     By using Exclude
2) Dragging fields to filters shelf
   - We can filter
     1) Dimensions
        - Character
        - Date
     2) Measures
     3) sets
3) quick filter "Interactive filtering"
4) context filter
   - For particular category only
5) Calculation filter
6) Cascading filters
7) Parameterized filters

Tableau (8.0) or higher
1) All using data source
2) only current sheet
3) specific sheets upto Tableau 8.0
   1) global 2) local

→ filter showing options

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10/5/16

24.12.15 ***

Filtering at the Data Source level:- From Tableau 8.0, we can directly perform filtering at the data source level. If we apply filters at the data source level, first Tableau applies the filter and then it will get only filtered data into Tableau.

→ At the sheet level Tableau connects to Complete data source and then applies filter at the required sheet.

Task 1:- Display only Asian continent data for the year 2013 using data source filter

- Right click on the data source and click on edit ~~data source~~ filters
- Click on add, select continent and click on OK, and select Asia
- Click on [add] select Orderdate, click on [OK], select years and click on [next], select the year as 2013. and click on [OK]
- Click on [View data], it will display on the filtered data

Note:- After adding the data source filter, if we want to modify or remove, select the required filter, click on edit/remove.

Filtering Across Multiple Data Sources:- In Tableau by default, we can share filter to only one data source. If we want to share the filter across multiple data sources then we have to use 1) parameters

2) ~~Act~~ Filter Actions

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Note:- Parameter is independent of the data source

Note:- If we use same parameter across multiple work sheets. If we select value in one work sheet it will automatically get applied in the remaining work sheets

Task 1:- On super store extract, Excel data sources display the same region wise sales and profits information.

- Connect super store extract and Excel (orders sheet) data sources
- If we create a parameter with the name region and add the values from region extract data source

Note:- While creating the parameter across the multiple data sources ~~also~~ always add the values from the field having more values.

- click on Extract data source drag region into rows, sales, profit into columns and rename the sheet as extract-profit
- Create a new sheet with the name Excel, drag region into rows, sales, profit into columns from Excel data source
- In both the sheets, drag region into filter, click on Condition, select by formula :

  [Region] = [Parameters].[Region] OR [Parameters].[Region] = 'All'

- Show the parameter and select ~~one~~ any region and check whether it is showing the same region in both sheets or not.

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Task :- Display the same year, customer sales information in both the super store Extract and Excel data sources

(Interviews)

Quick filters	Parameters
1) Selections :- It allows the multi value selection	1) It allows only single value selection
2) Behaviour :- Dynamic in nature	2) Static in nature
3) Type of values :- It contains the in-built values (Values from the datasource)	3) It contains the user defined values
4) Scope :- specific to one data source	4) It is common to complete work book (Independent of data sources)
5) It is possible to add Quick filter fields to filter shelf	5) It is not possible to add parameters to filter shelf
6) Filtering :- Quick filtering can be performed within 1 data source	6) parameter filtering can be performed across multiple data sources

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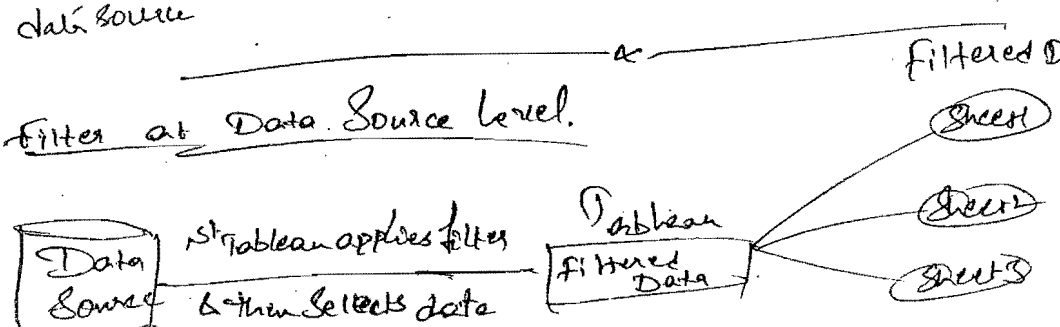
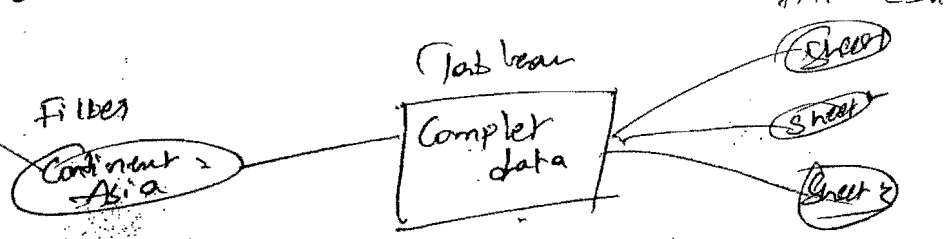
Filter at Data Source level.



Filter at Sheet level



25.12.15

→ SQL Contains 6 different Clauses

1) Select → Req. list of data columns (or) all columns
2) from → It contains the data sources
3) where →
4) Group By
5) Having
6) order By

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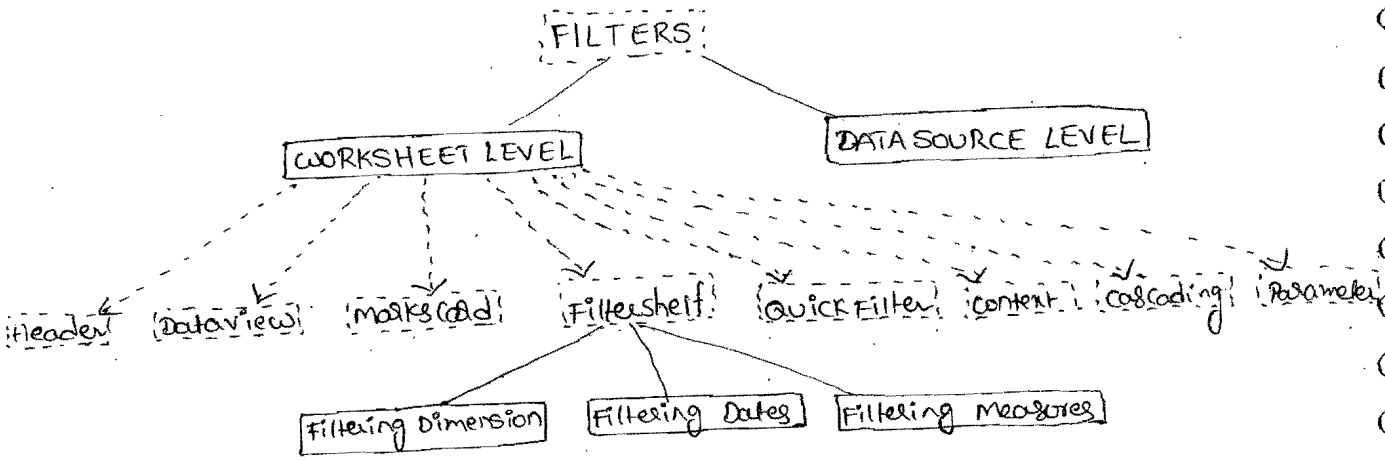
3) ~~where~~ Where → It Contains Conditions on the ungrouped data
→ It contains Conditions on the row level data
→ It performs filtering on the ungrouped records
→ It contains all the dimensional filtering Conditions

4) GroupBy → It contains conditions on the grouped data
→ It contains Conditions on the



Task: Performing dynamic filtering at the data source level

S1: Create a Parameter with the name department with the all the dept values.

S2: Right click on the data source (superstoreExtract) & select edit data source filters & select Edit data source filter & click on add select dept. & click on ok.

S3. In the dept window click on condition & select by formula

[Department] = [Dept] (Parameter) OR [Dept] = 'All' (Parameter)

click on ok, show the Parameter & select the required value. 104. Drag no. of records into rows.

11/5

Scenario - (11) **Joins**

* Join (1) is a query that combines the data from 2 (or) more tables, sheets, files in a single datasource based on the join-condition.

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Rules to perform Join :-

To perform Join we are having '2' rules.

(i) Both the tables should have a common column.

(ii) Based on the common datatype in the both tables.

Join Types :

Depending on the join condition joins are devided into two types. (i) Equi join (ii) Non-equi join.

Equi Join :- In the Join condition if you use the equality-operator (=) then such a kind of Join is called as "Equijoin"

Non-Equi Join : In the Join condition Apart from the equality If we use any operators like <, >, <>, <=, >= etc.. such a kind of Join is known as Non-equi join.

Equi Join Types :-

Equi join is divided into 3 types

(i) Inner Join (ii) Outer Join (iii) Self Join.

* again Outer Join is divided into '3' different types

(1) Left Outer (2) Right-outer (3) Full Outer

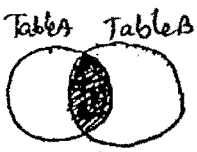
INNER JOIN: Inner Join combines the data from '2' tables and it displays only the matching records (or) common Records.

Table A

Name	ID
Ramesh	1
Ravi	2
praveen	3
Kiran	4

Table B

ID	Designation
1	professor
2	professor
3	professor
5	principal



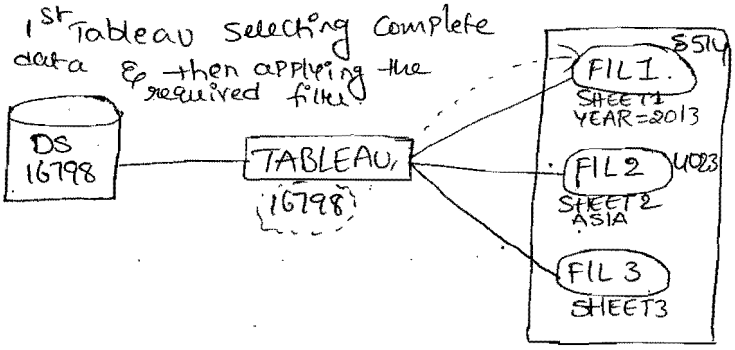
Output Table

Name	Designation
Ramesh	Professor
Ravi	professor
praveen	professor

Join condition : TableA.ID = TableB.ID

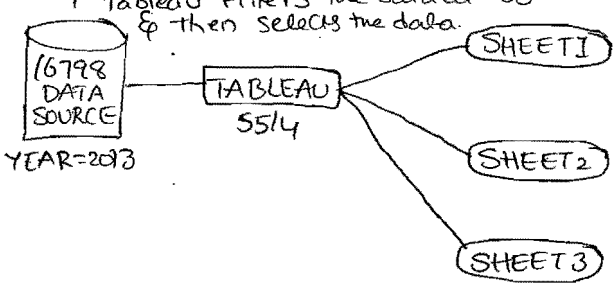
FILTERING MECHANISIM AT SHEET LEVEL :

1st Tableau selecting complete data & then applying the required filter.



FILTERING MECHANISIM AT DS LEVEL :

1st Tableau filters the data at DS & then selects the data.



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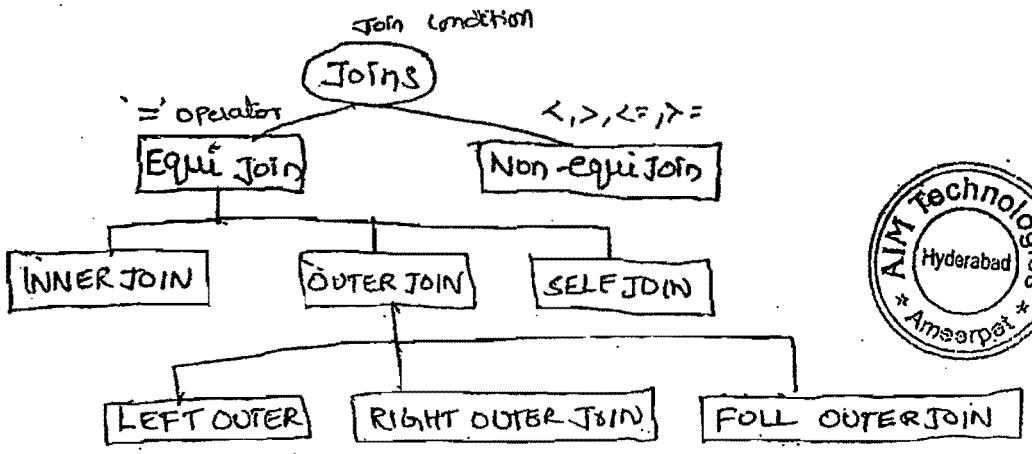

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Task-① Implementing Inner Join in Tableau on superstore datasource.

Upto 8-1

Step①: open Tableau.Desktop 8.1 Connect to data → Excel → Superstore → click on open.

Step②: In Connection window select multiple tables and click on 'Add Table'

Step③: Select 'Returns' and click on 'Join' tab select the Join Type as Inner and click on ok.

Step④: change Connection name as 'InnerJoin' and click on ok. and select 'Connect Live'

From 8.2

Step①: Connect to data → Microsoft Excel → superstore → open

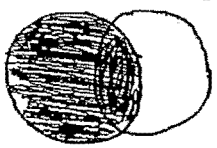
Step②: click on 'Orders' and click on 'Returns'.

Step③: Change name 'InnerJoin' and click on Go to worksheet.

OuterJoin

Left Outer Join :- Left Outer Join displays the complete data from the Left table and matching records from the Right Table.

TableA TableB



TableA ID = TableB.ID (+)

TableA LEFT JOIN TableB
ON
TableA.ID = TableB.ID.

Output

Name	Designation
Ravi	Professor
Ramesh	Professor
Pravey	Professor
Kiran	NULL

Task-① Implementing Left Outer Join in Tableau

upto 8.1

Step① : 8.1 → Connect to Data → Excel → Superstore → open

Step② : click on multiple Tables, click on 'Add Tables' click on Returns and click on 'Join' tab.

Step③ : select the Join Type as Left.

Step④ : Enter Connection name as 'LO_Join' click on Ok and connection type as Live.

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From Tableau 8.2

Step①: 8.2 → Connect to Data → Excel → superstore → open

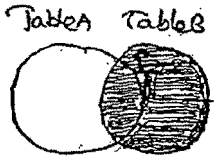
Step②: click on 'Orders' and click on 'Returns'

Step③: click on the Join icon and select 'Left'

Step④: Enter the name as 'LO_Join' and click on Go to worksheet

Step ⑤:

Right outer Join: Right Outer Join it displays complete data from Right table and matching records from left table.



⇒ Table A.ID (+) = Table B.ID

Name	designation
Ramesh	professor
Ravi	professor
praveen	professor
Null	principal

Task: Implementing Right Outer Join in Tableau

upto 8.1

Step①: 8.1 → connect to data → Excel → superstore → open.

Step②: Click on multiple Tables and click on Add table. Click on Returns click on 'Join' tab

Step③: select Join Type as 'Right' click on Ok. connection name 'Ro_Join' click on ok. and connection Type as 'live'

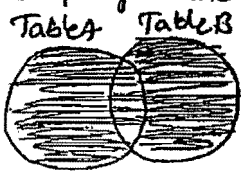
Step①: 8.2 → Connect to data → Excel → Superstore → open with Legacy connection.

Step②: Click orders, Returns and select the Join Type Right outer

Step⑧: enter the Connection name as 'Ro_Join' Click on Goto worksheet and click on view data.

Full OUTer Join:

It displays the complete data from both the tables



o/p:

Name	Designation
Ramesh	Professor
Ravi	Professor
Praveen	Professor
Kiran	Null
Null	principal

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Note:- Excel Datasource will not support Full outer Joins.

Note-② upto 8.1 customSQL is directly available in the Data-connection window.

Note-③ From 8.2 for files to get the custom SQL we have to open them in the Legacy Connection mode.

Note-④ From 8.2 2 Types of customSQL (i) New customSQL (ii) Convert to customSQL (SQL for the existing connection)

Note-④ Default Join in Tableau is 'Inner'

3) Self Join :-

Performing a Join to the same table itself is known as 'SelfJoin'

Implementing self Join in Tableau?

Upto 8.1

Step①: click on Connect to data → Excel → Superstore → open

Step②: Click on multiple Tables click Add table select 'orders' and click on 'Join' tab

Step③: From Both tables select customerID, customerID click on Add click on ok.

Step④: Enter the connection name as 'SelfJoin'

Step⑤: select the connection Type as 'Live'.

From 8.2

Step①: 8.2 → connect to data → Excel → Superstore → open

Step②: click on orders and Again click on Orders.

Step③: In Join condition select customerID from both the Tables. click on go to worksheet

Non-equi Join :-

Task - Display the states of unmatched orders.

Upto 8.1

Step①: 8.1 → connect to Data → Excel → Superstore → open

Step②: click on multiple Tables click on Add table Click on Returns and click on 'Join' tab

Step③: select the Existing Join clause and click on delete

Step④: select orderid from orders, orderid from Returns and

Step⑤: Select the operator as <> (notequal to) and click on Add, OK

Step⑥: Enter the connection name as 'NE_Join' Connection type as 'Live'

Step⑦: drag 'status' from Return sheet into Rows, orderid from orders into Label of marks card.

From 8.2

Step①: open Superstore in the Legacy Connection mode

Step②: click on orders, and click on Returns click on 'Join' icon select the operator as <> (notequal to) and connection name as 'NE_Join'

Step③: Click on go to worksheet

Step④: drag states from Return page into Rows, orderid from orders page into Rows.

Note - Cross Join is only one Join which can exist without a Join condition.

Note Cross Join it displays the cartesian product of 2 tables.

If Table A - 10 records, Table b - 6 Records The o/p of cross Join is 60 Records

Select (It contains list of fields /all fields)
- From (Identifier the datasource(s))
- Where → conditions on the Un-grouped data

GroupBy → Groups the data

Having → Conditions on the Grouped data

Orderby → sorts the data.

STUDENT

SID	SUB	PERCENTAGE
1	S1	70
2	S2	80
3	S3	90
4	S4	95

GRADE

P_1	P_2	Grade
65	75	B+
76	86	A
86	95	A+
96	100	A++

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Select S.SID, G.Grade from Students, Grade G
where S.Percentage >= P1 and S.percentage <= P2

Alternative

Select S.SID, G.Grade from Students Inner Join Grade G
on S.percentage >= P_1 and S.percentage <= P_2

Note :- After 'From' clause always the execution will begin from where clause, Then it moves to the ~~Select~~ Groupby clause after that it jumps to the 'GroupBy' Then Having and Finally Order by

12/5 Scenario - (12)

Cardinalities and working with KBC Data

Cardinality :-

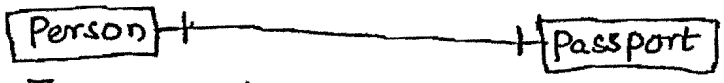
Join is a relationship b/w '2' tables if you want to know the type of relationship (or) exact Relationship (or) correct relationship b/w two tables We need to identify the Cardinality b/w '2' tables

Cardinality Types :-

cardinalities are divided into '4' different types

They are (i) one-to-one
(ii) One-to-Many
(iii) Many-to-one
(iv) Many-to-Many

One - one :- If one value in a first table is associating (or) relating to maximum of only one value in the second table Then such a kind of cardinality is known as 'one-one'



Join Type :- Inner Join

One - Many :-

If one value in the first table is relating to maximum of multiple values in the second table Then such a kind of cardinality is known as One-Many

Join Type : ~~Left outer~~ Right outer

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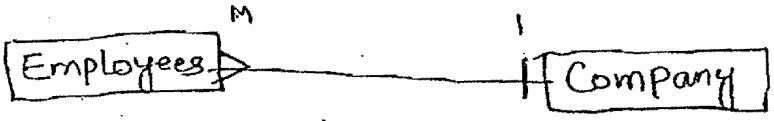
Many - one :-

If many values in the first table is associating (or) Relating to single value in the second table then such a kind of cardinality is known as "Many to one".



Join Type :- Left outer Join

Many - Many :- If one value in the 1st table is associating to multiple values in the second table which intern one value in the second table associating to multiple values of the 1st table, therefore multiple values in the 1st table will be associating multiple values in the second table then such a kind of cardinality is known as 'Many-Many'

Join Type: Full outer Join.

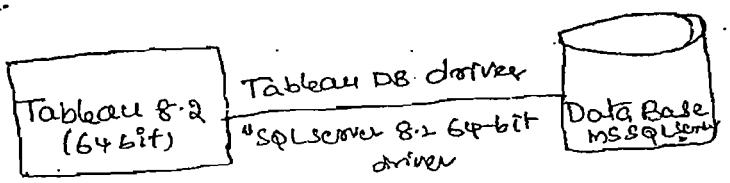
13/5

Working with KBC Data :

Prerequisites ;

(i) Download required tableau drivers

Note : The Tableau driver version and tableau Desktop Version should be same.



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Note :- all the drivers are available are following location
www.Tableau.com/support/drivers

(ii) Network :- IBALL . IP Add : 49.206.196.114 To Connect from line outside of the institute.
Servername : 192.168.1.253, Service Name : Aimenv2 port : 1821
username : AIM_B21_KBC, password : AIM_B21_KBC

Connecting to the KBC Data

Step① : Connect to IBALL Network from your Laptops

Step② : Install required tableau oracle driver

Step③ : 'open tableau Desktop click on Connect to data select Oracle Technology'

Step④ : Enter Servername as 192.168.1.253, service Name as aimenv2 port as 1821

Step⑤ : Enter the username and password as AIM_B21_KBC and click on connect.

Step⑥ : Click on Customer table and Orders table from Customer select 'New key' from Orders select 'Custkey' select Join Type as Right outer.

Step⑦ : Click on products from the datasource select orders Table and 'Prodkey' and products from 'productkey' select the Join type as 'LeftOuter'

Step⑧ : click on calendar from datasource select Orders tables and select the 'periodkey' from Calendar select 'yyyymmdd' and select the JoinType as 'LeftOuter'.

Step 9: Enter the Connection name as AIM_KBC Click on Go to worksheet.

Step 10: To identify the no of Records from the measures drag no of records and dropped into 'Rows'

'ATTLEXTND' is the sales or Revenue Column

The Level detail information of the facts is known as granularity

In Datablending 1st Tableau will perform the aggregation then performs the Blending.

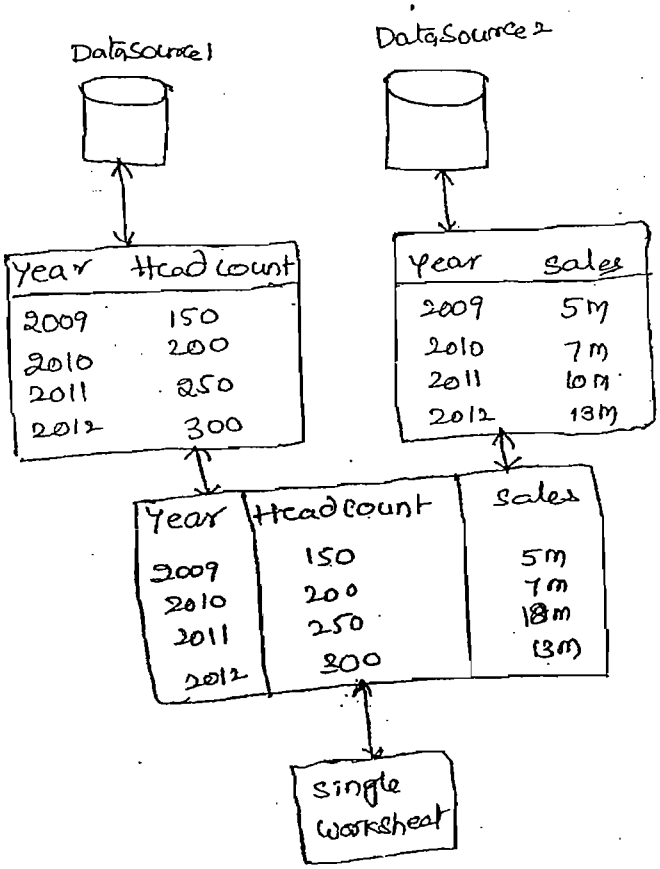
Note:- When we define any aliases 1st Tableau will apply the aliasing and then it performs the data Blending.

Scenario (13) Data Blending (2)

Joins combines the data from multiple tables in single datasource. If we want combined the data from multiple DataSources into a single worksheet Then we have to perform "Data Blending"

To perform data Blending we are having '2' thumb Rules

* i) Both the Datasources should have a common Dimension.
  ii) In that common Dimension Atleast on value should match
* If this '2' rules getting satisfied then it is possible to perform "Data Blending".



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* In Tableau data Blending can be performed in '2' ways
  (i) Automatic way
  (ii) In the Manual way

Automatic way: In the Automatic way tableau automatically performs the Blending if the Matching dimension is existing in the same case on the multiple datasources

Manual way: In manual way Tableau performs the Blending only If the user has defined the relationship manually

Task-① performing Blending on Excel, Text datasources.

step① Create an Excel file with the following data.

Products	Sales
A	100
B	200
C	300

step② Text file with the following data

Products, profits

A, 40

E, 60

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step③ Connect to Excel_source, Text_source from Tableau.

step④ : from Excel_source drag products into Rows and Sales into columns, from Text_source drag profits into columns.

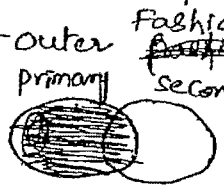
step⑤ : In the Text_Source, Tableau will indicate products with orange linked icon (field) which means Tableau has automatically performed the Blending

Notes :

(i) In Data Blending Tableau will indicate the datasources as primary datasource and secondary datasource

(ii) The first field datasource will Act as the primary datasource and remaining datasources will Act as Secondary datasource

(iii) Tableau will combine primary datasource and secondary datasource in the Left outer Fashion internally By default



"Left outer Fashion"

Test cases :-

Test case-①

Testing the Blending with unmatched values.

Result: All NULLS

Solution: To perform sucessful Blending we need atleast 1 matching value

Test Case — ②

Testing the Blending with same matching value in different case.

Result : All nulls

Solution: To perform successful Blending we need matched value in the same case

Test Case — ③

Testing the Blending with Matching dimension in different Case

Result :- Blending is possible in manual way.

Solution:- click on Data tab and perform Blending.

Test case — ④

Testing the Blending with unmatched dimensions with matched values.

Result :- Automatic Blending is not possible

Solution:- Perform Blending manually.

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Test case — ⑤

Testing the Blending for No of primary and No of secondary

Result :- 1 — Primary, 'N' — secondary.

Note — If we have morethan '2' datasources, one source will act as 'primary Datasource' all other datasources will act as Secondary

Task — ② Performing the Blending on '3' datasources

Step ①: Create an excel file with the following data

PRODUCT	DISCOUNT
C	0.05

and ~~name~~ name it as excel_sour-2

Step ②: connect to Tableau (By Assuming already connect to '2' excel, Text Sources)

Step ③: Create a new sheet from excel_source drag products into Rows sales into columns

Note: If we have multiple Datasources (or) Morethan '2' datasources identifying which source having Matching values with the remaining Datasources.

Step④: Click on Text source, Tableau has Automatically defined the relationships, drag profit and droppped into columns

Step⑤: Click on the excel source, Tableau haven't defined relation ship Automatically. Because field names are different.

Step⑥: To perform the Blending manually click on Data tab click on Edit Relationships

Step⑦: In Relationships window select primary as excel source secondary as excel source click on Custom, click on Add

Step⑧: In the mapping window select product and product click on OK

Step⑨: from the excel_source drag discount droped into Colums.

Note :- The primary and secondary datasources are sheet-specific. (it will change from one sheet to the another sheet)

Task-③ Performing Blending on superstore and KBC

Step①: Connect superstore and KBC from Tableau

Step②: From Superstore drag Region and droped into Rows

Step③: from KBC drag Revenue and droped into columns.

Step④: from superstore drag sales and droped into column

Note :- Tableau will indicates the DataBlending relationship with orange Linked icon (field)

Note :- If more than one matched dimension is existing then it is possible to Blending on the multiple matching dimensions

—— x ——

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Swaroop Kumar (9885146265)

TABLEAU Level II Notes

By Prazval

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Sets & Bins (3)
Groups & Hierarchies (9)
Types of Charts / visualizations (15)
Custom Geocoding & Clipboards (23)
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Image Processing (31), Animation / Motion Charts (34)
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14/5

Tableau Level-II Notes by Prazval.ks

Use Cases:-
> Set-Analysis
> Comparision
> Top & Bottom-Analysis.

SCENARIO
SETS AND BINS

Set is a custom field (means it is created manually) in tableau which contains the required subset of data.

Types of Sets:-
::: 2 :::

1. CONSTANT SET :- unconditional sets are Constant sets
In constant set, the data is always constant. If the set is not having any condition, then it is known as Constant set.

2. DYNAMIC/COMPUTED SET :- Conditional sets are Dynamic set.
Sets based on conditions are known as Dynamic/Computed sets. The data in the dynamic/computed set will change every time based on the condition or computation.

Task:
Create Constant & Dynamic sets for Top 10 Customers based on Sales.

Constant Set:
Step1:-
Drag Customername into rows, Sales into columns - Sort by Desc order - select first 10 customers manually
Step2:-
In tooltip, click on Create Set - Enter name as Top 10 Constant. Remove Customername from rows and drag Top 10 constant set into rows.

Dynamic Set:
Step1:-
Right click on Customername - select Create set - Enter set name as Top 10 Dynamic - click on Top - By field - select Top, 10, Sales, Sum - click Ok.
Note:
If we create any set, tableau will place that set under the 'Sets' tab of the data window.
Step2:-
Drag Top 10 Dynamic set into rows. Sales into columns.

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Tableau Level-II Notes by Prazval.ks

Step3:-
Click on Analysis - select percentage of table.

Note: -

- **If we create any set and if we drag it into the row shelf or column shelf, by default tableau will display IN/OUT mode where IN indicates members inside the set and OUT indicates members out of the set or condition**
- **To display the values in the set, right click on the set and select show members in set (In sets, values are known as Members).**

Task:
Display the profit contribution of all the countries whose sales are more than 100,000 every year.

Step1:-
Right click on Country - Create set - Condition - By field - select Sales, Sum, >, 1,00,000
Step2:-
Drag 'Country with Sales > 100000' set into rows. Profit and Year into columns.
Step3:-
Click on Analysis tab - select percentage of pane.

Note:

At a time - **To create a dynamic set based on the multiple dimensions is not possible directly. Using calculations (by formula), we can do the work around.**

At a time - **A constant set based on the multiple dimensions is possible.**

Task:
Create a Set based on the continent and customer segment in which the set contains Asia, Africa and Consumer, Corporate customer segments.

Step1:-
Drag Continent and Customer Segment into rows - select Consumer, Corporate in Asia & Africa. In the tooltip, select create set (Continent+Customer Segment).
Step2:-
Drag the set into rows - right click on set and select show members.

Tasks:
1. Display Profit Contribution of Top 15 Countries based on Sales when Compared with the remaining Countries.
2. Display the Profit Contribution % of top 50 Customers based on Order Qty when Compared with remaining Customers
3. Display the Sales Contribution % of Lossable Customers & their Count.
4. Top 10 Countries based on Sales & their Profit % Contribution every year.

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Task:

Display Top N customers based on Sales and their Profit percentage contribution.

Step1:-

Right click on customer name - select create set with name Top N - select Top - By field Step2:-

select Top, Top N parameter, Sales, Sum. Display Top N parameter.

Step3:-

Drag Top N set into rows and Profit into columns - click on Analysis - select percentage of table.

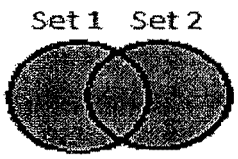
Note:

On the measures, it is not possible to create Sets.

COMBINED SETS:

- **In tableau, it is possible to combine 2 sets into a combined set if those 2 sets are based on single dimension.**
- **We can able to combine 2 sets in following 4 different ways:**

1. All members in both sets.

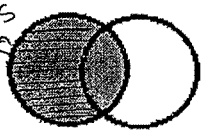


If we combine 2 Sets in Tableau & if we select all members Tableau will show/display Only the Unique data

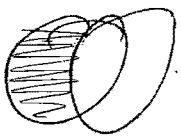
2. Common members in both sets.

3. Members part of only set 1.

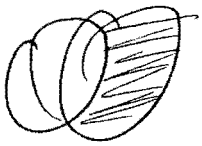
This is wrong



(Except Common data)



4. Members part of only set 2.



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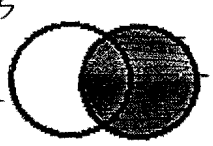
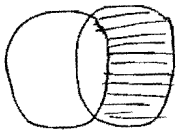
This is wrong



(Except the Common data)



Task:

Display

1. Common customers based on Top 10 sales & Top 10 profits.
2. All customers
3. Only customers part of Sales
4. Only customers part of Profits excluding Matching

Step1:-

Create 2 sets on Customername - Top 10 Customers based on Sales, Top 10 Customers based on Profits.

Step2:-

In the sets tab, select the above 2 sheets and select create combined set - In the combined set window, enter name as Common Customers and select 'shared members in both sets'.

Step3:-

Repeat the same and create 3 more combined sets:

1. For all customers - select all members in both sets
2. For only sales - select 'sales except shared members'
3. For only profits - select 'profits except shared members'.

Step4:-

Drag the 4 sets into 4 different sheets and select show members.

Task:

Display Top N + Bottom N customers based on Profits.

Note: In Tableau to display Top & Bottom N customers with in one single sheet we can do it in 2 ways. (i) using sets (ii) using calculations.

Step1:-

Create 2 Sets on Customer name - Top N based on Profit, Bottom N based on Profit. And simultaneously create 2 parameters - TopN, Bottom N. Display parameters.

Step2:-

Create a combined set to show all members (TopN + BottomN).

Step3:-

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Tableau Level-II Notes by Prazval.ks

Drag the Combined set into rows. Profit into columns & color.

Note:
Combined Sets will act as normal sets. So, on the combined sets again it is possible to create another combined set.

Task:
Identify the repeating customers for 2010, 2011 and display their sales percentage contribution.

Step1:-
Customer name into rows. Year into filter - select 2010.
Step2:-
Select all customers in the view using Ctrl+A. In tool tip, click on Create set - Enter name as 2010 Customers.
Step3:-
In filter, change year to 2011 and create a set on all customers with name 2011 Customers.
Step4:-
Create a Combined Set based on 2010 customers and 2011 customers sets with name 'Repeating Customers' and select shared members.
Step5:-
Drag Repeating Customers set into rows, Sales into columns and select percentage of table in Analysis.

Task:
Find out Repeating Customers for all the 4 years and display their:

1. % Profit contribution across superstore. (Across the Table)
2. % Profit contribution across every department. (Across the Pain)

BINS:

- On the measures, it is not possible to create Sets. If we want to perform similar kind of set analysis on measures, then we need to create bins.
- Bin is a container which holds the required values depending on the bin size.

Note:

- If we create a bin, tableau creates that field under dimension.
- Bins are used to identify the distribution of measure values.

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Tableau Level-II Notes by Prazval.ks

Task:
Identify Sales distribution values in the range of 10,000.

Step1:-
Right click on Sales - select create bins - enter bin size as 10,000.
Step2:-
From dimensions, drag Sales bin into rows and Sales into columns, and select percentage of table.

Note:
We can create bins only on the non aggregate measures up to T 8.X From T 9.0, it is possible to create bins on both aggregate and non aggregate measures.

Task:
Identify the Profit distribution values based on the size dynamically.

Step1:-
Right click on Profit - select Create Bin - enter Bin name as Dynamic Bin - In size, click on 'create a new parameter' - Enter parameter name as Bin size and allowable values as all. Display the parameter.
Step2:-
Drag Dynamic Bin from dimensions into rows and Profit into columns.

Note:
If we want to create variable size bins, then we have to use calculations.

0 - 25K
25K - 75K Here the size is varing.
75K - 150K

Notes: 1. Sets are the Re-usable Component. where as filters aren't Re-usable.
2. In sets we can store the o/p in the form of a field. where as in the filters we are n't storing the o/p any where.
3. Filters only gives the filters o/p. where as Sets gives the o/p in the form of in/out mode.

Tableau Level-II Notes by Prazval.ks

Scenario
Groups&Hierarchies

GROUPS

- Groups are used to combine the values into the higher level categories.
- Groups are used to perform the multi-value set analysis.

Task:

Create a group on the customers with 4 values - A, B, C, Others where A group contains all the customers whose name is starting with A, and similarly with B & C. Others should contain all the remaining customers.

Step1:-

Right click on Customer name & click on Create Group. Select all the customers whose name is starting with A and click on Group and enter the Group name as 'A Group'. Similarly, repeat for B & C.

Step2:-

To add 'Other Group', click on 'Include other' - Apply & Ok. Rename Other Group as D-Z Group.

Step3:-

Drag Customer Name Group and Customer name into rows. Profit into columns.

Note:

- All the groups in tableau are static. To create dynamic groups, we have to use calculations.
- Groups can be created on both dimensions & measures.

Task:

Create a Group on 'Profit'. if the value is +ve, group it under Profit and if it is -ve, group it under Loss.

Step1:-

Right click on Profit - select Create group.

Step2:-

In group window, select all the -ve values and click on group - Enter group name as Loss.

Step3:-

Click on Include other - Rename the group as Profit.

Step4:-

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Profit group into rows and Profit into columns.

Note:

- Tableau creates groups only on non aggregated measures upto Tableau 8,From Tableau 9 on both aggregate and non-aggregate measures we can create groups.
- With the help of groups also we are able to perform similar kind of 'Set' analysis.
- One more advantage of grouping is 'visual grouping' (see next worksheet for visual grouping).

VISUAL GROUPING:

- In tableau, it is possible to indicate required group of values in one color and remaining values in another color with the help of visual grouping.
- The visual grouping has to be performed at the visualization level.

Task:

Display Top 10 customers based on sales. Indicate first 4 in one color, next 4 in another color and remaining in another color.

Step1:-
Customer name into rows, Sales into columns.
Step2:-
Customer name into filters - Top - By field - Top, 10, Sales, Sum.
Step3:-
Sort view in descending order.
Step4:-
Select first 4 customers - In tooltip, click on Group (Automatically, tableau will indicate first 4 in one color and remaining in another color).
Step5:-
Select next 4 customers - In tooltip, click on Group.
Similarly for last 2 customers.

Note:

- In visual grouping, tableau is automatically creating the group and it is adding that group to color legend of the marks card.
- To ungroup the members from the group, at the visualization level select the required members and in tooltip, click on ungroup members.

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- It is not possible to combine 2 groups into a combined group.
- At the visualization level, it is not possible to add a member to the existing group. To add, we need to perform adding at the group field level. (at data window level)
- With the help of groups, it is possible to perform multi value set analysis (see next worksheet for multi value set analysis).

Multi Value Set Analysis:

Task:
Perform multi value set analysis to compare the profits of Top 4, Top 5-8, Top 9-10, and Other customers based on profits.

Step1:-
Drag the Customer name group created in the previous task into rows and Profit into columns.
Step2:-
Drag the Customer name group into color.

Task:
Display country wise sales in the form of a map. Indicate Top 5 in one color, next 3 in another color, and remaining 2 in another color.

Step1:-
Drag Country into rows and Sales into columns. Select Symbol map in show me.
Step2:-
Drag Country into filters - Top - By field - Top, Top N parameter, Sales, Sum.
Step3:-
In the parameter, select 5 in the slider. In the map, select all 5 values and click on create group in tooltip.
Step4:-
In parameter, enter 8 - select next 3 countries and click on create group.
Step5:-
Similarly, group the next 2 countries.
Step6:-
Drag the Country group into color & label. Drag Country into label.

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edit group.

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MULTI FIELD VISUAL GROUPING:

- **In tableau, at the visualization level, it is possible to perform grouping on the multiple dimensions if they are existing in the visualization.**
- **In the visualization, once if we define the grouping structure, it is not possible to change.**

Groups fields will indicated with Paper folding icon
On One field it is possible to create 'Multiple group'

Task: **Perform multi dimension visual grouping on continent wise dept wise total profits.**

Step1:-
Drag Continent & Department into rows. Profit into columns.
Step2:-
Select 1st 2 values in the view - In the tooltip, click on dropdown in the group - select 'All Dimensions'. Tableau automatically takes grouping structure as Continent+Department and it will color code selected values in one color and the remaining in the other color.
Step3:-
Select any 2 other values - In the tooltip, click on create group. Tableau will take the same grouping structure.
Step4:-
To perform grouping on the single dimension, remove the existing groups - select the required value - In tooltip, click on group dropdown and select either continent or department.

HIERARCHIES:

- **Defining one to many relationships is known as Hierarchy.**
- **In hierarchies, we will use:**
  1. **Drill Down**
  2. **Drill Up**
  3. **Drill Across**

1. Drill Down: If we view the data from one level to the next lowest level, it is known as drill down.

2. Drill Up: If we view the data from lower level to the next highest level, it is known as drill up.

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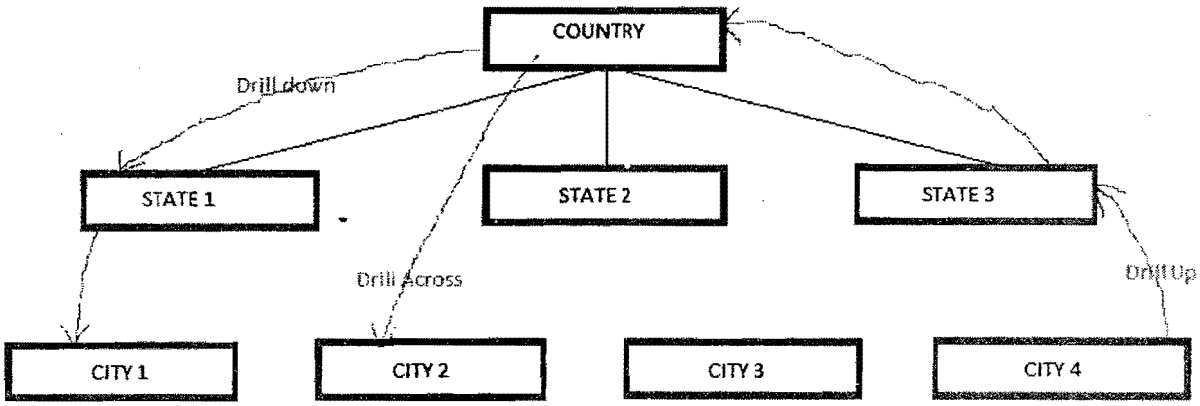
3. <u>Drill Across:</u> If we view the data from one level to the required level, it is known as drill across.



<u>Note:</u>
Tableau automatically creates hierarchies for geographic, date dimensions.

<u>Task:</u>
Creating a hierarchy on the geographic fields.
<u>Note:</u>
Right click on the existing hierarchy and select remove hierarchy.

Step1:-
Select all the required geographic fields.
Step2:-
Right click on those fields – select hierarchy – select create hierarchy.
Note: In hierarchy, the ordering of the fields is very important.
Step3:-
In the hierarchy, place all the geographic fields in the order.
Step4:-
Drag the hierarchy and drop it into rows and perform drill down, drill up and drill across.

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Note:

- **One data field cannot exist in two different hierarchies at a time.**
- **One hierarchy can contain different types of dimensions.**
- **In the hierarchies, it is possible to place the lower level fields before the higher level fields.**

* In Tableau while Showing the hiearachy it will follow the Order of the fields in the hiearachy. So hierarchy is dependent on data fields Order.

Task:

Create a hierarchy on product which contains data, category, item

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Scenario
Types of Charts/Visualizations

::: 3 TYPES :::

1. Univariate: - Supports univariate analysis.
   - Involves 1 measure.
2. Bivariate: - Supports bivariate analysis.
   - Involves 2 measures.
3. Multivariate: - Supports multivariate analysis.
   - Involves more than 2 measures.

1-Bar Chart:

- Used to perform Comparative analysis - compares data across multiple categories.
- 3 types: *Horizontal, Stacked, Side by side.*

Note:
All types of Bar charts support univariate, bivariate and multivariate analysis.

Horizontal Bar Chart:

- In horizontal bar chart, Tableau will display each & every categorical value in a separate bar for comparison. It is the default chart for comparative analysis.

Stacked Bar Chart:

- If you group all the categorical values into a single bar, then it is known as Stacked bar chart.

Note:
Stacked bar chart will not be effective if the data field contains huge amounts of data.
For e.g.
Drag Sales into rows. Customer name into columns. In Show me – Select Stacked bar chart.

Task:
Design the different types of bar charts in Tableau.

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Horizontal:
-> Drag Continent into rows. Profit into columns. Continent in color.

Stacked:
->Drag Sales into rows. Continent into color & label.

Side by Side:
->Drag Customer segment, Continent into columns. Profit into rows. Show me - Side by Side chart.

2. **Line Chart:** (It Supports Uni-Variate, Bi-Variate & Multi-variate)

- **Used to perform time series analysis (i.e. if we want to compare data over a period of time).**
- **3 types: *Discrete, Continuous, Dual.***

1. Discrete Lines:
contains discrete dates + line chart

2. Continuous Lines:
contains continuous dates + line chart

3. Dual lines:
contains discrete/continuous dates + dual axis line charts
On line charts, it is possible to perform all the 3 types of analysis.

Task:
Design a discrete line chart to display year wise quarter wise total sales.

- >Drag Year & Quarter into rows. Sales into columns. Tableau will display discrete line chart. To get continuous line chart, click on show me - select continuous line chart.

Task:
Design a continuous line chart to display year wise quarter wise total sales.

- >Drag Year & Quarter into rows. Sales into columns. Tableau will display discrete line chart. To get continuous line chart, click on show me - select continuous line chart.

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3. Area Chart: (It Supports Uni, Bi & Multivariate)

- Advanced line charts which perform time series analysis.
- Area chart indicates all the values with the filled portion from the axis.
- 2 types: *Discrete, Continuous*

1. Discrete:
contains discrete dates + area chart
2. Continuous:
contains continuous dates + area chart

Task:
Design Area charts to display year wise, quarter wise total sales.

- >Drag Year and Quarter into columns. Sales into rows. It will display discrete area chart. To get continuous area chart, click on show me - select continuous area chart.

Task:
Design Area charts to display year wise, quarter wise total sales.

- >Drag Year and Quarter into columns. Sales into rows. It will display discrete area chart. To get continuous area chart, click on show me - select continuous area chart.

4. Circle Charts:

- Alternate way to perform Comparative analysis.
- Types: *Circle views, Side by side circles.*
- Circle charts will support all 3 types of analysis.

Task:
Design Circle charts to display continent wise, customer segment wise total profits.

->Drag Continent & Customer segment into columns. Profit into rows. Show me - Select Circle views. To get Side by Side circles, select side by side circles.

5. Maps:

- used to perform Geographical analysis.
- Types: *Symbol map, Filled map.*
- Symbol map supports uni & bivariate analysis
- Filled map supports only univariate analysis.

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Task:
Design Maps to display country wise total sales.

->Drag Country into rows. Sales into columns. Show me - Select Symbol Map. To get Filled map, show me - select Filled map. Country into label.

Task:
Design Maps to display country wise total sales.

->Drag Country into rows. Sales into columns. Show me - Select Symbol Map. To get Filled map, show me - select Filled map. Country into label.

6. **Tree Maps:** **(new feature from T 8.0)**
   - **useful to display large amounts of data in less amount of space. Tree map is an alternate visualization for proportionate & comparative analysis.**
   - **Tree maps support only uni and bivariate analysis.**

Task:
Design a Tree map for continent wise sales every month.

- >Drag Continent into rows. Sales into columns. Show me - Select Tree map.
-> Drag Month into rows. Select entire view.

7. **Text Charts:**
   - **Text charts display all the values in the form of text only without any graphical visualization.**
   - **2 Types: *Text table* (Pivot table or Cross tab), *Highlight table.***
   - **Text table supports all 3 types of analysis whereas Highlight table supports only univariate analysis.**

Task:
Design text charts to display continent wise customer segment wise total profits.

-> Drag Continent & Customer segment into rows. Profit into columns. Show me - Text table. To get Highlight table, Show me - Highlight table.

→ Highlight Text Table (Only Uni Variate)

→ Text Table. (Uni, Bi, Multi Variate Charts)

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Task:
Design text charts to display continent wise customer segment wise total profits.

-> Drag Continent & Customer segment into rows. Profit into columns. Show me - Text table. To get Highlight table, Show me - Highlight table.

Note:
Highlight table will highlight the highest value in the table with the thicker color and lowest value with the lighter color.

8. **Pie/Bubble Charts:** (These charts called as Proportionate charts)
   - **Used to perform proportionate analysis.**
   - **Pie chart is not recommended if the no. of slices is more than 12.**
   - **Bubble chart is a new feature from T 8.0 which is used to perform proportionate analysis if the no. of values is large when Pie charts are not effective.**
   - **Both Pie and Bubble charts support only uni & bivariate analysis.**

Task:
Pie chart to display continent wise Sales contribution.

Step1-> Drag Continent into rows. Sales into columns. Show me - Pie chart.
Step2-> Drag Continent and Sales into label.
Step3-> Click on Analysis tab - Select percentage of table.

Task:
Bubble chart to display country wise Profits.

Step1->Drag Country into rows. Profit into columns. Show me - Packed bubble chart.
Step2->Drag Country into color.

9. **Scatter Plots:**
   - **Used to compare & identify the relationship b/w 2 or more measures in the form of a coordinate system.**
   - **Supports bivariate & multivariate analysis.**

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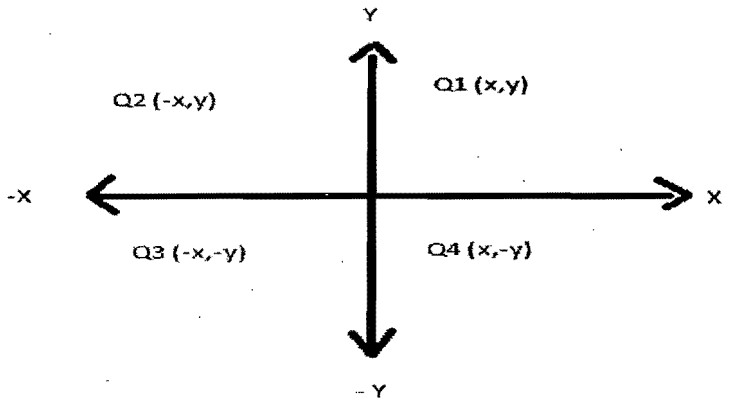

Task:
Identify the relationship b/w Sales & Profits for every customer.

Step1:-
Drag Sales into columns (x axis). Profit into rows (y axis).
Step2:-
Drag Customer into detail to get detailed information of each & every customer.

Note:
On DETAIL Shelf, we can place multiple fields at a time.

10. **Heat Map:** (new from T 8.0)
- **Alternate visualization for proportionate & comparison analysis. Heat maps display values or numbers in the form of a table or grid where the larger values will be encoded in the bigger size and smaller values will be encoded in the smaller size.**
- **Heat maps support uni & bivariate analysis.**

Task:
Design a heat map for month wise profits in each & every continent.

Step1->Drag Month into rows and Profit into columns. Show me - Heat map.
Step2->Drag Profit into color.
Step3->Drag Continent into columns.

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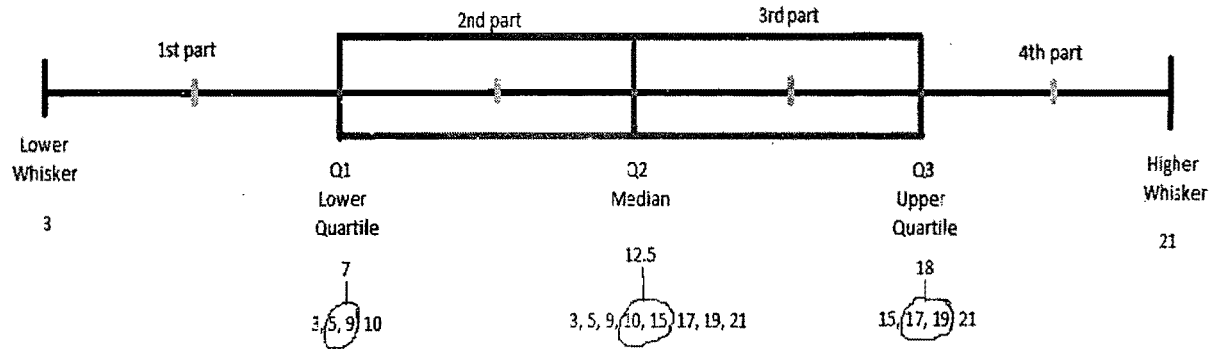
11- **Box Plot (or) Box Whisker Plot:** (new from 8.0)

- Used to identify distribution of values. It is mainly used in Statistics.



- In Box Plots, Tableau indicates 50% of the values in the form of Box and 50% of the values in the form of whisker (line).
- In Box plots, Tableau indicates lowest & highest values in the form of lines which are known as lower & higher whiskers.
- Then it finds the median which is known as Q2.
- After finding the median, again it finds the median in b/w lower whisker & median which is known as Lower Quartile and it will be indicated with Q1.
- It will shade Q1 and Q2 in one color.
- Again it finds the median in b/w Q2 and higher whisker and it will be indicated with Q3 which is known as Upper Quartile.
- It will shade Q2 and Q3 in one color.
- The values in b/w Q3 and Q1 are known as Inter Quartile Range (IQR).

Note: Tile means Part.

Task:

Design a Box plot for continent wise total sales.

->Drag Continent into columns. Sales into rows.Click on Show me,Select - Box plot.

12. **Dual Combination Chart:** (Only Bi Variate Charts)

- Combination charts are possible directly from 'Show me' with the help of dual combination charts.

Task:

Design a dual combination chart for year wise sales & profits.

->Drag Year into columns. Sales & Profits into rows. Click on Show me,Select - Dual combination chart.

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13. **Bullet Graphs: (new from T 8.0)**
- **Used to compare actual values with targeted values.**
- **Support only bivariate analysis.**

Task:
Design a bullet graph for continent wise sales & profits.

->Drag Continent into columns. Sales & Profit into rows. Show me - Bullet graph.

* New features in Tableau 9.0:

1. New Start Page
2. Automatic Pivoting

Notes:-
1. Only one pivot is allowed per data source in the workbook.
2. Pivot fields cannot be used as the key to join tables
3. Pivot option cannot be used in Calculation fields.

3. Automatic String Splitting

Notes:-
1. New fields generated from a split & Custom split cannot be used in pivot.
2. Split & Custom split options are not supported for sets, Groups, Parameters & Bins.
3. Split, Custom split fields cannot be used in joins but can be used to perform blending
4. Split & Custom split options are available only for fields that are a String data type.
5. Microsoft SQL Server only allows up to four split fields

6. Metadata Pane.
5. Data Interpreter for Excel **Scenario**
6. Analytics Pane
7. Re-Calculated Lines
8. New Data Sources
   - Statistical files, Google, Cloud, SQL, SparkSQL etc.

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9. Story Point formatting
10. New Calculation ~~fields~~ functions, Auto formula Completion, Adhoc Calculations
Map Search options, ~~Map~~ New Selection options

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Custom Geocoding&Clipboards

CUSTOM GEOCODING:

If we want to plot the map for the field which is not having default geographic role, then we need to obtain latitude & longitude for that field manually which is known as Custom Geocoding.

Task:-

Plot the address locations in the map for the following data:

Country	State	City	Address
India	Telangana	Hyderabad	AimTechnologies,Maithrivanam
India	Karnataka	Bangalore	Oracle,Whitfield

Step1:-

Create an Excel file (Excel2) with the above data. Copy the data. Open google and enter 'batch geocoding'. Select any website from the list and paste the data into the input area of that site

Step2:-

Click on geocode. It will automatically generate latitude and longitude.

Step3:-

In Excel, create 2 new columns with the name latitude & longitude and paste the values from the website into those 2 columns. Save the Excel file.

Step4:-

From tableau, connect to the Excel file.

Step5:-

Drag the manually generated latitude and longitude into rows and columns. Drag address and drop it into label. In marks card, select line.

Task:

Performing Custom geocoding on multiple sheets/tables of single datasource (Joins.)

Note:

If we have huge amounts of data for file datasources and if we want to plot them in the form of a map where default geographic role is not available then manually obtain the latitude and longitude for all the locations and create a new sheet in the file datasource and paste the geocoding data along with the location in a new sheet and perform the join in between the 2 sheets.

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Step1:-
Create an Excel file (Excel) with 2 sheets:

1. **Location Info**

Country	State	City	Address
India	Telangana	Hyderabad	AimTechnologies,Maithrivanam
India	Karnataka	Bangalore	Oracle,Whitefield

2. **Geocoding Info**

Original Address	Latitude	Longitude
AimTechnologies,Maithrivanam	17.38504	78.48667
Oracle,Whitefield	12.94215	77.69307

Step2:-
From Tableau, connect to the above 2 sheets using inner join.
Step3:-
Drag manually generated longitude & latitude into columns and rows.
Step4:-
Drag Address into label. In marks card, select line.

Task:
Implementing custom geocoding on multiple datasources.

<u>Note:</u>
If we want to perform custom geocoding on the databases, then we need to take geocoding information in a separate data source and we have to perform blending between database and geocoding data source.

Step1:-
In the previous task, copy the data in the geocoding sheet and paste it into a text file.
Step2:-
From tableau, connect to the excel source and geocoding source.
Step3:-
From geocoding data source, drag latitude and longitude into rows and columns.
Step4:-
Manually perform the blending between 2 data sources using address field.
Step5:-
From location data source, drag address and drop it into text.

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Map Issues:

While plotting the maps in tableau, we frequently come across unknown or unidentified locations. Then in such cases, we have to click on the unknown indicator and we need to click on Edit locations and in the geographic roles, we have to set each and every role to fields instead of fixed values. Still if we have any unknown then we need to enter latitude and longitude manually.

CLIP BOARDS & DEFAULT PROPERTIES:

- **Clipboard is a data source in tableau which allows the users to perform the Quick analysis. It is static in nature.**
- **From tableau, directly we cannot connect to html pages till Tableau 9.0, Word docs, ppts directly. So, the option available is clip board if the data is in the structured format.**

Task:

Create a clipboard for 2014 election results.

Step1:-
Open any website which provides 2014 election results.
Step2:-
Copy the data from that website.
Step3:-
Click on data tab and click on paste data.
Step4:-
Tableau automatically creates a clipboard.
Step5:-
Drag the required fields into rows & columns and perform the analysis.

Clip board Internal Mechanism:

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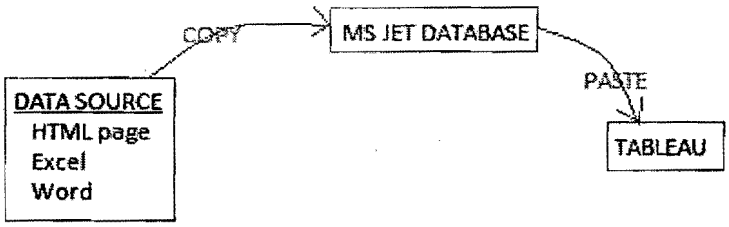

- If we copy and paste the data from any website into tableau, initially the data will be stored in MS Jet database.
- If we save our work in tableau, then the clipboard will get stored into tableau repository data sources folder.

MS JET DATA BASE

- MS Jet Database is the 1st generation database from Microsoft.
- JET stands for Joint Engine Technology.
- It is the 1st generation database from Microsoft. Now a days it is the integral part of all the windows operating systems.

Task:

Perform the data blending in the clip boards to compare election results for 2014 and 2009.

Note:

In tableau, clipboards will get stored in the format of 'tab delimiter text files'.

Note:

If we copy and paste the data without the meta data or headers, tableau automatically generates the meta data with the field name like F1, F2, F3.....so on.

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Scenario
Cascading Filters

- In Tableau by default Quick Filters directly queries the datasource without depending on the worksheet filters.
- If we want to make one QF dependent on the other then we need to define cascading behavior for all the QFs.

Cascading Filter Mechanism:

Cascading Filter Mechanism	Level 2	Level 3	Level 4	Level 5	Level 6	From level 7 to level 10
Quick Filter	2 filters	3 filters	4 filters	1 Parameter + 5 filters	1 Parameter + 6 filters	
1st	All values	All values	All values	Parameter + Datasource filter (at sheet level)	Parameter + Datasource filter (at sheet level)	
2nd	Only relevant	All in context	Only relevant	All values	All values	Define only relevant values for the fields
3rd		Only relevant	All in context	Only relevant	Only relevant	
4th			Only relevant	All in context	All in context	
5th				Only relevant	Only relevant	
6th					Table calculation	
Context Fields		1st	1st, 2nd	2nd, 3rd	2nd, 3rd	

Task1:
Display category wise profits and perform 6 level cascading on continent, dept, category, item, customer name and order priority.

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Note:
Check the Cascading filter mechanism table:
Since this is a 6 level cascading follow the order:
1)Parameter + Datasource filter -2) All values -3) Only relevant -4) All in context -5) Only relevant – 6)Table calculation.
Context filter should be on 2nd & 3rd filters.

Step1:-
Category into rows and Profit into columns.
Step2:-
Create a Continent parameter with type string and list with all values of continent. Also add 2 more values: All & None. Display the parameter.
Step3:-
Right click on datasource - select Edit datasource filters - click on Add - select continent - click on condition tab - By formula -
[Continent]=[Parameters].[Continent] or [Parameters].[Continent]='All'
Step4:-
Add a QF on Department, Category, Item, Customer name and Order priority.
Step5:-
In the filter shelf, make department & category as 'context'.
Step6:-
Click on Dept QF and select 'All values in database'.
Step7:-
Click on Category QF and select ' only relevant values'.

Note:
In tableau, by default, 2 context filters will behave independently. To make one context filter dependent on the other context filter, in the 2nd context filter set the behavior as 'only relevant values'.

Step8:-
Click on item QF and select 'all values in context'
Step9:-
Click on Customer name QF and select ' only relevant values'

Note:
- **For the fields having hierarchy, tableau automatically performs the cascading. But this approach is not recommended.**

* Cascading means that Selection on the current level should effect the below levels but not the above levels.
* If we perform Hierarchy base Cascading the current level self selection it is going to effect above & below levels effectively which is known as unknown Cascading

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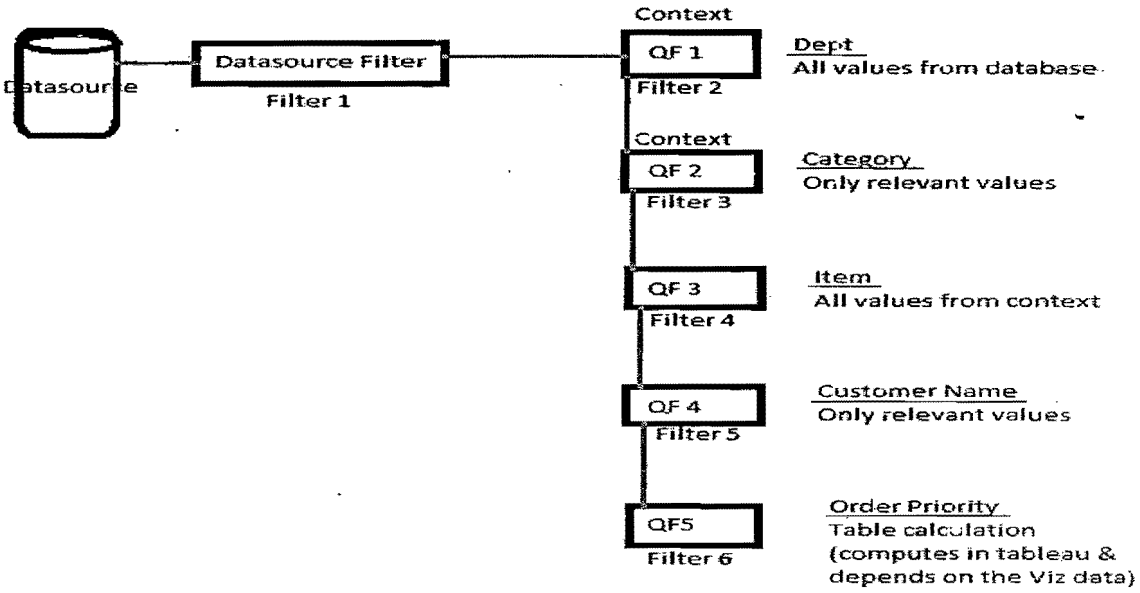
- In hierarchies, if we define cascading, except the top level field for all the fields, tableau will take only relevant values. If we define only relevant values on multiple fields, then all the relevant filters will call each other and it results in unknown outputs. / unknown Cascading
- In tableau, we can perform cascading filters only upto level 6 directly. From level 7, if we want to apply we don't have any direct mechanism. The only workaround is setting only relevant values.



* In Tableau Quick filters are indeped of the Context filters

Filter Execution Sequence:

1. Extract filters
2. Datasource filters
3. Context filters
4. Filters on dimensions (whether on filters shelf or in Quick filters)
5. Filters on measures (whether on filters shelf or in Quick filters)

Task:

Hiding nulls on Quick Filter.

Step1:-

Create a text file with the following data

LOCATION	JOBS
Hyd	100

Bang	**200**
Chennai	**100**
Pune	**300**
Null	**Null**

Step2:-
Connect to the text file
Step3:-
Location into rows and show the QF.
Step4:-
Duplicate the location field and drag the duplicated field into the filtershelf.
Step5:-
Select all values except 'Null' from that field.
Step6:-
Click on dropdown in the QF and select only relevant values.

NOTE:-
By default Quick filter is independent of Sheet level filter.

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Scenario

IMAGE PROCESSING

- Image processing is the next level of analysis which allow the users to display their required images in place of the actual text values.
- Image processing in tableau can be performed for any amount of data.
- In tableau, image processing can be performed in 2 ways:
  1. Using marks card (Shapes folder)
  2. Using coordinate system of tableau (background images)

Task 1:

Implementing image processing on the sales data using marks card. (using Shapes folder)

Step1:-
Download Sales data from FTP
Step2:-
Connect to the sales data file from tableau
Step3:-
From sales data folder, copy the item images folder and paste it into shapes folder of the tableau repository.
Step4:-
Drag items and drop it into rows. On category add a quick filter with single value selection.
Step5:-
In marks card, select shape. Drag items and drop it into shapes folder of marks card.
Step6:-
In shape window, click on drop down and select edit shape and click on reload shapes.
Step7:-
In shapes palette, select item images and assign the relevant image for any item.
Step8:-
Drag and drop it into label.
Step9:-

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In category quick filter, select any category and check whether the view is changing or not.

Task 2:

Performing image processing using coordinate system. (By using background images)

Note:

Tableau underlying language (VIZQL) will make use of the coordinate system to build any visualizations. With the help of the same coordinate system (x,y axis) we can perform image processing.

Step1:-
On Sales data file, connect to the products + items in inner join fashion.
Step2:-
From item sheet, drag x into columns and y into rows shelf.
Step3:-
Click on analysis – uncheck 'aggregate measures'.
Step4:-
Click on map tab – select background images and select the item+product datasource.
Step5:-
In background images window, click on add image
Step6:-
Click on browse – select the desktop image from the sales data folder and click on open.
Step7:-
In x field, in left enter 0, in right enter 100. For y field, in bottom enter 0, top enter 50.
Step8:-
Click on options and click on add – select 'desktop' – click on ok – click on apply & ok.
Step9:-
Repeat the same for all the items available.
Step10:-

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Drag items and drop it into rows and hide header for all the fields.
Step11:-
Decrease the size of scatter. Drag sales and drop it into label.

<u>Note:</u>
<u>Options in back ground images:</u>
1.Always show entire image will display the complete image irrespective of the maximum values on x,y axis. If the specified image size is more than the maximum of x&y axis values, it will dynamically increase the values on x&y axis.
2.Hiding image temporarily using check box in the background images window.

Task 3: For the top 10 countries based on profits, display their logos.
Task 4: Display top and bottom 3 IT companies based on their profits in the quarter Q2 in the form of images (Note: check BSE site for data).
Task 5:

```
Footwear
Category
        ----> Category 1
                    ---->Variant 1
            Shoes   ----> Formal Shoes
                                  -----> Style 1
                                              ----> Size 1
                                              ----> Size 2
                    ---->Variant 2
                        Casual Shoes
                                  -----> Style 2
                                              ----> Size 1
                                              ----> Size 2
                    ----->Variant 3
        -----> Category2
               Chappals
```

If I select Category, it should display all the different categories available and if I select any category, it should display all the variants, styles, sizes in it.

<u>Note:</u>
Always the background images are advantageous when compared with the marks card because using marks card, we cannot define images with dynamic sizes.

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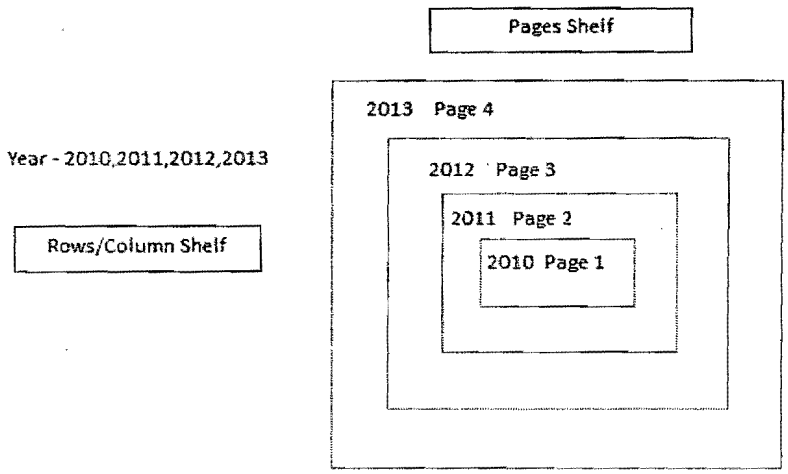
Scenario

ANIMATION (or) MOTION CHARTS

- **With the help of Pages shelf in Tableau, we can design animation kind of visualizations. These animation charts are also known as Moving charts (or) Motion charts as the data objects in the visualization will change automatically.**
- **If we drag & drop any field to the pages shelf, Tableau will break down the visualization into multiple pages where each page contains one value of the data field.**



Task 1:

Display month wise profit information every year in the form of animated chart.

Step1:-

Drag Month into rows, Profit into columns, Profit into color

Step2:-

Drag Year into pages shelf.

Step3:-

In Page control, click on 'play' button to play the visualization in the form of an animation.

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Page Control:

When we drag & drop any field to pages, automatically tableau will create page control window. With this page control we can specify the required settings on the animated charts.

Note:

By default, Tableau will not show us any historical pages in paging. If we want to show the historical pages, then we need to configure the 'show history' option.

Show History options:

In show history, we can specify the length of pages or history where the values could be all pages or the required no. of pages.

Note:

When we enable history for paging, tableau displays the values depending on the marks setting. So we have to set marks to 'All' to display the complete history.

Task 2:

Identify the relationship of sales & profits for every customer and display one customer at a time automatically.

Step1:-

Drag Profit into columns. Sales into rows,Customer Name into detail and pages shelf.

Step2:-

In page control, select 'show history'. Set marks to 'All' and length to 'All' and click on automated play button.

Note:

In show history, if we select show 'trials' means: tableau will display a line which will connect the current mark or current data point with all the previous data points and marks. If we select both, it will display data points and the lines (trials).

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Task 3:

Design an animation to highlight only the country having highest profit and fade all other countries.

Step1:-
Drag Country into rows and Profit into columns. In Show me –Select Symbol map.
Step2:-
Drag Profit in pages
Step3:-
Click on show history. Set marks to 'all' and length to 'all'
Step4:-
Drag Profit and drop it into label and change font size to 2.
Step5:-
Click on play. It will play the animation by highlighting the country having highest profits & dimming all other countries.

Note:

- **If we drag and drop any measure to the pages shelf, tableau will convert that measure to discrete measure.**
- **Tableau will add the trials only for the dimension fields and if the mark type is not automatic.**
- **Tableau will not add trials for discrete measures.**
- **If we take multiple fields into the pages shelf, tableau will combine multiple fields into a single combined field and it performs the required paging.**

* While building the animations Tableau will Show history for the current value.

Task 4:

Display continent wise total sales and build an animation based on year, continent, and sales.

Step1:-
Drag continent into columns and sales into rows.
Step2:-
Drag year, continent & sales into pages.
Step3:-

* To Show all values, Select 'All' in Show marks to Show history
* By Default, it will Show history for all values. To Show history for specific values, Click on Cast & Select requised no. of values.

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Select show history – set marks to all and length to all. Click on play.

Scenario
Sorting

- **Arranging the data in an order is known as Sorting.**
- **Sorting can be performed in 2 ways:**
  1)On Discrete fields
  2)On Continuous fields.

1. **On Discrete Fields:**
   Discrete fields can be sorted in 2 ways:
   1)Computed 2)Manual

1. **Computed Sorting** Based on Some condition 8) Programatic rules.
   Can be performed in 4 ways
   a) Datasource Order
   b) Alphabetic Order
   c) Field
   d) Manual

   NOTE: It is not possible to create Calculation on the Groups"

   NOTE: It is not possible to perform Nested Charts if the visualisation contains group field because on the groups it is not possible to create calculation

2. **Manual Sorting**
   In manual sorting, at the vizualation level, we need to drag & drop the values manually.

Rules for sorting:

1. Two dimensions will behave independently while performing sorting i.e. sorting order of one dimension is independent of the 2nd dimension.
2. We can sort dimension on any shelf except filter shelf.
3. Sorting of the dimension depends on its existing shelf. It means if the field is in the column shelf, it will sort the values based on columns. if it is in color, it will sort in the color window.

2. **On Continuous Fields:**
Continuous fields can be sorted either in the Ascending or Descending order.

Task:
Display customer wise sales and sort them in all possible ways.

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Till Tableau 8 we can use use combine field option. but from Tableau 9 it is not working Properly.

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Note:
Datasource order means it will sort in the alphabetic order if the datasource is of type 2 dimensional (for e.g. excel files, text files, RDBMS systems). If it is a 3 dimensional datasource (cubes), then tableau will perform sorting in hierarchy order.
Alphabetic order means from A to Z (if it is ascending) and from Z to A if it is descending.

Step1->Drag Customer name into rows. Sales into columns.
Step2-> Right click on Customer Name - click on Sort - select the required sorting - Apply & Ok.

Note:
It is possible to perform sorting at the field label level also.

Nested Sorting:
If we have 2 dimensions on the same shelf and if we want to perform sorting, tableau gives wrong results. To achieve exact sorting, we need to create a combined field on the 2 dimensions and sorting has to be performed on that dimension.

Task:
Display dept wise customer segment wise total sales in the descending order of Sales.

Step1:->Drag Dept & Customer Segment into rows. Sales into columns.
Step2:-> Select Dept and Cust Segment in the dimensions and right click and select 'combine fields'.
Step3:-> Drag the combined field and place it before the inner most dimension.
Step4-> Right click on the combined field - select Sort and select order as descending - sort by field - sales, sum. Right click on combined field and hide header.

Task:
Display continent wise, category wise, ship mode wise Sales in the descending order.

Step1:-Drag Continent, Category and Ship mode into rows. Sales into columns.
Step2:- Create a combined field based on continent, category and ship mode. Place the combined field before the inner most dimension.
Step3:- Sort the combined field in the descending order of Sales.

Task: Sorting a quick filter on filter window.
Note: By Default it is not possible to sort values on the filter window (or) quick filter. If you want to sort then we can make use of sorting option in the default properties.

Steps: Drag Continent in to rows & show quick filter option.
Right Click on Continent in data window → Default Properties → Sort.
In Sort window → Alphabetic → Descending → Apply & Ok.
Now Quick filter & filter window contains values in the sorted order.

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Note:- If you perform sorting is common to all the sheets

Tableau Level-II Notes by Prazval.ks

Task:
Sorting a text table for continent wise month wise total profit.

Note:
In the text table, both the rows shelf & columns shelf contains dimensions and sorting of those dimensions will take place based on those shelves.

Step1:-Drag Continent into columns. Month into rows. Profit into label.
Step2:- Right click on Continent, month individually and sort them in the descending order of profits.
Step3:- Click on Analysis tab and add column, row grand totals.

Task:
Display dept wise customer segment wise total sales for every year & quarter in the form of text table and sort them in the descending order of sales.

Step1:- Dept, Customer Segment into rows. Year and Quarter into columns. Sales into label.
Step2:- Sort all the dimensions in the descending order of sales and add column, row grand totals.
Step3:- Extract year, quarter using datename (For Quarter, use 'Q'+DATENAME('quarter'+[Order Date]).
Step4:- Create a combined field based on year & quarter.
Step5:- Place the combined field before Quarter in the view and sort in the descending order of sales.

Task:
Sorting a stacked bar which contains Customer Segment wise Sales in every Dept.

Step1:- Cust Segment into columns. Sales into rows & label. Dept into color.
Step2:- Right click on Dept and select attribute.
Step3:- Create a Combined field based on Customer Segment & Dept and drop it into detail and sort it in the descending order of Sales.

Task:
Design a stacked bar for continent wise ship mode wise shipping costs for every dept and sort it in the descending order of shipping cost.

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Hint: **Create a combined field on Continent, Ship mode and Dept.**

Task:
Display month wise total Order Quantity and sort the view dynamically based on the selection of the user. Selection box contains Sales & Profit.

Step1:-
Month into rows & Order Quantity into columns & color.
Step2:-
Create a parameter with the name 'Sort By' of type string with values Sales, Profit. Display parameter.
Step3:-
Create a calculated field with name 'Sort By'. Enter formula as:
IF [Sort By] = 'Sales' THEN sum([Sales])
ELSEIF [Sort By] = 'Profit' THEN sum([Profit])
END

Step4:-
Right click on Month in the rows - select sort - Descending - Field - Sort By - Apply & Ok.
Step5:-
In Sort By parameter, select Sales and check whether it is sorting with Sales or not.

NOTE:- from Tableau 9 it is possible to perform metadata Sorting in the Data Source Page.
It is the new option from Tableau 9.

NOTE:- To perform metadata Sorting in data source page → Select Sort fields → Select Required Order

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Tableau Level-II Notes by Prazval.ks

Scenario
CALCULATIONS

- Every time with the existing data fields it is not possible to perform the complete analysis. Sometimes, we need to create new fields known as Calculated fields based on the existing fields with the help of calculation formulas.
- Calculated fields in tableau contain:
  1. Functions
  2. Fields
  3. Parameters
  4. Comments (Optional)

Task:
Display item wise PBD (price before discount), DP (discount price), PAD (price after discount).

Step1:-
Create 3 calculated fields:
Enter field name as:
1. PBD and formula -→ [Unit Price]
2. DP and formula →[PBD]*[Discount]
3. PAD and formula →[PBD]-[DP]

Step2:-
Drag Item into rows. PBD, DP and PAD into columns.
Step3:-
Right click on PBD, DP and PAD - Default properties - Number format - number (custom) - enter 2 decimals.

1)NUMBER FUNCTIONS

1. ABS:
ABS stands for Absolute Value Function. It takes the input as number. It ignores the sign of the number and it gives the value.

Syntax:-
ABS (number)
E.g.: ABS(-5) = 5

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ABS (5) = 5

Task:
Implementing ABS function in tableau.

Step1:-
Create a calculated field with the name ABS and formula ABS (-5) + ABS (5)
Step2:-
Drag ABS into rows. Right click ABS - click on dimension or uncheck Aggregate measures.

2)TRIGONOMETRY FUNCTIONS:

- **Functions which deals with 3 sides are known as Trigonometric functions.**
- **In Tableau, 4 different Trigonometric functions are available: Sin, Cos, Tan, Cot**

Syntax:
Trigonometric function (Radians) = Value

Task:1
Create a calculated field with the name 'Sin30 + Cos30'.

Step1:-
Create a calculated field with the name 'Sin30+Cos30' and Enter formula: Sin (Pi()/6) + Cos (Pi()/6).
Step2:-
Drag 'Sin30+Cos30' into rows and convert it to dimension.

Task:2
Display Sin0, Cos0 and Tan0.

Step1:-
Create Calculated field.
In Name, enter Sin. In Formula, enter 0. Create similarly for Cos and Tan.
Step3:-
Drag Sin0, Cos0, and Tan0 into rows. Right click and change to 'dimension'.

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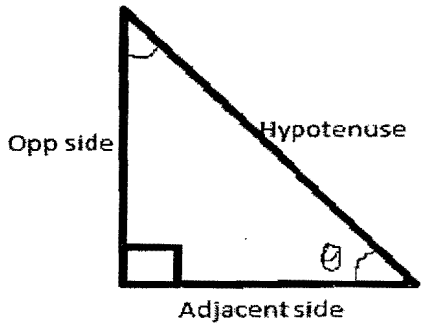
Task:
Display Sin15+Cos15 and Tan75+Cot75 for each Item.

Step1:-
Create Calculated fields.
For Sin15+Cos15, enter formula as Sin(pi()/12)+Cos(pi()/12). For Tan75+Cot75, enter formula as Tan(pi()/2.4)+Cot(pi()/2.4).
Step2:-
Drag Sin15+Cos15 and Tan75+Cot75 into columns. Item into rows.



$$\text{Sin} = \frac{\text{Opp side}}{\text{Hypotenuse}}$$

$$\text{Cos} = \frac{\text{Adj side}}{\text{Hypotenuse}}$$

$$\text{Tan} = \frac{\text{Sin}}{\text{Cos}} = \frac{\text{Opp side}}{\text{Adj side}}$$

$$\text{Cot} = \frac{1}{\text{Tan}} = \frac{\text{Adj side}}{\text{Opp side}}$$

Teta	0	30	45	60	90
Sin	0	1/2	$1/\sqrt{2}$	$\sqrt{3}/2$	1
Cos	1	$\sqrt{3}/2$	$1/\sqrt{2}$	1/2	0
Tan	0	$1/\sqrt{3}$	1	$\sqrt{3}$	∞
Cot	∞	$\sqrt{3}$	1	$1/\sqrt{3}$	0

3)INVERSE TRIGONOMETRY FUNCTIONS (or) CYCLOMETRIC FUNCTIONS

- ASin, ACos, ATan,ATan2 are known as Inverse trigonometry functions.
- These functions will take the input as number and it gives output as Radians.

Syntax:
Inverse Trigonometry function (Value) = Radians

Task:
Implementing inverse trigonometry function in tableau.

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Step1:-
Create a calculated field with the name Asin and formula ASIN (1)

Step2:-
Drag ASIN into rows and convert it into dimension.

4)DEGREES
It converts Radians to Degrees
Syntax:
Degrees (Radians) = Degrees

5)RADIANS
It converts Degrees to Radians
Syntax:
Radians (Degrees) = Radians

6)POWER:

Syntax:
Power (number, power)

7)SQUARE:
Square will square the input number.
Syntax:
Square (number)
E.g.: Square (5) = 25
Square (10) = 100

8)SQRT:
SQRT gives the square root of the input number.
Syntax:
SQRT (number)
E.g.: SQRT (5) = 2.236

9)DIV:
Division function takes the input as 2 integers. It divides 1st integer with 2nd integer and returns output as integer.

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Syntax:
DIV (int1, int2)
E.g.: DIV (5,2) = 2

Note:
5/2 = 2.5 but DIV function shows only integer and not decimals.

Task:
Implementing Div function in Tableau.

Step1:-
Create a calculated field with the name 'DIV' and formula DIV (11,2).
Step2:-
Drag DIV into rows and convert it into dimension.

10)SIGN:
Sign function takes the input as number. If the number is positive, it gives +1. If the number is negative, it gives -1. If the number is zero, it gives 0.

Syntax:
Sign (number)
E.g: Sign (-5) = -1
Sign (5) = 1

Task:
Implementing Sign function in Tableau.

Step1:-
Create a calculated field named 'SIGN' and formula SIGN (-10) + SIGN (10) + SIGN (10).
Step2:-
Drag SIGN into rows and convert to dimension.

Task:
Display customer wise Profit signs.

Step1:-
CustomerName into rows. Profit into columns.
Step2:-

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Create a calcuated field with name 'ProfitSign' and formula SIGN(SUM([Profit])).

Note:
In the calculation formula, if we take any aggregation, tableau will indicate that field with AGG. It means that field is already aggregated.

Step3:-
ProfitSign into color and label.

11)ZN (ZERO NUMBER):
It takes the input as an expression. If the expression is null, it returns '0' else it returns the same expression value.

Syntax:
ZN (expression)

E.g:

PRODUCT	SUM(SALES)	ZN(EXPRESSION)
A	100	100
B	Null	0
C	200	200
D	Null	0

12)ROUND:
Round function will round the number to required number of places.

Syntax:
Round (number, [no. of places(or) n])

Note:-
Round function will work differently if no. of places is positive and if no. of places is negative.

1. No. of places is positive:
If 'n' is positive, round function will round the decimals.

Logic:-
While Rounding the Decimals to 'n' places,Round will checks the 'n+1' value.

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If 'n+1' value >=5 then it will add 1 to 'n' Value
Else it displays 'n' value

Ex:-
ROUND(12.1124,2)=12.11 ,n = 2, n+1=3 ,n+1 value=2 <5,it returns 'n' value,which is 1 so final value is 12.11

ROUND(12.1154,2)=12.12 , n = 2, n+1=3 ,n+1 value=5 >=5,it returns 'n+1' value,which is 2 so final value is 12.12

ROUND(12.1154,0)=12, ROUND(12.1154)=12

ROUND(12.54,0)=13, ROUND(12.54)=13

2.No of places is negative:
If 'n' is negative, round function will round the integers.

Logic:-
While Rounding the Integers to '-n' places,It will Round '-n' places to Zero and Round will checks the '-n' value.
If '-n' value >=5 then it will add 1 to the before Value
Else it displays before value

Ex:-
ROUND(12.1124,-2)=0 ,n = 2, -n value =1<5,it returns before value,which is 0 so final value is 0

ROUND(62.1154,-2)=100 n = 2, -n value =6>5,it will add 1 to the before value,so Final value is 100

ROUND(122,-2)=100,ROUND(172,-2)=200

13)LOGARITHMIC FUNCTIONS:
In tableau, 2 logarithmic functions are available:

1)LN:
LN returns natural logarithmic of the given number. Returns null if the number is 0 or less than 0.

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Syntax:
LN (number).

2)Log:
It gives base logarithmic values.

Syntax:-
Log (number, [base]).

14)EXPONENTIAL (EXP):
Exponential function takes the input as number and it raises that number to power 'e'.

Syntax:
Exp (number) = e to the power of that number.

15)New Functions from Tableau 9.0:-

1)CEILING & FLOOR:
Ceiling function returns nearest greater integer whereas floor function returns nearest lower/equal integer.
Ceiling
E.g.: Ceiling (3.1) = 4
Ceiling (3.99) = 4
Floor
E.g.: Floor (3.1) = 3
Floor (3.99) = 3

Task:
Implementing ceiling, floor functions in tableau.

Step1:-
Create 2 Calculated Fields:
1. **Ceiling with formula:**
Ceiling (3.99) + Ceiling (3.01)
2. **Floor with formula:**
Floor (3.1) + Floor (2.99)

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Step2:-
Drag ceiling & floor into rows and convert them into dimensions.

Note:
HexbinX,HexbinY,Ceiling & Floor are new functions from T 9.0.

2)STRING FUNCTIONS

1. ASCII:
ASCII takes the input as string and it gives the ASCII number of the starting character of the input string. Note: ASCII numbers are different for upper case letter and lower case letters.

Syntax:
ASCII (string)
E.g.:
ASCII ('A') = 65
ASCII ('a') = 97
ASCII ('apple') = 97

2. CHAR
CHAR takes the input as ASCII number and gives the equivalent character.

Syntax:
CHAR (ASCII_Number)
E.g.:
CHAR (97) = a
CHAR (65) = A

3. BOOLEAN:
Functions which have outputs either true or false are known as Boolean functions. There are 3 different types of Boolean functions:

1) STARTS WITH: -
Startswith checks whether the search string is exactly matching with the starting part of the input string or not. If it is matching it returns 'true' else it returns 'false'.

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Syntax:
STARTSWITH (string, search_string)
E.g.:
STARTSWITH ('TABLEAU','TA') = true
STARTSWITH ('TABLEAU','ta') = false

2) ENDS WITH: -
Endswith checks whether the search string is matching with the ending part of the input string or not. If it is matching it returns 'true' else it returns 'false'.

Syntax:
ENDSWITH (string, search_string)
E.g.:
ENDSWITH ('TABLEAU','AU') = true
ENDSWITH ('TABLEAU','au') = false

3.CONTAINS: -
Contains will check whether the search string is existing in the input string or not. If it is existing it returns true else it returns false.

Syntax:
CONTAINS (string, search_string)
E.g.:
CONTAINS ('TABLEAU', 'BL') = true
CONTAINS ('TABLEAU', 'BE') = false

4)SUBSTRING FUNCTIONS:
Substring functions extract the required sub part of the string from the input string. There are 3 sub string functions available: LEFT, RIGHT, MID.

1) LEFT:
Left displays the number of characters from left part of the input string.
Syntax:
LEFT (string, No_Of_Char)
E.g.:
LEFT ('TABLEAU',3) = TAB

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2) RIGHT:

Right displays the number of characters from right part of the input string.

Syntax:

RIGHT (string, No_Of_Char)

E.g.:

RIGHT ('TABLEAU',4) = LEAU

3.MID:

Mid displays substring from the input string based on the starting position and optionally the no. of characters. If we omit no. of characters it will display string till end.

Syntax:

MID (string, start _position, [No_Of_Char])

E.g.:

MID ('TABLEAU',3,3) = BLE

MID ('TABLEAU',3) = BLEAU

MID ('TABLEAU',0) = TABLEAU

5)FIND:

Find function finds the search string on the input string if it finds it returns the string position of the input string else it returns 0.

Syntax:

FIND (string, search_string, [start_position])

E.g.:

FIND ('TABLEAU', 'A') =2

FIND ('TABLEAU', 'A',5) =6

FIND ('TABLEAU', 'AB') =2

FIND ('TABLEAU', 'BE') =0

Task:

Display first name, and except first name for all the customers.

Step1:-

Create a calculated field with the name 'FindingSpace' with formula FIND([Customer Name]," ")

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Step2:-
Create 2 calculated fields:
1. FirstName with formula → LEFT([Customer Name],[FindingSpace]-1)
2. ExceptFirstName with formula → MID([Customer Name],[FindingSpace]+1)

Step3:-
Drag CustomerName, FirstName, and ExceptFirstName into rows.

Task:
Extract only midname, lastname from Superstore.

Step1:-
Create a calculated field with the name 'FindingSpace2' with formula
FIND([ExceptFirstName]," ")

Step2:-
Create 2 calculated fields:
1. MiddleName with formula
   LEFT([ExceptFirstName],[FindingSpace2]-1)
2. ExceptFirstName with formula
   MID([ExceptFirstName],[FindingSpace2]+1)

Step3:-
Drag CustomerName, ExceptFirstName, MiddleName, and LastName into rows.

Task:
Display only the customer wise sales whose name is starting with the selection of the user.

Step1:-
Create a parameter with the name 'SearchName' of type String and allowable values as list and add from 'FirstName' field. Display parameter.
Step2:-
Create a calculated field with the name 'CustSearch' and formula
STARTSWITH([Customer Name],[SearchName])
//parameter
Step3:-
Drag CustomerName into rows. Sales into label. CustSearch into color. Select True and Keep only. Do testing.

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Task:
Display item wise Order Quantity of those items whose name contains canon, xerox, IBM, AT&T.

Step1:-
Create a parameter with the name 'ItemSearch' and enter the values canon, xerox, ibm and at&t. Display parameter.
Step2:-
Create a calculated field with name 'Item_Search' and formula
CONTAINS([Item],[ItemSearch])
//parameter
Step3:-
Drag Item into rows. Order Quantity into columns. Item_Search field into color. Select True and Keep only.

Task:
Display all the customers whose name is starting with A or B or C.

Step1:-
Drag CustomerName into rows. Sales into columns.
Step2:-
Drag CustomerName into filters - Condition - By formula - Enter formula as
LEFT([Customer Name],1)='A' OR
LEFT([Customer Name],1)='B' OR
LEFT([Customer Name],1)='C'

6)TRIMMING FUNCTIONS:

1. LTRIM:
Eliminates space from left part of string.

Syntax:
LTRIM (string)
E.g.:
LTRIM (' TABLEAU ') = 'TABLEAU '

2. RTRIM:
Eliminates space from right part of string.

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Syntax:
RTRIM (string)
E.g.:
RTRIM (' TABLEAU ') = ' TABLEAU'

3. TRIM:
Eliminates space from both parts of string.

Syntax:
TRIM (string)
E.g.:
TRIM (' TABLEAU ') = 'TABLEAU'

Task:
Implementing trimming functions in Tableau.

Step1:-
Create 3 calculated fields.
1. LTRIM with formula LEN(LTRIM(' TABLEAU '))
2. RTRIM with formula LEN(RTRIM(' TABLEAU '))
3. TRIM with formula LEN(TRIM(' TABLEAU '))

Step2:-
Drag LTRIM, RTRIM and TRIM into rows.

7)LEN FUNCTION:
LEN gives the length of input string.

Syntax:
LEN (string)
E.g:
LEN ('TABLEAU') = 7

8)REPLACE FUNCTION:
Replace function will check whether the search string is available in the input string or not. If it is available it will be replaced with the replacement string. If it is not available it will display input string as it is.

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Syntax:
REPLACE (input string, search string, replacement string)
E.g:
REPLACE ('TABLEAU', 'TAB', 'TAT') = TATLEAU
REPLACE ('TABLEAU', 'tab', 'TAT') = TABLEAU

9)CASE CONVERSION FUNCTIONS:
1. UPPER:
Syntax:
UPPER (string)
E.g:
UPPER ('tableau') = TABLEAU

2. LOWER:
Syntax:
LOWER (string)
E.g:
LOWER ('TABLEAU') = tableau

Note:
In tableau, to combine two or more strings we do not have any function. We have to use '+' operator.

10)SPACE:-
Space will take the input as number and it allocates the required number of spaces.

Task:
Combine 3 strings TABLEAU,Batch24,7:15 AM.

Step1:-
Create a calculated field with the name 'StringConcat' and formula
'TABLEAU'+SPACE(2)+'Batch24'+SPACE(1)+'7:15 AM'
Step2:-
Drag 'StringConcat' into rows.

Note:
In tableau, to combine 2 strings we are not having function. So we have to use the '+' operator.

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11)Min, Max Functions:

Syntax:

MIN(string), MAX(string)

Min & Max functions takes the input as string and it returns string having minimum ASCII number and maximum ASCII number.

Task:

Implementing Min, Max on strings.

Step1:-

Create 2 calculated fields:

1. Min with formula MIN(Customer Name)

2. Max with formula MAX(Customer Name)

Step2:-

Drag Min & Max into rows.

12)New Functions in Tableau9.0:

Find Nth, Split, Regular Expressions.

1. Find Nth:

Find Nth will return the nth occurence of search string in the input string.

Syntax:

FINDNTH(string, search string, nth occurence)

Task:

Implementing Find Nth function in tableau.

Step1:-

Create a calculated field FindNth with formula

FINDNTH('TABLEAU','A',2)

Step2:-

Drag FindNth into rows. Convert to dimension.

Note:

If the Nth occurence is not available, then it returns 0.

2. SPLIT:

Split is used to split the input string based on the search string and string part.

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Syntax:
SPLIT(string, search string, string part)

Task:
Implementing split function in Tableau.

Step1:-
Create 3 calculated fields:
1.FirstName with formula SPLIT([Customer Name]," ",1)
2.MiddleName with formula SPLIT([Customer Name]," ",2)
3.LastName with formula SPLIT([Customer Name]," ",3)

Step2:-
Drag Customer name, FirstName1, MiddleName1, LastName1 into rows.

3)DATE FUNCTIONS:-

1)SUB DATE FUNCTIONS:
Sub date functions extract the required date part or sub date from the input dates.
There are 5 different sub date functions:

1. YEAR:
Extracts year values in the form of integers.
Syntax:
Year (input date)

2. MONTH:
Extracts month values in the form of integers.
Syntax:
Month (input date)

3.DATE:
Extracts date values in the form of integers.
Syntax:
Date (input date)

4. DATEPART, DATENAME:
Extracts required sub date or sub time values from the input date or date+time values.
Datepart gives output as integer whereas Datename gives output as string.

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Syntax:
Datepart (Datepart, Date or Date+Time) = Integer
Datename (Datepart, Date or Date+Time) = String

Note:
Datepart ('quarter', date) - valid
Datepart ('Quarter', date) - invalid

Note:
For any date function, datepart must be specified in the lower case.

Task1:
Extract Year, Quarter, Month, Week, Day in Tableau.

Step1:-
Create 5 calculated fields:

1. **Year.**
   With Formula Year ([OrderDate])
2. **Quarter.**
   With Formula Datepart ('quarter',[OrderDate])
3. **Month.**
   With Formula Month ([OrderDate])
4. **Week.**
   With Formula Datepart('week',[OrderDate])
5. **Day.**
   With Formula Day([OrderDate])

Step2:-
Convert all the fields into dimensions and drop into rows.

Task2:
Implement Datepart, Datename dynamically.

Step1:-
Create a parameter with the name 'DatePart' of type String and allowable value as list and enter year, quarter, month, week, day (Note: all must be in lower case) and display parameter.
Step2:-

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Create 2 calculated fields:

1. DatePart with formula
   DATEPART([Parameters].[DatePart],[Order Date])
2. DateName with formula
   DATENAME([Parameters].[DatePart],[Order Date])

Step3:-
Convert DatePart to dimension
(note: DateName is already present in Dimensions as it is of String output)
Step4:-
Drag DatePart and DateName into rows. Testing.

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2)TODAY & NOW:

Today displays current date whereas Now displays current date + current time.

Task1:
Implementing Today and Now in Tableau.

Step1:-
Create 2 calculated fields:
1. Today with formula Today( )
2. Now with formula Now( )

Step2:-
Drag Today and Now into rows. Right click both and choose Exact date and Discrete.

Task2:
Extract Timeparts from NOW() Field

Step1:-
Create a parameter with the name 'TimePart' with type String, list. Enter hour, minute, second. Display the parameter.
Step2:-
Create a calculated field with name 'TimePart' and formula
DATENAME([Parameters].[TimePart],NOW())
Step3:-
Drag the field into rows.

3)DATEADD:

DateAdd requires add the required date or time part to the input date or date+time field based on the interval and it creates a field of type date+time.

Syntax:

DATEADD (datepart or timepart, interval,date or date+time).

Task:

Add 4 days, 4 months to the current date.

Step1:-

Create 2 calculated fields:

1. DateAddDays with formula DATEADD('day',4,TODAY())

2. DateAddMonth with formula DATEADD('month',4,TODAY())

Step2:-

Drag the 2 fields into rows. Convert to exact date and discrete.

4)DATEDIFF:

It finds the difference between start date and end date based on the datepart.

Syntax:

DATEDIFF (datepart, startdate, enddate)

E.g.:

1. DATEDIFF ('year',#21-Oct-2014#, #21-Oct-2015#) = 1

2. DATEDIFF ('month',#21-Oct-2014#, #21-Oct-2015#) = 12

3. DATEDIFF ('year',#21-Oct-2015#, #21-Oct-2014#) = -1

4. DATEDIFF ('month',#21-Oct-2015#, #21-Oct-2014#) = -12

Note:

- **Datediff gives the output in integers.**
- **In Datediff, if startdate>enddate, it gives output in negative.**
- **In tableau, always the date values should be enclosed between #s.**

5)DATETRUNC:

DateTrunc displays the accuracy of the dates. Accuracy of the dates means displaying the starting value of the dates depending on the datepart.

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Syntax:
DATETRUNC (datepart, input date)
E.g.:
1. DATETRUNC ('year',TODAY()) = 1-Jan-2015
2. DATETRUNC ('quarter',TODAY()) = 1-Oct-2015
3. DATETRUNC ('month',TODAY()) = 1-Dec-2015

Task:
Implementing DateTrunc in Tableau.

Step1:-
Create a calculated field with DateTrunc and formula DATETRUNC ([datepart],#27-May-2015#) //parameter
Step2:-
Drag the field into rows and show the parameter.

Task2:
Display the number of days left in the current month.

Step1:-
Create a calculated field 'CM_LastDay' with formula
DATEADD('day',-1,
DATEADD('month',1,
DATETRUNC('month',TODAY())))

Step2:-
Create another calculated field 'DaysLeft' with formula
DATEDIFF('day',TODAY(),[CM_LastDay])

Step3:-
Drag both fields into rows and convert it into dimensions, discrete.

Task3:
Find out number of days left in the current year.

Step1:-
Create a calculated field 'CY_LastDay' with formula
DATEADD('day',-1,
DATEADD('year',1,

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DATETRUNC('year',TODAY()))

Step2:-
Create another calculated field 'DaysLeft2' with formula
DATEDIFF('day',TODAY(),[CY_LastDay])

Step3:-
Drag both fields into rows and convert it into dimensions, discrete.

Task4:
Find out number of days left in the current quarter.

Step1:-
Create a calculated field 'CQ_LastDay' with formula
DATEADD('day',-1,
DATEADD('quarter',1,
DATETRUNC('quarter',TODAY())))

Step2:-
Create another calculated field 'DaysLeft3' with formula
DATEDIFF('day',TODAY(),[CQ_LastDay])

Step3:-
Drag both fields into rows and convert it into dimensions, discrete.

Task5:
Display the number of days inbetween firstday and last day of the superstore.

Step1:-
Create a calculated field with name 'DaysBetween' with formula
DATEDIFF('day',MIN([Order Date]),MAX([Order Date]))
Step2:-
Drag the field into rows and convert to dimension.

6)DATE PARSE:
Date Parse will convert string dates to tableau dates.

Syntax:
DATEPARSE(string format, date string)

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E.g:
DATEPARSE ('ddMMMMyyyy','4Dec2015')
DATEPARSE ('yyyyMM','201509')

Note:
Date Parse Format:
1. dd --- day (all small d)
2. MMMM --- month (all capital M)
3. yyyy ---- year (all small y)

Task:
Implementing date parse in tableau.

Step1:-
Create a calculated field with name 'DateParse' with formula
DATEPARSE ('ddMMMMyyyy','4Dec2015').
Step2:-
DateParse into rows and select the exact date.

4.TYPE CONVERSION:
Type Conversion functions are used to convert the data from one format to another format.
Syntax:
Function (expression)

1. INT:
It converts input expression to integer
Syntax:
INT (expression)
E.g:
INT (5/2) = 2

2. FLOAT:
It converts input expression to floating number
Syntax:
FLOAT (expression)
E.g:
FLOAT (4/2) = 2.0
FLOAT (5/2) = 2.5

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3. STR:
It converts input expression to string
Syntax:
STR (expression)

4. DATE:
It converts input expression to date values
Syntax:
DATE (expression)

5. DATE TIME:
It converts input expression to date time values
Syntax:
DATETIME (expression)

6. MAKE DATE TIME: **(new function from T 8.2)**
It combines date & time values into date+time fields.
Syntax:
MAKEDATETIME (date,time)
E.g:
MAKEDATETIME (#4-Dec-2015#,#10:45#) = 4-Dec-2015 10:45 AM
MAKEDATETIME (Today(),Now()) = Invalid as Now will give both date & time

7. MAKE DATE: **(new function from T 9.0)**
It takes input as multiple date parts and it combines them into a single date field.
Syntax:
MAKEDATE (year,month,day)
E.g:
MAKEDATE (2015,12,04) = 12/4/2015

8. MAKE TIME: **(new function from T 9.0)**
It takes input as multiple time parts and it combines them into a single time field.
Syntax:
MAKETIME (hour,minute,sec)
E.g:
MAKETIME (8,26,10) = 8:26:10 AM

Note:

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Make time will take the hour values in 24 hour clock format.

Task1:
Implementing int, float functions in tableau.

Step1:-
Create 2 calculated fields:

1. Int + Float with formula
   INT(5/2)+FLOAT(5/2)+DIV(INT(5.2),2)
2. S/P with formula
   DIV(INT([Sales]),INT([Profit]))

Task2:
Display customer ID length wise number of customers.

Step1:-
Create a calculated field with name Cust_ID_length and formula LEN (STR([CustomerID]))
Step2:-
Convert Cust_ID_length to dimension and drop it into rows.
Step3:-
CustomerID into columns and change Agr to Count Distinct.
Step4:-
Click on Analysis - Select Totals - Select column grand total.

Task3:
Implementing MakeDate, MakeTime functions in tableau.

Step1:-
Create 3 calculated fields:
1. MakeDate with formula MAKEDATE (2015,12,04)
2. MakeTime with formula MAKETIME (8,26,10)
3. MakeTime2 with formula MAKETIME (20,32,10)

Step2:-
Drag the 3 fields into rows - Convert them to exact date.

Task4:

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Display countrywise Avg shipping time and display all the countries having more shipping time in red color and less shipping time in green color.

Step1:-
Create a calculated field with name 'ShippingTime' and formula DATEDIFF('day',[Order Date],[Ship Date])
Step2:-
Drag Country into rows. ShippingTime into color and label. Change Agg from Sum to Avg.
Step3:-
Select Edit colors in color window - select Red Green divergence.

Task5:
Extract year from the Order ID of global superstore

Step1:-
Download global superstore from ftp.
Step2:-
Create a calculated field with name 'Year1' with formula:
MID([Order ID], FIND([Order ID],"-")+1,4)
Step3:-
Drag Order ID & Year into rows.

5.Logical Functions:

- **Logical Functions are used to perform the *conditional evaluation* in tableau. Conditional Evaluation means evaluating each and every value with the help of a condition.**
- **Types: There are 2 ways of performing a conditional evaluation:**
  1. ***Single condition evaluation* which checks single condition at a time.**
  2. ***Multi condition evaluation* which checks multiple conditions at a time.**

With the help of conditional evaluations, we can design the KPIs.

KPI:

- **KPI stands for Key Progress Indicator or Key Performance Indicator.**
- **KPIs are the strategic goals defined by each and every organization after some specific period. They will check whether they have reached the targets or not by comparing their actual values with the targeted 3values.**

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1)IIF:
IIF stands for *IF and Only IF*. It performs single condition evaluations.

Syntax:
IIF (condition, then, else)

E.g: -
IIF (sum[Profit])>100000, 'Profitable countries', 'No Gain Countries')

Task1:
Display category wise Order Quantity if the order quantity is more than 30,000 then indicate all the categories as good else bad.

Step1:-
Category into rows. Order Quantity into columns.
Step2:-
Create a calculated field with the name 'OQ_KPI' with the formula
IIF(sum([Order Quantity])>30000,'Good','Bad')
Step3:-
Drag OQ_KPI into color and label.

Task2:
Display customer wise margin or profit sales ratio.

Note:
Margin (or) Profit sales ratio = Total Profit / Total Sales = sum(Profit) / sum(Sales)

Step1:-
Create a calculated field with the name 'Margin' and formula:
IIF(SUM([Sales])!=0,SUM([Profit])/SUM([Sales]),0)
Step2:-
Customer Name into rows and Margin into label and display margin in the form of percentage.

Task3:
Display discount sales ratio for all the items whose sales are more than 15000.

Step1:-

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Create a calculated field with name 'DS Ratio' and formula:
IIF(SUM([Sales])>15000,SUM([Discount])/SUM([Sales]),0)
Step2:-
Drag item into rows and DS Ratio into label.

Spot Lighting:
If we are coloring the values depending on the condition in the visualization then such a kind of coloring is known as Spot Lighting.

Task4:
Display year wise month wise profits. If the profit is more than 100000, then spotlight the values in green color else red color.

Step1:-
Create a calculated field with the name 'Profit_KPI' and formula:
IIF(SUM([Profit])>100000,'G','R')
Step2:-
Drag Year into columns, Month into rows, Profit into label, Profit_KPI into color. In color windows, assign green color to G and red color to R.

Task5:
Display year wise month wise total sales and spotlight the values depending on the selection of the user. If the sale is more than the user selection, then display all values in green else in red.

Step1:-
Create a parameter with name 'Sales_Checker' of type float and allowable values as 'all'. Display the parameter.
Step2:-
Create a calculated field with name 'Sales_KPI" and formula:
IIF(SUM([Sales])>[Sales_Checker],'G','R')
Step3:-
Drag Year into columns, Month into rows, Sales into label, Sales_KPI into color. In color window, assign green to G and red to R.
Step4:-
Testing with any value in parameter

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Task6:

Display year wise month wise total profits. If the profit is more than 100000, then indicate all the values in 'green tick' else indicate all the values in 'red cross'.

Step1:-

Create a calculated field with name 'Profit_KPI' (note: it already exists as we created it in prior tasks) and formula IIF(SUM([Profit])>100000,'G','R')

Step2:-

Drag Year into columns, Month into rows, Profit into label, Profit_KPI into shape. In marks card, select shape.

- In shape window, assign green tick for G and red cross for R.

- Click on label - uncheck 'show marks label'. These kind of visualizations are known as Score Cards.

2)Multi condition Evaluation:

_Done using IF function and CASE function.

1)IF function:

Syntax: IF <condition1> THEN <return1>
ELSEIF <condition2> THEN <return2>
ELSEIF <condition3> THEN <return3>
ELSE <OTHER>
END

Task1:

Display country wise sales and design a sales KPI where If sales is more than 100000 then indicate all the countries with A, if the sales is in between 50000 and 100000 then indicate with B, else indicate all the countries with C.

Step1:-

Create a calculated field with name 'Sales_KPI2' and formula:

IF SUM([Sales])>100000 THEN 'A'
ELSEIF SUM([Sales])>=50000 AND SUM([Sales])<=100000 THEN 'B'
ELSE 'C'
END

Step2:-

Click on country geographic field, drag sales into label and sales_kpi2 into color.

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Task2:-

Display item wise profits and design a profit KPI if the item is having profits then indicate all the items as profitable items. if it having losses indicate as lossable items. if profit is 0 then no gain items.

Step1:-

Create a calculated field with name 'Profit_KPI2' and formula:

```
IF SUM([Profit])>0 THEN 'Profitable'
elseif SUM([Profit])=0 THEN 'No Gain'
ELSE 'Lossable'
END
```

Alternate formula:

```
IF SUM([Profit])>0 THEN 'Profitable'
ELSEIF SUM([Profit])<0 THEN 'Lossable'
ELSEIF SUM([Profit])=0 THEN 'No Gain'
END
```

Step2:-

Item into rows, Profit into columns, Profit_KPI2 into color & label.

Task3:

Display dynamic date wise total sales. Dynamic date contains year, quarter, month, week, weekday.

Step1:

Create a parameter with name 'Dynamic_Date' with type string and enter values year, quarter, month, week, weekday. Display the parameter.

Step2:-

Create a calculated field with name 'Dynamic_Date' and formula:

```
IF [Parameters].[Dynamic_Date]='year' THEN DATENAME('year',[Order Date])
ELSEIF [Parameters].[Dynamic_Date]='quarter' THEN
'Q'+DATENAME('quarter',[Order Date])
ELSEIF [Parameters].[Dynamic_Date]='month' THEN
DATENAME('month',[Order Date])
ELSEIF [Parameters].[Dynamic_Date]='week' THEN DATENAME('week',[Order
Date])
ELSEIF [Parameters].[Dynamic_Date]='weekday' THEN
DATENAME('weekday',[Order Date])
```

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END
Step3:-
Drag 'Dynamic_Date' field into rows, Sales into label, Dynamic_Date into color.

Note:
- Parameter evaluation is case sensitive.
- All the returns values in the IF statement should be of the same datatype.

Task4:
Design a visualization with dynamic dates (contains year, quarter, month, week, weekday), dynamic dimensions (contains region, customer segment, continent), dynamic measures (contains total sales, average profits, maximum order quantity). Color the visualization with dynamic dimension and size with dynamic measures.

Step1:
Create 3 parameters with the above values:
1. Dynamic_Date (already exists)
2. Dynamic_Dimension
3. Dynamic_Measure

Step2:
Create 2 calculated fields:
1. Dynamic_Dimension with formula
IF [Parameters].[Dynamic_Dimension]='region' THEN [Region]
ELSEIF [Parameters].[Dynamic_Dimension]='customer segment' THEN [Customer Segment]
ELSEIF [Parameters].[Dynamic_Dimension]='continent' THEN [Continent]
END
2. Dynamic_Measure with formula
IF [Parameters].[Dynamic_Measure]='sales' THEN SUM([Sales])
ELSEIF [Parameters].[Dynamic_Measure]='profit' THEN AVG([Profit])
ELSEIF [Parameters].[Dynamic_Measure]='order quantity' THEN MAX([Order Quantity])
END

Step3:-
Dynamic_Dimension & Dynamic_Date into rows, Dynamic_Measure into columns. Dynamic_Dimension into color and Dynamic_Measure into size.

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Task5:

Display region wise, category wise total profits. If the profit is more than 50000 then indicate all the values with green circle. If profit is between 30000 & 50000, then indicate all the values with red circle. and all the remaining values indicate with orange circle.

Step1:-

Create a calculated field with name 'Profit_KPI3' and formula

```
IF SUM([Profit])>50000 THEN 'G'
ELSEIF SUM([Profit])>=30000 and SUM([Profit])<=50000 THEN 'R'
ELSE 'O'
END
```

Step2:-

Drag Region into columns, Category into rows, Profit into label, Profit_KPI into color. In the marks card, select 'circle'.

- In color window, assign the required colors.

2)CASE function:

- **Case is an alternate to IF.**
- **Case is used to perform multi condition evaluation.**

Syntax:

```
CASE <expression>
WHEN <condition1> THEN <value1>
[WHEN <condition2> THEN <value2>]
[WHEN <conditionN> THEN <valueN>]
[ELSE <other>]
END
```

Task:

Extract Quarter name using Case function.

Step1:-

Create a calculated field with the name 'Quarter_Names' with formula:

```
CASE DATEPART('quarter',[Order Date])
WHEN 1 THEN 'Q1'
WHEN 2 THEN 'Q2'
WHEN 3 THEN 'Q3'
ELSE 'Q4'
END
```

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Step2:-
Drag Quarter_Names into rows.

3)IF NULL:
IF NULL takes the input as two expressions. If expression1 is null it returns expression2. If it is not null it returns exact value of expression1.
Syntax:
IF NULL(expression1, expression2)

4)IS NULL:
IS NULL checks if input expression is null or not. If it it null, it returns true else false.
Syntax:
IS NULL(expression)

Note:
In tableau any function starting with IS is a boolean function.

5)IS DATE:
IS DATE checks whether input expression is valid date or not. If it is a valid date, it returns true else it gives false.

E.g:

PRODUCT	SALES	IFNULL	ISNULL
A	Null	0	True
B	100	100	False

Task:
Implementing If Null and Is Null in tableau.

Step1:-
Create the following text file (Text6) with the following data and connect to the text file:

Product	Sales
A	100
B	Null

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Step2:-
Create 2 calculated fields:
1. IFNULL(SUM([Sales]),0)
2. ISNULL(SUM([Sales]))
Step3:-
Product into rows, Sales into columns. IsNull into rows, IfNull into columns.
Step4:-
Instead of showing '0' in IfNull, if we want to display some text value, create a calculated field with the name 'Modified_Sales' with formula:
IFNULL(STR(SUM([Sales])),'No Value')
Step5:-
Drag Product and Modified_Sales into rows.
Step6:-
To hide the Abc, create a calculated field with the name 'Space' and formula CHAR(32). Drag Space into label.

Note:
32 is the ASCII number for space.

6.Aggregate Functions:

- **Aggregate functions combine the individual values and it gives single consolidated value or aggregated value.**
- **The different aggregate functions are Sum, Max, Min, Avg, Count, Count Distinct etc.**

Rules to perform Aggregation:

Rule1:-
We cannot place one aggregation inside the other aggregation.
E.g:
Sum(Avg(Sales)) -- Invalid

Rule2:-
We cannot combine or mix aggregations with non aggregations.
E.g:
Sum(Sales) * Profit --- Invalid

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Rule3:-

We can combine aggregates with constraints, and other aggregations.

E.g:

Sum(Sales) * Sum(Profit) -- Valid

Sum(Sales) * 7 -- Valid

Rule4:-

We cannot evaluate or compare aggregates with non aggregates.

E.g:

Sales, Total Profit

Max(Sales, Sum(Profit)) -- Invalid

Rule5:-

We can evaluate/compare aggregation with aggregates/constraints.

E.g:

Sales, Total Profit

Max(Sum(Sales), Sum(Profit)) -- Valid

Note:

Inside the formula if we take any aggregation and if we drop that field into columns or rows, tableau will indicate that field with AGG. it means already that field is aggregated.

Median:

It gives the mid value of the set of numbers. If the number count is even, then the median is average of the middle numbers.

Task:

Display median Profit value of each and every continent.

Step1:-

Create a calculated field with the name 'Median' with formula MEDIAN([Profit]).

Step2:-

Continent into rows and 'Median' into columns.

ATTR:

ATTR stands for attribute functions.

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Syntax:
ATTR(expression)

It is used:
1. To aggregate the non aggregated fields(Dimensions)
2. To check the values.

Logic:
If Min(expression) = Max(expression) THEN Min(expression)
ELSE *
END

Task1:
Display continent wise Profit Sale ratio. If continent is having least Profit Sale ratio, then double the value of that continent else display the actual value.

Step1:-
Create a calculated field with the name Profit/Sale ratio and formula SUM([Profit])/SUM([Sales]).
Step2:-
Continent into rows, Profit/Sale ratio into columns.
Step3:-
Create a calculated field with name 'Modified Profit/Sale ratio' and formula:
IF ATTR([Continent])='North America'
THEN [Profit/Sale Ratio]*2
ELSE [Profit/Sale Ratio]
END
Step4:-
Drag 'Modified Profit/Sale ratio' into columns.

Task2:
Finding whether a state is existing in one country or multiple countries.

Step1:-
Create a parameter with name 'State' and list all State values. Display parameter.
Step2:-
Create a calculated field with name 'Checking_Country' and formula:
IF [State]=[Parameters].[State] THEN [Country / Region]
ELSE 'Not Existing'

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END

Step3:-

State, Country into rows. Checking_Country into columns.

7.TABLE CALCULATIONS:

- Table calculations are the computations that are *performed across the values in the table.*
- To perform table calculations, we need to know 2 things:

1. *What type of calculations* we are performing:

It indicates the type of table calculations.

There are a total of 8 diff types of calculations like: Difference from, Percent, Rank etc.

2. *Where we are performing* the calculations:

Its having 2 parts:

1.Addressing part

2.Partitioning part.

1. Addressing Part:

Addressing part indicates how we are going to address the table calculation part.

Addressing Options are:

a. Table Across:
If we perform the calculation across the table horizontally.

b. Table Down:
If we perform the calculation down the table vertically.

c. Table Across Then Down:
If we perform the calculation first across the table then down the table.

d. Pane Across/Down:
If we perform the calculation first horizontally across the pane is known as Pane across and if we perform the calculation down the pane vertically is known as Pane Down.

e. Pane Across Then Down:
If we perform the calculation first across the pane horizontally then down the pane vertically.

f. Cell:
If we perform the calculation at each & every value level.

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2. Partitioning Part:
At the time of addressing the calculation, tableau will divide the table into multiple parts using data fields. These fields will act as the Partitioning fields.

Implementing Table Calculations:
Tableau calculations can be implemented in 2 ways:
1. Automatic way 2. Manual way.

1. Automatic way:
   In this, tableau automatically generates the calculation formula.
2. Manual way:
   In this, we need to write the calculation formula manually.

Note:
Table calculations can be implemented only on the measures (aggregated fields).

Implementing table calculations in Automatic way:
1. Difference From:
   It is used to perform the *growth calculations*.

Task 1:
Display year wise profits and profits growth.

Step1:-
Drag Year into rows. Profit into columns.
Step2:-
Right click on Profit in columns shelf - select 'add table calculation' - select calculation type as 'difference from', addressing as 'table down' and 'difference from previous' - apply & ok.
Step3:-
Drag Profit into columns.

Task 2:
Display continent wise sales and display how much each & every continent is varying with the continent having highest sales.

Step1:-
Continent into rows. Sales into columns. Sort the view in the descending order.

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Step2:-
Right click on Sales in columns shelf - select add table calculation - select calculation type as difference from, addressing as table down, and difference from first.
Step3:-
Drag Sales into columns.

Task 3:
Display order priority wise total order quantity and display how much each and every order priority is varying with medium.

Step1:-
Drag Order priority into rows. Order quantity into columns.
Step2:-
Drag 'Medium' bar and drop it into last.
Step3:-
Select the calculation type as difference from, addressing as table down and difference from last.
Step4:-
Drag Order quantity into columns.

Note:
All the table calculation fields are indicated with a greek symbol known as delta (triangle).

Task 4:
Display year wise month wise profit and profit growth by comparing each and every month with August every year.

Step1:-
Drag Year and Month into rows. Profit into columns. From data view, drag 'August' month and drop to first.
Step2:-
Add a table calculation on Profit of type difference from, addressing as Pane down and difference from first.

Task 5:
Display dept wise, region wise, total sales and display how each & every region is varying with 'west' for each & every dept.

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Step1:-
Drag Dept and Region into columns. Sales into rows.
Step2:-
Add a table calculation with type difference from, addressing as pane across and difference from last.

2. **<u>Percent Difference From:</u>**
   It is used to calculate percentage change. It is used in the *growth percentage calculation.*

<u>Task 1:</u>
Display profit growth percentage of every year.

Step1:-
Drag Year into rows. Profit into columns.
Step2:-
Add table calculation on profit type percent difference from, addressing table down, difference from previous.

<u>Task 2:-</u>
Display month wise year wise sales, sales growth percentage and profit, profit growth percentage.

Step1:-
Drag Year and Month into rows. Sales and Profit into columns.
Step2:-
For Sales & Profit, add a table calculation type percent difference from, addressing table down, percent difference from previous.

<u>3.Percent From:</u>
It is used to obtain the *absolute change* (Absolute change means comparing each & every value with the required value.

<u>Task1:-</u>
Display the absolute change of all the continents by comparing each and every continent with continent having highest profit.

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Step1:-
Drag Continent into rows. Profit into columns. Sort by descending order.
Step2:-
Add table calculation on Profit type percent from, addressing table down, percent from first.

Task2:-
Display year, quarter wise total sales and compare all the quarters with Q4 and display the absolute change.

Step1:-
Drag Year and Quarter into rows. Sales into columns.
Step2:-
Add a table calculation on Sales type percent from, addressing pane down, percent from last.

3.Percent of Total:
It is used to obtain *each & every value contribution to the total value.*

Task1:
Display year wise profit contribution by all the continents.

Step1:-
Continent into columns. Year into rows. Profit into label.
Step2:-
Add a table calculation of type percentage of total and addressing as table across.

Task2:
Display dept wise, category wise order quantity contribution every year.

Step1:-
Dept and Category into rows. Year into columns. Order quantity into label.
Step2:-
Right click on order quantity - add a table calculation of type percent of total, addressing as pane down.

Task3:-
Display year wise, month wise Profit across multiple customer segments and display Profit contribution of each and every month across all the years.

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Step1:-
Year and Month into rows. Customer Segment into columns. Profit into label of marks card.
Step2:-
Add table calculation of percent of total and addressing as Pane down.

5. <u>Rank:</u>
::4 types::

<u>1.Unique Rank</u>:
It uniquely allocates the ranks even though if the ranks are repeating.

<u>2.Competition Rank</u>:
It uniquely assigns the rank if the values are unique. If the values are duplicating, for the duplicated values, it assigns the same rank. And to display the **next rank, it will <u>count no. of times the current rank is repeating</u> and it will add that count to the current rank to display the next rank.**

<u>3.Modified Competition Rank</u>:
To assign the current ranks it will <u>count no. of times</u> the <u>current value is repeating</u> and it will add that count to the previous rank.

<u>4.Dense Rank</u>:
Competition & Modified Competition skip the next immediate ranks if the ranks are repeating. Even though if the ranks are repeating if we want to display the next immediate rank then we have to use dense rank.

E.g:
<u>Distinct Data:</u>

SID	Marks	Unique	Competition	Modified	Dense
1	99	1	1	1	1
2	98	2	2	2	2
3	97	3	3	3	3
4	96	4	4	4	4
5	95	5	5	5	5

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Duplicate Data:

SID	Marks	Uniq	Competition	ModifiedCompetition	DenseRank
1	98	1	1	2	1
2	98	2	1	2	1
3	97	3	3	3	2
4	96	4	4	6	3
5	96	5	4	6	3
6	96	6	4	6	3
7	95	7	7	8	4
8	95	8	7	8	4

Task1:

Implementing ranking functions in Tableau.

Step1:

Create a text file with the following data:

SID , Marks

1, 99
2, 98
3, 97
4, 97
5, 96
6, 96
7, 96
8, 96
9, 95
10, 95

Step2:-

Convert SID to dimension. SID into rows. Marks into columns 5 times.

Step3:-

In four Marks pills, add four different ranking functions with table down.

Task2:

Display continent wise profit ranks every year.

Step1:-

Drag Continent into rows. Year into columns. Profit into label.

Step2:-

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Add a dense rank calculation on Profit with addressing as table down.

Step3:-

Drag Profit into visualization. Place measure names into columns.

- Edit the alias to rank of dense rank field.

Task3:

Display each and every continent performance based on Profit across all the years.

Step1:-

Drag Continent into rows. Year into columns. Profit into text.

Step2:-

Add a dense rank calculation on Profit with addressing as table across.

Task4:

Display Customer Segment wise Order Quantity ranks for each and every month across multiple years.

Step1:-

Drag Customer segment, Month into rows. Year into columns. Order quantity into label.

Step2:-

Add a dense rank calculation on order quantity with the addressing as table across.

Task5:

Across the multiple years and months in each and every customer segment, compare all the months order quantity and assign ranks.

Step1:-

Drag Customer segment and Month in rows. Year into columns. Order quantity into label.

Step2:-

Add a rank table calculation of type dense rank and addressing as pane across and then down.

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6. Percentile:

- Percentiles are used to identify how many values are falling above the current value or below the current value.
- Percentiles can be obtained in 2 ways:

1.Ascending Order 2.Descending order.

Note:-

Percentile behavior is different upto Tableau 8.x and From Tableau 9 it has changed.

Percentile behavior upto Tableau 8:-

1. *Ascending Order*:

   Using Ascending order we can know how many values are falling below the current value.

Formula = $\frac{\text{No. of values less than or equal to the current value}}{\text{Total values}}$ X 100

2. *Descending Order*:

   Using Descending order we can know how many values are greater than the current value.

Formula = $\frac{\text{No. of values greater than or equal to the current value}}{\text{Total values}}$ X 100

Percentile behavior From Tableau 9:-

1. *Ascending Order*:

Formula = $\frac{\text{No. of values less than the current value}}{\text{Total values-1}}$ * 100

2. *Descending Order*:

Formula = $\frac{\text{No. of values greater than the current value}}{\text{Total values-1}}$ * 100

Task1:

Display continent wise sales or profit percentiles.

Step1:-

Drag Continent into rows. Sales into columns 3 times.

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Step2:-
Add a percentile table calculation on sales addressing as table down and sort as descending.
Step3:
On the 2nd sales field, add percentile calculation in ascending order.

Task2:
Display month wise customer segment wise total profit across multiple years and display which month values is having highest profit across all the customer segments and years.

Step1:-
Drag Month, Customer segment into rows. Year into columns, Profit into label.
Step2:-
Add a table calculation on Profit of type percentile addressing as table across then down and order as ascending.
Step3:-
If you want to know month having least profits, change the sort order to descending.

7. Running Totals:

- **Running totals are used to perform cumulative calculations in Tableau.**
- **Cumulative calculations means along with the current value performing computations on the previous values.**
- **The different running total calculations available are: Running Sum, Running Avg, Running Min, Running Max, Running Count.**

E.g:

Product	Sum(Sales)	Running Sum	Running Avg	Running Min	Running Max	Running Count
A	100	100	100	100	100	1
B	200	300	150	100	200	2
C	300	600	200	100	300	3
D	400	1000	250	100	400	4

Note:

On the output of the running totals, it is possible to perform one more calculation using secondary calculations. But again secondary calculation cannot be performed on running total.

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Tableau Level-II Notes by Prazval.ks

Task1:
Implementing Running Totals in Tableau.

Step1:-
Drag Continent into rows. Sales into columns.
Step1:-
Add table calculation on Sales of type Running Total Sum addressing as table down.
Step2:-
Drag Sales into columns for 3 times and add other three (Avg, Min, Max) running total calculations.

Note:

On the output of the running totals, it is possible to perform one more calculation using secondary calculations. But again secondary calculation cannot be performed on running total.

Task2:
Display month wise, year wise total profit and cumulative profit percentage.

Step1:-
Drag Year into columns, Month into rows. Profit into label.
Step2:-
Add a table calculation on Profit of type Running Total Sum addressing as Table down or Order date. Select perform secondary calculation of type percent of total addressing as table down.

Note:

In Running Total, it is possible to define 2 different addressing options.

Task3:
Display customer segment wise all departments cumulative profit contributions in each and every continent across all the years.

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Tableau Level-II Notes by Prazval.ks

Step1:-
Drag Customer segment, Dept into rows. Continent, Year into columns. Profit into label.
Step2:

Add a table calculation of type Running Total Sum. Secondary calculation as Percent of total with addressing as pane across then down.

8. Moving Calculations:

- Moving Calculations are used to obtain the stabilized values for the moving data or the data which will change frequently.
- Moving Calculations are mainly used to smoothen the short term fluctuations to obtain the long term trends by computing stabilized values.
- It will be mainly operated with the security data or financial data.
- In computing the moving calculations, tableau will take previous value, current, next value into computations.

Note:
On the moving calculations, it is possible to perform a secondary calculation. But secondary calculation cannot be performed on moving calculation or running totals.

Task1:
Display the stabilized discount values by taking 3 previous and 3 next values.

Step1:
Drag Discount into rows. Order date into columns.
- Change the order date type to exact date.
Step2:-
On discount, define a table calculation of type moving calculation average addressing as table across. Enter 3 for previous and next values and check Null - Apply & Ok.
Step3:-
Right click on the sheet - select duplicate as crosstab.
Step4:-
To compare both the sheets in a single window, create a dashboard and drag both the sheets.

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Tableau Level-II Notes by Prazval.ks

Implementing Table Calculations Manually:-

In the manual way, we need to write the formulas manually by using table calculation functions.

1.Rank Calculation:

Syntax:

Rank_Function (Expression, [Order]) [Order]→Optional. Order can be asc or desc.

Note:

In Rank function, Order is case sensitive.

RANK:	RANK FUNCTION:
1.Unique Rank	Rank_Unique
2.Competition Rank	Rank
3.Modified Competition	Rank_Modified
4.Dense	Rank_Dense

Task1:

Finding Continent wise Sales Ranks manually.

Step1:-

Drag Continent into rows,Sales into columns.

Step2:-

Create 2 calculated fields:

1.Sales_Rank with formula

Rank_Dense(SUM([Sales]))

2.Sales_Rank_Asc with formula

Rank_Dense(SUM([Sales]),'asc')

Step3:-

Drag the 2 calculated fields into columns.

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Tableau Level-II Notes by Prazval.ks

Note:

All the input expression to the table calculations functions must be aggregate or constant values.

Task2:

Display month wise profit ranks every year

Step1:-

Drag year and month into rows. Profit into label.

Step2:-

Create a calculated field with the name 'Profit Rank' and formula

Rank_Dense(SUM([Profit]))

Step3:-

Drag 'Profit Rank' and drop into visualizations

Step4:-

In the measure values, right click on the profit rank. Select compute using Pane down.

2. Percentile:

Syntax:

Rank_Percentile (Expression,[Order])

Note:

In ranking function, default order is descending order while in Percentile it is ascending order.

Task:

Display continent wise sales percentiles manually.

Step1:-

Drag continent into rows. Sales into columns.

Step2:-

Create 2 calculated fields:

1. **Sales_Percentile with formula**

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Rank_Percentile(SUM([Sales]))

2. Sales_Percentile_Desc with formula
   Rank_Percentile(SUM([Sales]),'desc')

Step3:-

Drag the 2 calculated fields and drop into columns.

Assignment Task:

For each and every continent, display customer segment wise profit percentiles

3. **Running Totals:**

Syntax:

Running_Function(Expression)

Functions:

Sum, Avg, Min, Max, Count

Task:

Implementing Running totals manually for the continent wise total sales.

Step1:-

Create 5 calculated fields:

1.R_Avg with formula
  Running_Avg(SUM([Sales]))
2.R_Min with formula
  Running_Min(SUM([Sales]))
3.R_Max with formula
  Running_Max(SUM([Sales]))
4.R_Count with formula
  Running_Count(SUM([Sales]))
5.R_Sum with formula
  Running_Sum(SUM([Sales]))

Step2:-

Drag Continent into rows. Sales and calculated fields into columns.

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Tableau Level-II Notes by Prazval.ks

First:

Syntax:-

First()

→It gives number of value from current row to the first row.

Last:

Syntax:-

Last()

→It gives no. of rows from current row to the last row.

Index:

Syntax:

Index()

→It gives the row number.

Size:

- **It gives the size of the window in tableau.**
- **Size of the window means total count of all the values in the table or visualization (count of values in the rows shelf fields).**

Task1:

Implementing first, last, index, and size function in tableau.

Step1:-

Drag customer name into rows.

Step2:-

Create 4 calculated fields:

1. First with formula First()

2. Last with formula Last()

3. Index with formula Index()

4. Size with formula Size()

Step3:-

Drag all the 4 fields in the form of a text table.

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Tableau Level-II Notes by Prazval.ks

Task2:

Display the no. of customers every year.

Step1:-

Drag year and customer name into rows. Size into label. For Size, change the addressing to pane down.

Total:

Syntax: Total(expression)

→It returns the total value of the input expression.

Task:

Display continent wise total sales and complete sales.

Step1:-

Drag continent into rows and sales into columns.

Step2:-

Create a calculated field with the name 'Total Sales' and formula:

Total(SUM([Sales]))

Step3:-

Drag Total Sales and drop into columns.

LOOK UP:

- **It displays the input expression based on the offset. Offset determines which value we want to display. It can be either number or first or last functions.**

Syntax:

LOOKUP(Expression,[Offset])

E.g:

Product	SUM(Sales)	Lookup(SUM[Sales],1)
A	100	200
B	200	300
C	300	400
D	400	Null

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Tableau Level-II Notes by Prazval.ks

LOOKUP(SUM[Sales],-1)	First()	Last()	Index()
Null	0	3	1
100	-1	2	2
200	-2	1	3
300	-3	0	4

LOOKUP(SUM[Sales],First())	LOOKUP(SUM[Sales],Last())
100	400
100	400
100	400
100	400

LOOKUP(SUM[Sales],Index())	LOOKUP(SUM[Sales],0)
200	200
400	200
Null	0
Null	0

LOOKUP(SUM[Sales])

Null
Null
Null
Null

Note:

1.Difference From:

Current Value – Required Value

2.Percent Difference From:

(Current Value – Required Value)/Required value

3.Percent Difference From:

Current Value/Required Value

4.Percent of Total:

Current Value/Total Value

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Tableau Level-II Notes by Prazval.ks

Note:

In Tableau, LOOKUP function is used to extract the required value.

Task:

Display month wise profits and compare each and every profit with June and display profit growth and profit growth percentage.

Step1:-

Drag month into rows and profit into columns.

Step2:-

Create 3 calculated fields:

1.June Profit with formula

LOOKUP(SUM([Profit]),First()+3

2.Profit Growth with formula

ZN(SUM([Profit]))-LOOKUP(ZN(SUM([Profit])),First()+3)

3.Profit Growth Percent with formula

ZN(SUM([Profit]))-LOOKUP(ZN(SUM([Profit])),First()+3))

/

ABS(LOOKUP(ZN(SUM([Profit]),First()+3))

Step3:-

Drag Profit Growth percentage into columns.

Task:

Display Country wise order quantity growth for each and every customer segment by comparing all the countries with India.

Step1:-

Drag customer segment and country into rows, order quantity into label.

Step2:-

Create a calculated field with the name Profit Growth and formula:

IF ATTR([Customer Segment])='Consumer' OR ATTR([Customer Segment])='Small Business' THEN

ZN(SUM([Order Quantity])) – LOOKUP(SUM([Order Quantity]),First())

ELSEIF ATTR([Customer Segment])='Home Office' THEN

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ZN(SUM[Order Quantity])) – LOOKUP(SUM([Order Quantity]),First()+14)
ELSE ZN(SUM([Order Quantity])) – LOOKUP(SUM([Order Quantity]),First()+16)
END

Step3:-

Drag the calculated field and drop into columns. Change the addressing to Pane down.

WINDOWS FUNCTIONS:

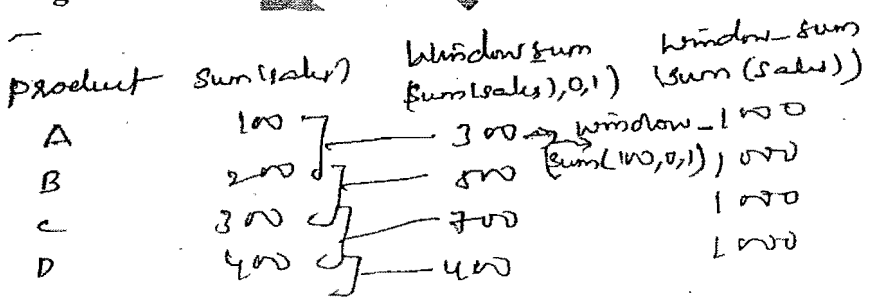
Window functions are used to perform the moving calculations in tableau.

Syntax:

WINDOW_FUNCTION(Expression,[Start],[End])

- **Window functions are aggregate functions only but it will apply that function with in the window.**
- **Window means the values of the input expression in between start and end points.**
- **If we omit start and end values tableau will take all the values of the input expression as a window and it performs the required computation.**
- **The different window functions are: Window_Sum, Window_Avg, Window_Min, Window_Max, etc.**

-E.g:



Window_Sum(SUM[Sales]) = SUM(SUM[Sales]))

Task:

Obtain the stabilized values for discounts by taking 2 previous and 2 next values.

Tableau Level-II Notes by Prazval.ks

Step1:-
Drag Order, Discounts into columns and rows. Change the Order Date type to continuous.
Step2:-
Create a calculated field with the name 'Stabilized discount' and formula:
Window_Avg(Avg([Discounts]),-2,2)
Step3:-
Drag stabilized discount and drop into color.

<u>Task:</u>
Display year wise quarter wise total profits and compute average profit value for all the quarters every year and indicate the quarters whose profit is more than average profit in one color and remaining quarters in the other color.

Step1:-
Drag year, quarter into rows and profit into columns.
Step2:-
Create a calculated field with formula:
Window_Avg(SUM([profit]))
Step3:-
Drag Window_Avg of Profit field and drop it into columns and compute using Pane down.
Step4:-
Create a calculated field with the name KPI and formula:
SUM([Profit])>(WA[PI])
Step5:-
Drag KPI and drop into color of all marks card.

<u>Task:</u>
Display continent wise Sales, each and every continent percent contribution, cumulative percent of sales.

Step1:-

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Create 2 calculated fields:

1. Percent Cumulative with formula:

Running_Sum(SUM([Sales]))/TOTAL(SUM([Sales]))

2. Continent Contribution and Profit with formula:

SUM([Sales])/TOTAL(SUM([Sales]))

Step2:-

Drag continent into rows. Sales and 2 calculated fields into columns.

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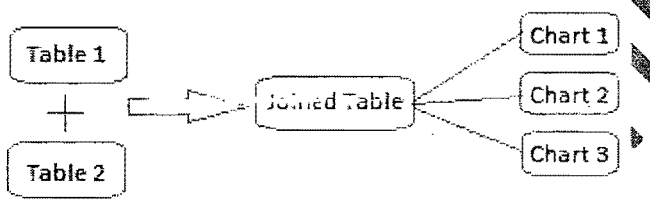
Scenario
ADVANCED BLENDING

Join: →Combines tables from same data source.

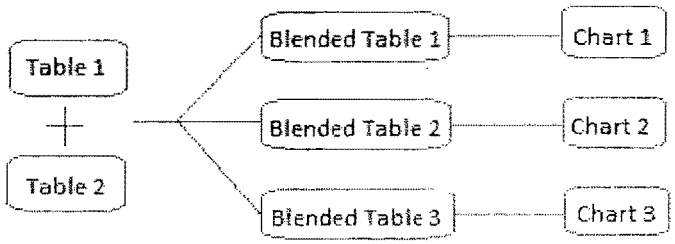
Blend: →Combines tables from different data sources.
→Combines tables from same data source having many to one (or) many to many relationships.

E.g.
Joining multiple fact tables.

Note:
Joins will be executed at the data source level and Join output is common for all the sheets.



Note:
Data blending will be performed at the tableau level after executing each and every data source queries separately.



Note:
While performing the data blending, first tableau aggregates the data and then blends the data.

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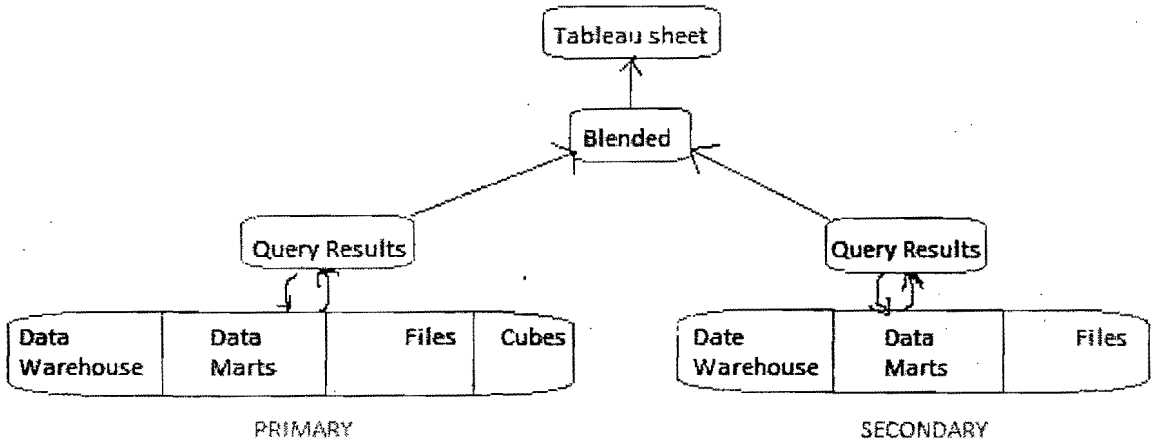

Data blending Setup:

-Add dimension from the PRIMARY datasource to the sheet.

-Add fields from the secondary datasource to the sheet as measures or attributes.

-Make sure either field names match or a relationship exists.

How the Blend works:

-For each datasource used on the sheet

1. Query sent to the database
2. Results processed

-Then all results are LEFT joined on common key.

-Dimensions on the sheet are considered for keys.

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Note:

Cubes are multi dimensional data sources cannot act as secondary data source while performing the data blending. Always we have to take them as primary data source.

Note:

Internal join while performing the data blending is LEFT OUTER.

Note:

With data blending we can implement Inner and Right Outer joins. But Full Outer join is not possible with data blending.

Task 1:

Implementing Inner, Right outer join with data blending.

Note:

Download Advanced blending data sources from FTP server.

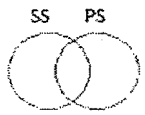
Tableau Level-II Notes by Prazval.ks

Step1:-
From tableau, connect to appointments, patient history from 'hospital' excel file.
Step2:-
From appointments, drag patient into rows, appointment data into label of marks card. And on appointment date, select exact date discrete.
Step3:-
From patient history data source, drag illness and drop it into rows before patient field.
Step4:-
Right click on the null – select edit alias – give the alias name as 'new patients'.

<u>Implementing Inner Join</u> (Create new sheet)
Step1:-
Drag patient into rows and appointment date into text of the marks card.
Step2:-
Drag illness into rows – select new patients and click on exclude.
Step3:-
It will display only the matching records.

<u>Implementing Right Outer Join</u> (Create new sheet)

<u>Note:</u>
While performing the data blending to implement right outer join, take the secondary source as left and primary source as right.



Step1:-
Create a new sheet from patient history. Drag illness into rows, patient from appointments into rows. And appointment date into text.
Step2:-
Edit the alias of null to 'new' for all the patients.

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Task2:

Performing the data blending by linking with the multiple matching dimensions.

Note:

In data blending, null indicates unmatched values.

Step1:-

From hospital excel sheet, connect to the 'sales' and 'promotions' sheets.

Step2:-

From promotions, drag customer name, product into rows. And from sales, drag sales into columns.

Step3:-

On the sales source (which is acting as secondary) link with both the customer name and product.

Note:

In data blending, if we link the multiple dimensions, tableau will take combination of multiple dimension values as the blending key or dimension key.

Task3:

Performing filtering with data blending.

Step1:-

From sales source, drag product into rows and sales into columns.

Step2:-

From promotions, drag promotion voucher into columns. And delivery method into filters and select the delivery method as 'mail'.

Note:

In data blending, if we take secondary source field into filters first blending will take place and then filtering will happen.

Note:

While performing the data blending, we frequently face ' * ' issue. The reason is is if the secondary data source dimensions are having one to many, many to one, many to many relationship with the linking field (blending field or blending key) then it will show ' * '

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Note:

Always, secondary dimensions should be in one to one relationship with the linking field(Dimension from primary datasource) to display its value. It is the rule of blending.

Note:

To overcome ' * ' issue, interchange primary with secondary and secondary with primary.

Task4:

Handling star issue in the data blending.

Step1:-

Connect to Fruit stands. Drag Fruit into rows. Fruits sold into columns.

Step2:-

Click on inventory – drag inventory into columns and location into color.

Step3:-

Location color window results in ' * ' value due to one to many relationship.

Step4:-

To resolve this, create a new sheet. From Inventory source, drag Fruit into rows and Inventory into columns, Location into color. From Fruit stands source, drag Fruits sold into columns.

Handling the Duplicate Values:

Task5:

Handling one to many, many to many, circular join issues with the data blending.

Step1:-

Connect to Fruit stands and Inventory in Inner join from Fruit data excel sheet.

Step2:-

Drag Fruit, Fruit stands into rows. Inventory, Fruits sold into columns.

Step3:-

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If we remove Fruit stand from rows, it is going to show us duplicate inventory count or circular count per every fruit which is wrong.

Note:
It is mainly because first Join will take place and then performs the aggregation.
Note:
It is a common issue with one to many, many to many relationships. To resolve this issue (first performance the) join the 2 files using blending because in blending first aggregation will take place and then perform the blending.
Step1:
Connect to Fruit and Inventory separately.
Step2:-
From Fruit stands, drag Fruit, Fruit stand into rows, Fruit sold & Inventory into columns.
Step3:-
Remove Fruit stands from rows. It will maintain the same Inventory count.

Handling many to many relationships:
To handle the many to many relationships, design the visualization with the combine mode joint blending.

Task6:
Handling many to many relationships.
Step1:-
Connect to Sales excel file for Sales sheet and Comments sheet independently.
Step2:-
From Sales sheet, drag Product into rows and Sales into columns.
Step3:-
Create a new sheet from comment source. Drag comments into text of the marks card. Number of records into color and size into marks card. Select text.
Step4:-
Create dashboard and place both the sheets on the first sheet. Select 'Use as Filter'.
Step5:-

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Tableau Level-II Notes by Prazval.ks

Select any product it will not show us the relevant comment due to many to many issue.

Note:
Using filter action, it is possible to perform filtering across multiple data sources.

Step1:
-To handle the above issue, connect to the sales+comment in the inner join fashion.
Step2:-
Create a new sheet. Drag product into rows from Joined source and from Sales source drag sales into columns.
Step3:-
Similarly, create a new sheet for comment by dragging comment into text from joined source and no. of records from comment source into color and size to build word cloud.
Step3:-
Create a dashboard and place both the sheets.
Step4:-
Select use as filter on the first sheet and select any product it shows us the relevant comments.
Step5:-
On the comments and the sales secondary sources link with both the dimensions to get current count.

Task7:
Display the customer having highest amount of returns on global super store.
Tip:-
-Find out customer wise no. of orders placed and no. of orders returned.
-Divide returns orders with orders placed to get the % of returns.

Note:
On the secondary datasources, it is not possible to take count distinct function while performing the blending.

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Tableau Level-II Notes by Prazval.ks

Task8:

Display which region manager is having:

1. **Highest amount of returns**
2. **Highest returned sales amount**

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SCENARIO

Forecasting:

- Forecasting is a computation/calculation of obtaining future trends based on the current trends and data.
- To perform forecasting we need *time series data.*
- At the time of specifying the forecasting, we need to specify forecast length, forecasting data aggregation and forecasting model.

Note:

- Forecasting is completely automatic in Tableau.
- To create a good forecast we need good data.
- By default tableau automatically excludes last period value in forecasting and it will forecast that excluded value in the output.
- While computing the forecast, tableau will take the aggregates of the date level because while performing forecasting tableau will goes to underlying data at the required aggregation level and it performs forecasting.

Trends & Seasonality:

Tableau forecasting will make use of exponential smoothing model which will perform the forecasting by using 'Trends & Seasons'.

Trend:

Trend is a tendency in data which will increase or decrease over the period of time.

Seasonality:

Seasonality is a repeating predictable variation in value. For e.g. Fluctuations in temperature relative to the season. E.g. Temperature fluctuation relative to season.

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Tableau Level-II Notes by Prazval.ks

Trends & Seasonality are having 3 values:

1. ***None,2 .Additive, 3.Multiplicative.***

1. **<u>None:</u>**
   Data in the trends would not be assessed based on the season.
2. **<u>Additive:</u>**
   It means trends in the season is constant over the time.
3. **<u>Multiplicative:</u>**
   Which means trends in the season may increase or decrease over the time.

<u>Forecasting Options:</u>

::: 3 Options :::

1. **Forecast Length**
2. **Forecast Model**
3. **Source Data Aggregation**

1. <u>Forecast Length:</u>

By default, Tableau computes forecast length automatically. If we want to set our required period, select either exactly (or) until.

2. <u>Forecasting Models:</u>

- **While selecting the forecasting models, 1st prerequisite is we need to get complete idea on our data or business.**
- **If we don't have complete idea then the best practice is using the default (automatic using seasonality and trends) forecasting model. The 3 diff forecasting models are:**
  1) *Automatic.* 2) *Automatic without seasonality.* 3) *Custom.*

1. **<u>Automatic:</u>**
   Automatic is the best model for forecasting because in Automatic tableau selects the forecasting model automatically depending on the type of data out of 8 models.
2. **<u>Automatic without seasonality:</u>**

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If our data is having no seasonal trends then select the forecasting model as Automatic without seasonality.

3. Custom:

Using the Custom model, we can define forecasting based on trends and seasons. In custom model we have 3 options:

a) Additive – which means trend in season is constant over time.
b) Multiplicative – which means trend in season may decrease (or) increase over time.
c) None – which means data will not be accessed for season.

3. Source Data Aggregation:

While computing forecasting, tableau will take the Aggregation. It means while performing forecasting, tableau will go to the underlying data and aggregation data at the required time series aggregation level and it performs the forecasting.

Note:

By default, tableau automatically excludes the last period in forecasting.

Note:

In forecasting options, we can set the prediction intervals also. E.g. If we set prediction interval as 99%, it means if we perform prediction for 100 times, prediction value is correct 99 times.

Forecasting Limitations:

1. Null Dates
2. A continuous dates cannot be derived.
3. Disaggregated measures
4. Grand totals or sub totals
5. Multiple dates
6. Table calculations
7. A time series is too short (if data view contains very few dates, then forecasting will not be possible on all the models)
8. Data fields set to 'exact date'

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9. If the data view contains above specified points then it is not possible to define forecasting model in tableau

Note:
While performing forecasting it is always recommended to take the continuous dates instead of discrete as forecasting cannot derive the continuous values automatically.

Task1:-
Forecast profit values across the months.

Step1:-
Drag order date into columns. Profit into rows. Change month to continuous.
Step2:-
Right click on view. Select Forecast and show forecast.
Step3:-
To know about the forecast values, right click on sheet – select forecast and select forecast options.
Step4:-
Duplicate sheet as cross tab and compare the values.

Task2:-
Perform forecasting for 2012 profits.

Step1:-
Drag month into columns, Profit into rows. Change month to continuous.
Step2:-
Drag year to filters and uncheck 2013 to keep the data up to 2012.
Step3:-
Right click on the view and select show forecast.
Step4:-

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Copy the forecast data from the visualization and paste into tableau in the form of clipboard.

Step5:-

On the clipboard data source, create a calculated field with name "DateMonth" and formula: DATEPARSE("MMMyyyy",[Month of Order Date])

"Month-Forecast" and formula: DATENAME('month',[DateMonth]) //calculated field

Step6:-

On superstore, create a calculated field with name "Months" and formula: DATENAME('Month',[OrderDate])

From clipboard, drag 'DateMonth' into columns and select continuous.

Step7:-

Drag profit from clipboard into rows and change the alias name to profit estimate.

Step8:-

Drag profit from superstore and drop it into the other end of axis and perform dual axis, and synchronize axis.

Step9:-

Drag measure names and drop into color and label.

<u>Task3: -</u>

Forecast the next 12 months profit trends for the Top 10 countries based on profits.

Step1:-

Create a set based on profits for Top 10 countries.

Step2:-

Drag month into columns, profit into rows, set into rows, and show members in the set.

Step3:-

Right click on the view and select forecasting.

<u>Note:</u>

In automatic model, tableau automatically selects the seasons and trends depending on the date.

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Task4:

Show the next 1 year forecasting values for sales, profit, order quantity, and discount.

Step1:-
Drag order date into columns and change date level to month.
Step2:-
Drag sales, profit, order quantity and discounts into rows.
Step3:-
Right click on the view and select show forecast.
Step4:-
Duplicate sheet as crosstab and check the values.Color code with measure names.
Step5:-
Right click on sheet. Select forecast and click on describe forecast.
Step6:-
In the forecast window, click on models and check the model types.

Note:

In forecasting, Tableau will make use of exponential smoothing model.

Task5:

Forecast month wise profit values for the next 2 years.

Step1:-
Drag Month into rows and select continuous.Profit into columns.
Step2:-
Right click on the visualization – select forecast and select show forecast.
Step3:-
Again right click – select forecast – forecast options. In forecast options, select exactly 2 years and set ignore last to 0.Select Forecasting model as automatic and prediction interval by 99%. Click on apply & Ok.
Step4:-

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Duplicate sheet as crosstab and build a dashboard with forecasting and text table sheets.

Note:

Depending on the prediction interval the forecasting value will change.

Task6:

Perform a forecasting for month wise profits using without seasonality model.

Step1:-

Drag Month into columns. Profit into rows. Change month to continuous.

Step2:-

Right click on data view – select show forecast and click on forecast options. In forecast options window, select forecast length as exactly 2 years, ignore last to 0, forecast model as automatic without seasonality, PI as 99% - click on apply & Ok.

Step3:-

Duplicate sheet as cross tab.

Step4:-

Create dashboard place without seasonality and cross tab sheets.

Task7:

Compare the forecasting output of Additive and Automatic.

Step1:-

Create a forecast for month wise profits in the Additive model using Custom.

Step2:-

From the sheet, select all the forecasted values in the tooltip. Click on view data. Select all the data and paste into tableau which will create a clipboard. Name the clipboard as Additive.

Step3:-

Similarly create a clipboard for Automatic. Rename clipboard to Automatic.

Step4:-

Create a calculated field with name Monthdate on 2 clipboards with the formula: Dateparse('MMMyyyy',[Month of Orderdate])

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Step5:-
Drag Monthdate into columns from automatic and Profit into rows.
Step6:-
Click on Additive. Perform the blending. Drag the profit value and drop it into rows and perform Dual axis.

Task8: -
Perform forecasting for month wise no. of orders, no. of customer, avg discounts, total profits.

Step1:-
Drag month into columns and all the 4 measures into rows.
Step2:-
Right click on data view. Select show forecast in forecasting option. Set last value as 0, length as exactly 1 year and PI as 99%, forecast model as Automatic.
Step3:-
Right click on the visualization – select forecast and select describe forecast.

Note:

- **In forecasting there are 3 different quality models: *Good, Ok, Poor.***
- **On the forecasting fields it is not possible to perform filtering.**
- **On the normal fields of visualizations which contains forecasting it is possible to add filters.**
- **Forecasting is prediction (or) estimate of future events (or) Forecasting is planning tool that helps managements in its attempts to cope with uncertainty of the future, based on the current and past data.**

Designing a forecasting model:
In tableau is it possible to perform forecasting manually by taking required growth % and depreciation (or) churn rate % with the following formula: Measure X (1 – Churn rate %) X (1 + Growth rate %)

Task10:

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Display category wise total sales and estimate sales, estimate order quantity 20%, growth 50% depreciation.

1st way:

Step1:-

Drag category into rows, Sales into columns.

Step2:-

Create 2 parameters: 1.Churn Rate%, 2.Growth rate% of type float

Step3:-

Create a calculated field with name "Estimated Sales" and formula:

[Sales] * (1-[Churn Rate%)/100) * (1+[Growth Rate%]/100)

Step4:-

Show the 2 parameters. Enter the churn rate as 50% and growth rate as 20%.

2nd way:

Step1:-

Drag category into rows, measure names into columns, measure values into label.

Step2:-

Create a calculated field with name 'Estimated Order Quantity' with formula:

[Order Quantity] * (1-[Churn Rate%]/100) * (1+[Growth Rate%]/100)

Step3:-

From the measure values, remove everything except sales, order quantity and estimated fields.

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SCENARIO
TREND LINES

- Trend Lines allow the users to identify the trends on the data.
- Trend Lines also known as 'Best Fit Lines' as here we'l compute the lines that predicate the data trends.
- While computing the trendlines, tableau will make use of the 4 different trend models. They are:

1. Linear
2. Logarithmic
3. Exponential
4. Polynomial

1.LINEAR:

Linear is the default trend model in tableau. In linear model, tableau will make use of slope intercept formula **(y=mx+c)** to identify the trends.

2.LOGARITHMIC:

In Logarithmic, tableau will use either natural logarithms (or) base logarithms to compute the trends using following expression:

$y = a + b \ln(x)$ → Natural Logarithm.

$y = a + b \cdot \log_{10} x$ → Base Logarithm.

Note:

While using the logarithmic trending model, first we need to filter out –ve values as the logarithms don't support –ve.

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3. EXPONENTIAL:

- **In the Exponential model, tableau will make use of exponential series logarithm to compute the trends.**
- **-Exponential add the trend lines for the growth as well as for delay. It makes use of following expression to compute the growth.**

[Base e] · $y = c\,e^{kt}$.

[Base 10] * $y = c\,10^{kt}$.

Delay expression is $y = c\,e^{kt}$

[Base 10] $y = c\,10^{kt}$ where k is '-ve'

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4.POLYNOMIAL:

In the polynomial, tableau will make use of the polynomial expression to compute the trends.

The Expression is $y = b_0 + b_1x + b_2x^2 + b_3x^3 + \cdots + b_nx^n$

n = degress

Note:

- **For Linear, Logarithmic and Exponential, Tableau always takes degrees as '2'.**
- **While computing the trend lines in tableau on both the ends, we need to take either data field (or) number field.**
- **If we have only the textual dimensional on the view and if you want to add trend lines it is not possible.**
- **For the multi dimensional data sources, trend lines are not allowed for the dates because dates actually contains string instead of number in the multi dimensional.**

Task1:

Display year wise profit and add linear trend line

Step1:-

Drag Order Date into columns. Profit into rows.

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Step2:-
Right click on the view – select trend line and show trend lines.

Note:
When we add trend lines, tableau automatically creates a trend model.

Step3:-
To show the trend model, Right click on the view and select 'describe trend model'.
Step4:-
For the trend model, check the significance value (p value is <=0.05 or not).

Note:
If 'p value' is more than 0.05, the model is not significant. So the trend is not reliable.

Task2:
Display month wise profit in every department and add a trend line for every department.

Note:
Always it is recommended to take the continuous dates while adding the trend lines.
Step1:-
Drag continuous month into columns. Profit into rows.
Step2:-
Drag department and drop into rows.
Step3:-
Click on Analysis. Drag trend lines and drop into view with the linear model.

Task3:-
Display region wise category wise trends based on sales in every shipping month.

Step1:-
Drag ship date into columns. Sales into rows.
Step2:-

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Drag region into columns. Category into rows.
Step3:-
Click on Analysis pane. Drag trend lines and drop into view with linear model.

<u>Task4:</u>
Identify which quarter is giving the highest discounts across the years based on the monthly average discounts.

Step1:-
Drag year, quarter into columns. Discount into rows.
Step2:-
Drag Supplier and drop into rows.
Step3:-
Check the significance value.
Step4:-
Click on label – select Min/Max and scope as Table and click on Abc.

<u>Assignment Task:</u>
Identify the Profit trends for all the years in the Superstore then identifying highest salary.

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(9885146265)

TABLEAU Level III Notes

By Prazval

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P.V.R.V. Swaroop Kumar

Advanced Calculations (3)
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Types of Advanced Charts

(1) Word Cloud
(2) Bar in Bar chart
(3) Grouped Bar Chart
(4) Waterfall / Flying Bricks Chart
(5) Donut chart
(6) Bump / Racing / Ranking Chart
(7) Funnel Charts
(8) Dumbell / DNA Chart
(9) Slope lines
(10) Spark lines
(11) Pareto Charts
(12) Lollipop chart
(13) Manually Building the Charts
(14) Sorted Heat Map
(15) Small Multiple Heat Map / Pannel Chart.

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Scenario
Advanced Calculations

Task1:
Display year wise, quarter wise profit and the profit growth when the same quarter is compared across the multiple years.

Step1:-
Drag Year & Quarter into Rows.
Step2:-
Drag Profit into columns. Right click on Profit – select 'Add Table Calculation' – Calculation type as 'Difference from' – Difference along 'Order Date' at the level of 'Year of Order Date' and difference from 'Previous' – Apply & Ok.
-Check: 2011 Q1 – 2010 Q1
2012 Q2 – 2011 Q2
2013 Q3 – 2012 Q3

Task 2:
Display the Profit growth of same quarter and compare it across multiple years when compared with 2012.

Step1:-
Drag Year & Quarter into rows. Profit into columns.
Step2:-
Right click on Profit – select 'add table calculation' – calculation type as 'difference from' – difference along 'order date', at the level 'Year' – click on 'customize'. Enter the field name as "Profit_Growth", and formula as ZN(SUM([Profit]))-LOOKUP(ZN(SUM([Profit])),LAST()-1) – Apply & Ok.
Check: 2010 Q1 – 2012 Q1
2011 Q2 – 2012 Q2
2012 Q3 – 2012 Q3
2013 Q4 – 2013 Q4
Step3:-
Change the Line chart to Bar chart. Click on 'Abc' and drag Profit into columns.
Note:-

- **Growth = Current_Value – Required_Value**

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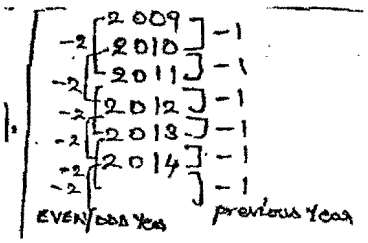

Check: 2012 Q1 – 2010 Q1
2013 Q2 – 2011 Q2
2012 Q3 – 2010 Q3

Task 3:
Display the Profit Growth of the same quarter when compared across the even years and odd years.

Step1:-
Drag Year & Quarter into rows. Profit into columns.
Step2:-
Create a calculated field with the name 'Profit_Growth' and formula as ZN(SUM([Profit]))-LOOKUP(ZN(SUM([Profit])),-2).
Step3:-
Drag 'Profit_Growth' into columns. Drag Profit into columns. Note: By default, Table calculations will compute in the 'Table(Down)' way.
Step4:-
To change the addressing option, Right click on 'Profit_Growth' – select 'Edit Table Calculation' – compute using 'order date', and at the level 'year of order date' – click on apply & ok.
Step5:-
To avoid nulls, use ZN() to the 'Profit_Growth' formula.

Assignment Tasks:-
Task 4: Design a view to display (DAVD) year wise sales across the multiple regions and display the sales growth % of same month across multiple years when compared with 2012.
Task 5: DAV to compare Even month sales with odd month sales with every year.
Task 6: DAVD year wise, month wise sales and sales growth and display the sales growth difference by comparing the same month across the multiple years.
Task 7: DAVD quarter wise, week wise discounts and display the discount variations of the same week compared across the different quarter with Q4.

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Task 8:

Display the continent wise, customer segment wise total profits and display customer segment whose profit is more than Avg Profit of all the customer segments in each and every continent.

Step1:-
Drag Continent & Customer segment into rows,profit into columns.
Step2:-
Create a calculated field with the name 'Avg_Tot_Profits' and formula as WINDOW_AVG(SUM([Profit])).
Step3:-
Drag the calculated field into columns. Right click on field and change the addressing option to 'Pane(Down)'.
Step4:-
Create a calculated field with the name 'KPI' and formula SUM([Profit])>[Avg_Tot_Profit] //calculated field. Click on Apply & Ok.
Step5:-
Drag the KPI into color.

Assignments:-

Task 9: DAVD region wise, order priority wise total quantity ordered and display which order priority, order quantity is more than the Average order quantity of all the order priorities in each and every region.
Task 10: DAVD state wise sales and growth % by comparing each and every state with Tokyo.
Task 11: DAV to obtain state wise quantity ordered ranks every year in the form of a map manually.
Task 12: DAV to compare current year sales & next year sales manually by taking all the years.
Task 13: Design a view to find out running sales averages of all the countries manually and on the output, perform a secondary calculation to display % of total manually.

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Top/Bottom Analysis:

- **Normally in Tableau, using filters we could display either TOP_N (or) BOTTOM_N customers. If we want to display both the TOP_N & BOTTOM_N customers then we have to make use of table calculations.**

Task 14:

Display TOP/BOTTOM_N customers based on profits and tag the remaining customers with "Others".

Step1:-
Drag Customer Name into rows and Profit into columns.
Step2:-
Create 2 parameter with the name TOP_N, BOTTOM_N of type 'Integer' and allowable values as 'All'.
Step3:-
Create a calculated field with the name 'TOP/BOTTOM_N' and formula
IF FIRST()>=-[TOP N]+1 THEN "TOP"+STR([TOP N])
ELSEIF LAST()<=[BOTTOM N]-1 THEN "BOTTOM"+STR([BOTTOM N])
ELSE "OTHERS"
END
Step4:-
Drag TOP/BOTTOM_N into color and label.
Step5:-
Show both the TOP_N & BOTTOM_N parameters and enter the required values and check the output.

Note:

On the groups, we can't create calculations. On the Sets we can create.

Task 15: -

Display the TOP_N customers based on sales and for remaining customers display as 'Others' and display a single cumulative value and add a selection. In the selection, if we select, Expand then it should display each and every customer in the 'Others'. And if we select 'close', then it should display a single cumulative value.

Step1:-
Create a set on the customer name based on TOP_10 sales.
Step2:-
Drag the set and drop into rows and sales into columns.

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Step3:-
Create a parameter with the name 'Selection' of type 'String' and allowable values as 'List'. In list of values, enter 'Expand&Close'.
Step4:-
Create a calculated field with the name 'Modified_CustomerName' and formula
IF [Selection]='Expand' THEN [Customer Name]
ELSEIF [Selection]='Close' THEN
IF [Top10] THEN [Customer Name]
ELSE "OTHERS"
END
END
Step5:-
Drag the 'Modified_CustomerName' and drop into rows and show the selection parameter. Right click on set and uncheck show header.
Step6:-
In selection parameter, select 'Expand' and check whether it is displaying all the customers or not.

Assignments:-
Task 16: Display the TOP_N & BOTTOM_N customers based on Sales and also add an 'Others' tag for the Other customers. If the selection is Expand, then display every customer and if selection is close, then display cumulative value for all other customers.
Task 17: Display TOP & BOTTOM_N items based on Quantity ordered.
Task 18: Display TOP & BOTTOM_N countries dynamically in each and every continent based on sales.
Task 19: Display TOP & BOTTOM_N items based on sales dynamically every year.
Task 20: Display TOP & BOTTOM_N continents based on profits in each and every customer segment.
Task 21: Display TOP & BOTTOM_N days based on discounts in every year.

Task 22: Display TOP_N countries based on profits and display the country names who are in TOP_N and for other display them with a single tag called as 'Others' dynamically. And also add a selection which contains 2 values: 1. Summary, 2. Detail. If the selection is 'Summary', then it should display the summarized information of other countries and if the selection is 'Detail', then each and every country information individually.

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Task 23: -

Display year wise customer wise sales ranks

Year	Total Rank
2010	1180
2011	1213
2012	1232
2013	1389
Grand Total	5164

Step1:-
Create a calculated field with the name 'Year' and formula DATENAME('Year',[Order Date]) or use Order Date (Year) also.
Step2:-
Create a calculated Field "Year+CN" with formula DATENAME('year',[Order Date])+[Customer Name].
Step3:-
Drag the calculated field "Year+CN" in between Year and CustomerName,and drag sales into columns. And right Click on the "Year+CN",select Sort,sort by field sum(Sales) in descending order.
Step4:-
Create a calculated field with the name 'Rank' and in formula INDEX().
Step5:-
Drag the 'Year' and drop into rows before the Customer Name. Right click on 'Rank'. Select compute using Pane down. *= Drag Rank into rows and set to discrete.
Rows -> Year, Rank, (Customer Name & Year)
Columns -> Sales

Note:

- **In tableau, if we perform sorting on 2 fields, the 2 fields will act independently. So to overcome this, create a combined field on the 2 fields and perform sorting which is known as Nested Sorting.**

Note:

- **In tableau, it is possible to combine 'n' no. of fields at a time. It means, it is possible to perform Nested Sorting on 'n' no. of fields.**

Task 24:-

Perform a nested sorting on the category & order priority based on the order quantity.

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Step1:-
Drag order priority and category into rows,Order Quantity into columns.
Step2:-
Create a combined field with category,order priority and drop into rows before order priority and sort the combined field in descending order of order quantity
Step3:-
Right click on the combined field and uncheck show header.

- TOP/BOTTOM N % Customers:

Task 25:
Display the TOP N% customers based on Sales.

Step1:-
Create a calculated field "RANK",With formula "INDEX()".
Step2:-
Drag Customer Name and Sales and drop into rows and columns.
Step3:-
Create a parameter with the name 'TOPN%' of type integer with 'All'.
Step4:-
Create a calculated field with the name TOPN% and formula

```
IF[RANK]<=([TOPN%]/100)*[SIZE] THEN "TOP"+STR([TOP_N%])+"%"
                //0.01*3403 =34.03 i.e. 1 to 34 customer names
ELSE "OTHERS"
END
```

Note:-
[TOPN%] –is Parameter in the above formula

Step5:-
Drag TOP_N% and drop into color and label and show the TOP_N% parameter.
Drag the Rank field and drop into columns. (Out of 3403 customers, Top% -> Top 34 i.e. 1 to 34, Bottom% -> Last 34)

Task 26:
Display the Top & Bottom N% customers based on Profits.
Step1:-
Drag Customer Name into rows and Profit & Rank into columns.
Step2:-

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Create 2 parameters with the name TOP_N%, BOTTOM_N% of type 'Integer' and allowable values as 'All'.
Step3:-
Create a calculated field with the name "TOP/BOTTOM_N%" and formula
IF [RANK]<=(([TOP_N%]/100)*[SIZE]) THEN "TOP"+STR([TOP_N%])+"%"
ELSEIF [RANK]>=((1-[BOTTOM_N%]/100))*[SIZE] THEN
"BOTTOM"+STR([BOTTOM_N%]+"%"
ELSE "OTHERS"+" "+STR(100-INT(([TOP_N%])+([BOTTOM_N%])))+"%"
END

Note:-
[TOPN%],[BOTTOM_N%] –are Parameters in the above formula

Step4:-
Click on Profit Marks card, Drag 'TOP/BOTTOM_N%' and drop into label. Click on 'All' marks card, drag "TOP/BOTTOM_N%" and drop into color.

Assignments:-
Task 27: DAVD TOP/BOTTOM_N% in each and every month based on Unit Price.
Task 28: DAVD TOP/BOTTOM_N% items based on order quantity every year.
Task 29: DAVD TOP/BOTTOM_N% customers based on sales.
Task 30: Display the Items based on TOP/BOTTOM_N% sales.

Task 31:
Display the most/last recent transaction sales value for each and every customer.

Step1:-
Drag Customer Name and Order Date into rows.
Step2:-
Change the Order Date to 'Exact Date' and 'Discrete'.
Step3:-
Drag the Sales and drop into 'Text'.
Step4:-
Create a calculated field with the name "Most Recent Transaction" and formula
LAST()=0
Step5:-
Drag the calculated field and drop into color. Right click on the field – select 'Edit Table Calculation'. In compute using, select 'Advanced'.
Step6:-

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In the advanced window, place 'customer name & order date' into addressing. Click on ok.
Step7:-
In restarting Every: Select 'customer name'. click on apply & ok.
Step8:-
In the color window, select 'True' and select 'Keep only'.

Note:
- To address the table calculation using multiple fields, select Advanced.

Assignments Tasks:-
Task 32: Display the 1st transaction value for all the customers.
Task 33: Display the no. of transactions in between 1st and last for all the customers.
Task 34: DAV to compare 1st 15 days profit with the last 15 days on each and every month.
Task 35: Display last 5 days sales of each and every category of every year

- WHAT IF ANALYSIS:

What if the sales of A for last 45 days,sales of B for last 60 Days,Sales of C for 70 Days.
Products
A -> Last 45 days sale
B -> Last 60 days sale
C -> Last 70 days sale
This type of analysis is known as WHAT-IF Analysis.

With the help of parameter, we can achieve this. What If analysis will display each and every category values specifically depending on the user selection.

Task 36:-
Display the container wise sales, if the container is 'BOX' then display last 45 days sales. If the container is 'other' then display 60 days sales depending on the user selection date.

Step1:-
Drag the container & order date into rows.
Step2:-
Change the date level of order date to 'Exact Date, Discrete'.
Step3:-

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Create a parameter with the name "Date Selection' of type Date and allowable values as All and show the parameter to dataview.

Step4:-

Create a calculated field with the name 'ContainerSales' and formula

```
IF RIGHT([Container],3)='BOX' THEN
  IF [Order Date]<=[Date Selection] AND DATEDIFF('day',[Order Date], [Date
Selection])<=45
  THEN [SALES] END
  //START_DATE<=END_DATE(Start Date should be lessthan or equal to END
Date)
ELSE IF [Order Date]<=[Date Selection] AND DATEDIFF('day',[Order Date], [Date
Selection])<60
THEN [SALES]
END
```

Step5:-

Drag the 'ContainerSales' calculated field and drop into columns. In the 'Date Selection', select any date and Tableau will display the respective values.

<u>Task 37:-</u>

Display the country wise sales. If the country belongs to Asian continent, then display last 3 month sales. If it belongs to North America and South America then display last 2 month sales. For other continents, display last 6 month sales.

Step1:-

Click on country geographic field. Drag the country and drop into color.

Step2:-

-Create a calculated field with the name "Country_Sales" and formula

```
IF [Continent]= 'Asia' THEN
 IF [Order Date]<=[Date Selection] AND DATEDIFF('month',[Order Date], [Date
Selection]<3
 THEN [SALES]
END
ELSEIF [Continent]= 'North America' OR [Continent]= 'South America' THEN
 IF [Order Date]<=[Date Selection] AND DATEDIFF('month',[Order Date], [Date
Selection]<2
 THEN [SALES]
 END
ELSEIF [Order Date]<=[Date Selection] AND DATEDIFF('month',[Order Date],
[Date Selection]<6
THEN [SALES]
```

END
END
Step3:-
Drag the 'Country_Sales' and drop into size and label. Show the Date Selection parameter and Continent Quick Filter. Selection any value and cross check whether the output is correct or not.

Assignments:-
Task 38: Design a view to display last 30 days profits for Asia and Europe, last 90 days profit for South America and North America and for remaining display the complete sales.
Task 39: Display the customer wise Sales, if the selection is [Quarter] 'Q4' then display 1st 2 months in Q4 (i.e. Oct, Nov) for Q1 (Jan) and Q2 (June) display 1st and last month and for Q3 display all 3 month sales.
Task 40: DAVD year wise, quarter wise profits and compare which individual quarter profit is more than the Avg Profit of all the quarters in the same year.

Task 41: -
Display year wise total sales, total of current year with next 2 years, avg of current year with previous 2 years, maximum of current year with previous 4 years (2 ways).

Step1:-
Drag the Order Date & Sales into rows and columns.
Step2:-
Create 3 calculated fields.
1. 'WINDOW_SUM' with formula WINDOW_SUM(SUM([SALES]),0,2)
2. 'WINDOW_AVG' with formula WINDOW_AVG(SUM([SALES]),-2,0)
3. 'WINDOW_MAX' with formula WINDOW_MAX(SUM([SALES]),-4,0)
Step3:-
Drag the 3 calculated fields and drop into columns.

Assignments:-
Task 42: Display year wise, month wise profits, Total of current month with next 3 months every year, Avg of current month with previous 6 months every year, Max of current month with previous 12 months every year, Min of current month with next 5 months every year.
Task 43: Display product category wise Order quantity and obtain cumulative sum on the result. Apply % of total.

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Task 44: Display last week sales of each and every country for every month in the form of a map. Restart with 'every month'.
Task 45: DAV in such a way that if the user selects any year, it should display count of Sundays/Saturdays in that year. And if user selects any month, it should display weeks in that month along with the week duration.

Task 46:
Display the week duration instead of week – numbers.

Would anyway
current week Duration is 24-May-2015 to 30-May-2015
// Starting Day // Ending Day of week
May 24-30
May 31-June 6
, week Duration instead of week-Numbers.

Step1:-
Create a calculated field with the name 'weekstartday' and formula DATETRUNC('week',[Order Date]).
Step2:-
Create another calculated field with the name 'weekendday' and formula DATEADD('day',6,[weekstartday])
Step3:-
Create another calculated field with the name 'weekduration' with formula
LEFT(DATENAME('month'[weekstartday],3)+DATENAME('day',[weekstartday])+ '_'
IF MONTH([weekstartday])=MONTH([weekendday]) //checking whether the month is same or not
THEN DATENAME('day',[weekendday])//if it same then adding only 'day'
ELSE
LEFT(DATENAME('month'[weekendday]),3)+DATENAME('day',[weekendday])
END
Step3:-
Drag the 'weekduration' calculated field into rows and sales dropped into text.

Task 47:
Combine both the Date+Time on Fruit Sales Data from FTP Server.

Step1:-
Download the 'Fruit-Sales' data from the FTP server and connect to it from Tableau.

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Step2:-
Create a calculated field with the name "Date+Time" and formula

```
DATEADD('hour',
        DATEPART('hour',[Time Sold]),
            DATEADD('minute',
                DATEPART('minute',[Time Sold]),
                    DATEADD('second',
                        DATEPART('second',[Time Sold]),([Date Sold]))
                        //ADDING SECONDS to DATESOLD
                    // Date sold + Seconds
                // Adding MINUTES to the DATESOLD + SECONDS
            // Date sold + Minutes + Seconds
        // Adding HOUR to the Date sold + Minutes + Seconds
// Date sold + Hour + MINUTE + SECONDS.
```

- **PTD CALCULATIONS:**
- **PTD means Period to Date.**

Types:
YTD(year to date), MTD(month to date), QTD(quarter to date), WTD(week to date).

1. **YTD – Year to Date indicates the period from starting day of current year to the current date.**
   PY YTD –Previous Year Year to Date indicates the period from starting day of previous year to the same date in the previous year.
   E.g: 2016 YTD: 1-Jan-2016 to 29-Feb-2016
   2015 YTD: 1-Jan-2015 to 29-Feb-2015→(PY YTD)
   2013 YTD: 1-Jan-2013 to 29-Feb-2013
2. **MTD – Month to Date indicates period starting from starting day of the current month to the current date.**
   PY MTD –Previous Year Month to Date indicates the period from starting day of same month in previous year to the same date in the month previous year.

   E.g: 2016 MTD: 1-Feb-2016 to 29-Feb-2016
   2015 MTD: 1-Feb-2015 to 29-Feb-2015→(PY MTD)
   2013 MTD: 1-Feb-2013 to 29-Feb-2013
3. **QTD – Quarter to Date indicates period starting from starting day of the current quarter to the current date.**
   E.g: 2016 QTD: 1-Jan-2016 to 29-Feb-2016

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2014 QTD: 1-Jan-2014 to 29-Feb-2014
2013 QTD: 1-Jan-2013 to 29-Feb-2013

Task 48:

Display the continent wise YTD sales ,2015 YTD, 2013 YTD, MTD sales,2015 MTD, 2013 MTD,QTD Sales,2015 QTD Sales,2013 QTD Sales

Step1:-
Drag the continent into rows and sales into columns.
Step2:-
Create 9 calculated fields:

1. 'YTD Sales' with formula:

```
IF [order date] <= TODAY() AND DATEDIFF('year', [order date], TODAY())=0
THEN [sales]   // 2016 , //2016
ELSE 0(zero)
END.
```

2. '2015 YTD Sales' with formula:

```
IF [order date] <= TODAY()-365 AND DATEDIFF('year', [order date], TODAY())=1
THEN [sales]   // 2015  //2016
ELSE 0
END
```

3. '2013 YTD Sales' with formula:

```
IF [order date] <= TODAY()-1095 AND DATEDIFF ('year', [order date], TODAY())=3
THEN [sales]   //2013  //2016
ELSE 0 END.
```

4.'MTD Sales' with formula:

```
IF[order date] <= TODAY() AND DATEDIFF('month', [order date], TODAY())=0 THEN [sales]
ELSE 0 END   //2016  //2016
```

5.'2015 MTD Sales' with formula:

```
IF [order date] <= TODAY()-365 AND DATEDIFF('month', [order date], TODAY())=12 THEN [sales]
ELSE 0 END   //2015  //2016
```

6.'2013 MTD Sales' with formula:

```
IF [order date] <= TODAY()-1095 AND DATEDIFF ('month', [order date], TODAY())=36 THEN[sales]
ELSE 0 END.   //2013  //2016
```

7. 'QTD Sales' with formula:

```
IF [order date] <= TODAY() AND DATEDIFF('quarter', [order date], TODAY())=0
THEN [sales]   // 2016 , //2016
ELSE 0(zero)
END.
```

8. '2015 QTD Sales' with formula:

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```
IF [order date]<= TODAY()-365 AND DATEDIFF('quarter', [order date], TODAY())=1
                THEN [Sales]                          // 2015    //2016
ELSE 0
END
```

9. '2013 QTD Sales' with formula:

```
IF [order date] <= TODAY()-1095 AND DATE DIFF ('quarter'[order date], TODAY()) =3
                THEN [Sales]                          //2013    //2016
ELSE 0 END.
```

10.Drag all the 9 calculated fields and drop into columns and in show me click on Text table

<u>Task 49:</u>

Display Region wise: CY TYD (2016 YTD), PY YTD (2015 YTD), PM MTD (Jan 2016), PM PY MTD (Jan 2015), Previous 6 months MTD (Sep 2015 to Feb 2016), Previous 6 months in the last year MTD (Sep 2014 to Feb 2015) Total Sales and also display Grand Totals.

Step1:-

Drag Region into rows. YTD Sales, 2015 YTD into columns.

Step2:-

Create 4 calculated fields:

1. 'PM MTD Sales' with formula:

```
IF [order date] <= TODAY() AND DATEDIFF('month', [order date], TODAY())=1
THEN [Sales]        ELSE 0 END.
```

2. 'PM PY MTD Sales' with formula:

```
IF [order date] <= TODAY()-365 AND DATEDIFF('month', [order date], TODAY())=12
  THEN [Sales]        ELSE 0 END.
```

3. 'Last 6 months MTD Sales' with formula:

```
IF [order date] <= TODAY() AND DATEDIFF('month', [order date], TODAY()) <=5
THEN [Sales]        ELSE 0 END
```

4.'PY 6 months MTD Sales' with formula:

```
IF [order date] <= TODAY()-365 AND DATEDIFF('month', [order date], TODAY()) >=-12 AND
DATEDIFF ('month',[order date], TODAY()) <=17 THEN [Sales]
ELSE 0 END.
```

Step3:-

Drag all the 4 calculated field into columns.

Step4:-

Click on analysis and display the 'Grand totals' - show columns grand totals.

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Assignment Tasks:-

Task 50: Display MTD, YTD, Previous 4 Quarters QTD, Previous 14 months MTD.
Task 51: Display YTD, PY YTD, MTD, PY MTD, QTD, PY QTD based on dynamic date. In the dynamic date, if the user selects any year, it should display that year YTD and previous year YTD. Same for month and quarter also.
Task 52: DAVD last day sales of datepart. Datepart contains year, quarter, month.
Task 53: Display last 5 days profits depending on the dynamic datepart. Dynamic datepart contains year, quarter, month.
Task 54: Display state wise no. of customers who got added in the last datepart and in the first datepart. Datepart contains year, quarter, month, week.
Task 55: Display year over year change (YOY) for all the departments based on sales (1st way: table calculations, 2nd way: YOY)

YOY Change:	2013	Sales
	2012	Sales

Task 56:

Create a variable size BIN on sales.

Step1:-
Create a calculated field with the name 'Variable Size Bin' and formula:
IF [Sales]>=10001 AND [SALES]<=50000 THEN "1001-50000"
ELSEIF [SALES]>=50001 AND [SALES]<=150000 THEN "50001-150000"
ELSE "OTHER"
END
Step2:-
Drag the 'Variable Size Bin' into rows and Sales dropped into columns.

Task 57:

Create a dynamic group on the customers if name is starting with 'A' name it as 'A' group. If 'B' then 'B' group, If 'C' then 'C' group, 'Others' then 'Others' group.

Step1:-
Create a calculated field with the name 'Dynamic Group' and formula:
IF LEFT ([Customer Name],1) = 'A' THEN "A-Group"
ELSEIF LEFT([Customer Name],1)='B' THEN "B-Group"
ELSEIF LEFT([Customer Name],1) ='C' THEN "C-Group"
ELSE "OTHER'
END
Step2:-

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Drag the 'Dynamic Group' and 'Customer Name' and drop into rows.

<u>Task 57:</u>
Design a visualization in Tableau from superstore and coffee chain datasources in the below format:

PRODUCTS	SS_SALES	CS_SALES	T.SALES
COFFEE	0	120	120
TEA	0	100	100
LABELS	30	0	30
PAPER	40	0	40
TABLES	60	0	60

SS – Super store
CS – Coffee chain
T – Total

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Step1:-
Create an excel file with the name 'Master Source' which contains the following data:

the following data

PRODUCTS
Coffee
Tea
Labels
paper
Tables

** coffechain → product ↔ product type
superstore → product ↔ product subcategory
primary DS → secondary DS

step② From Tableau, connect to

* After dragging 'cc_sales' into Text, one dialogue box will displays about to blend the relationship as follows. click on ok.
click on Data → Edit Relationship → select 'coffee chain Source' → select 'custom' → click on 'Add' → select secondary datasource. field as 'Product Type'. [**]

Step2:-
From Tableau, connect to 'Master Source', 'Superstore Source', 'Coffee chain' data sources.
Step3:-
Drag 'Products' and drop into rows from 'Master Source'.
Step4:-
Create 2 calculated fields:
1. 'Coffee chain_Sales' with formula ZN(SUM([Sales])) //Sales field from coffee chain datasource.
2. 'Superstore_Sales' with formula ZN(SUM([Sales])) //Sales field from super store datasource.
Step5:-
Drag 'Coffee chain_Sales' and drop into text. 'Superstore_Sales' and drop into dataview.
Step6:-
Create a calculated field with the name "Total_Sales" with formula:

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[Sample-Superstore-English (Extract)].[SS_Sales]+[Instant (Sample-Coffee Chain)].[CC_Sales]
// Superstore sales + //+ Coffee chain Sales

Step7:-
Drag the Total_Sales into data view.

<u>Task 59:</u>
For the below data, display 1st non empty & last non empty [FNE,LNE] or First Transaction value & Last Transaction value.

(59)

PRODUCTS	DATE	SALES
A	29-MAY-2015	10 (First sale value/Non-Empty value)
A	30-MAY-2015	
A	31-MAY-2015	12 (Last sale value)
A	01-June-2015	
B	29-May-2015	
B	30-May-2015	15
B	31-May-2015	
B	01-June-2015	9
C	29-May-2015	
C	30-May-2015	
C	31-May-2015	12
C	01-June-2015	18

FNE = First Non-Empty

LOOKUP(SUM([Sales]), FNE INDEX-INDEX())
LOOKUP(10, 1-1)
LOOKUP(10, 0) = 10
LOOKUP(NULL, 1-2)
LOOKUP(NULL, -1) = 10

LNE = Last Non Empty Index
WINDOW_MAX[Non-Empty Index]
LOOKUP(SUM(

Step1:-
Create a text file with the above data and connect to tableau.
Step2:-
Drag the products into columns and date into rows and select the 'exact date-discrete' for date.
Step3:-
Drag Sales and drop into text.
Step4:-
Create a calculated field with the name 'Non-Empty Index' and in formula:
IF NOT ISNULL(SUM([Sales])) THEN INDEX() END
Step5:-
Drag the 'Non-Empty Index' and drop into data view and change the Addressing option of Non-Empty Index to Table(down).
Step6:-
Create 2 calculated fields:
1.First Non Empty (FNE) Index and formula WINDOW_MIN([Non-Empty Index])

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2.Last Non Empty (LNE) Index with formula WINDOW_MAX([Non-Empty Index])
Step7:-
Drag FNE Index & LNE Index and drop into the measure values.
Step8:-
Create 2 more calculated fields with:
1.FNE value with formula: LOOKUP(SUM([Sales]),[FNE Index]-[Index]
2.LNE value with formula: LOOKUP(SUM([Sales]),[LNE Index]-[Index]
Step9:-
Drag the FNE value & LNE value and drop into the Measure Values.

<u>Task 60:</u>
Display customer segment wise, continent wise sales and for each and every continent display the customer segment.
Step1:-
Drag customer segment & continent and drop into rows. Drag sales and drop into columns.
Step2:-
Create a calculated field with the name 'Index' with formula: Index()
Step3:-
Drag the 'Index' and drop into rows. Convert the Index to discrete and place it before customer segment. And uncheck 'show header'

- <u>STATISTICAL CALCULATIONS:</u>

2 types of calculations will be frequently performed using standard deviation and variance

1. Z Score
2. Correlation Coefficient

Z Score:

- Z Score is also known as Standard Score.
- Z Score is used to find out how many standard deviations are falling above/below the mean value.
- If the Z Score is in between (-1.96 to +1.96) then it indicates: all the observations are USUAL.
- If the Z score is (>+1.96) and (<-1.96), then it indicates: all the observations are UNUSUAL.

$$\boxed{Z\text{-Score} = \frac{x-\mu}{\sigma}}$$

where, x = Each and Every observation
μ = Mean of the observations
σ = Standard deviation of the observations

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Task 61:
Display the country wise Z scores based on profits.

Step1:-
Drag country into rows and profit into columns.
Step2:-
Create a calculated field with the name 'Z Score' with formula:
(SUM([Profit]-WINDOW-AVG(SUM([Profit]))/WINDOW_STDEV(SUM([Profit]))
Step3:-
Drag the Z score and drop into color and label.

Correlation Coefficient:

- It identifies the relationship between 2 measures.-Whether the relationship is +ve/-ve. It is denoted by 'r'
- Always the 'r' value lies between -1 to +1.
- If 'r' value is +ve, then it indicates there is a +ve correlation existing between 2 measures.
- if 'r' value is –ve, then it indicates there is a –ve correlation existing between 2 measures.

Formula:-

$$r = \frac{1}{(n-1)} \sum_{i=1}^{n} \left[\frac{x_i - \bar{x}}{S_x}\right]\left[\frac{y_i - \bar{y}}{S_y}\right]$$

where, x = measure 1 (sales) y = measure 2 (profit)
$\bar{x}$ = Mean of measure 1 $\bar{y}$ = Mean of measure 2
S_x = standard deviation of measure 1 S_y = standard deviation of measure 2
n = no. of observations.

TABLE

-
- (+ve) relationship means if value of measure-1 increases automatically the value of measure-2 will also increase. E.g: Incr Discount, Sales Incr
- (-ve) relationship means if value of measure-1 increases automatically the value of measure-2 will decrease. E.g: Incr Price, Sales decre

- Correlation coefficient can be obtained in 2 ways:
1. Automatic way
2. Manual way

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Task 62:

Obtain the correlation coefficient for customer wise sales-profit in both the automatic and manual ways.

Automatic way:

Step1:-

Drag Sales into rows. Profit into columns and Customer Name into detail of marks card.

Step2:-

Right click on data view – select trend lines – select 'show trendlines'.

Step3:-

Right click on data view – select trend lines – select 'trend model'.

Step4:-

In the trend model window, find out the square root of the γ squared value

Manual way:

Step1:-

Create a new sheet. Drag Sales & Profit and drop into rows and columns.

Step2:-

Create a calculated field with the name 'correlation coefficient' with formula:

```
(( 1/(SIZE()-1))
*
WINDOW_SUM(
            ( (SUM([Sales])- WINDOW_AVG(SUM([Sales])))
                                /
              WINDOW_STDEV(SUM([Sales]))
            )
            *
            ( (SUM([Profit]) - WINDOW_AVG(SUM([Profit])))
                                /
              WINDOW_STDEV(SUM([Profit]))
            )
)
```

Step3:-

Drag the correlation coefficient and drop into color and Customer Name into detail.

Step4:-

Right click on 'correlation coefficient' – select compute using 'Customer Name'.

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MARKET BASKET ANALYSIS:

- **By this analysis, we can identify the customer purchasing behavior.**
- **Market Basket Analysis is used to understand the customer purchasing behavior. For e.g if we want to see: 1. How many customers purchased both the product A and product B. and Students who enrolled in course A and also who enrolled in course B and also for both the courses.**
- **Rules to perform Market Basket Analysis:**
  1. **Obtain the unique records.**
  2. **Eliminate the same and duplicate categories.**

Task 65:

Identify the product category wise customer purchasing behavior.

Step1:-

Connect to superstore excel from tableau in legacy connection mode and create a self join between 'Orders' and 'Orders' using 'Customer ID'='Customer ID'. And 'Product Category'<>'Product Category'. Click on 'Go to worksheet'.

Step2:-

Drag the product category into rows from '1st orders' and into columns from '2nd orders'.

Step3:-

Drag the no. of records and drop into text.

Step4:-

Click on 'show me' & select 'highlight table'.

Qn. Find out the shortest distance between 2 cities.

like HYD, VSKP, BANGLORE, CHENN

Distance Formula :- 3959 * ACOS (→ Radius of Earth, in miles)

SIN(A)SIN(B) − COS(A)COS(B)COS(B−A)

PIE = π = Circumference / Diameter

SIN(RADIANS(LATITUDE1)) * SIN(RADIANS(LATITUDE-2)) + COS(RADIANS(LATITUDE-1)) * COS(RADIANS(LATITUDE-2)) * COS(RADIANS(LONGITUDE-2) − RADIANS(LONGITUDE-1))

Task 66:

Find out the shortest distance between one city with the remaining.

Step1:-Create an excel file with the following data:

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CITY	Latitude	Longitude
HYDerabad	17.38504	78.486671
Banglore	12.9716	77.594563
Chennai	13.08268	80.270718
Vijayawada	16.50677	80.648015

Step2:-

From excel, connect to tableau in legacy connection mode and create a self join with the following condition with inner join.

Datasource sheet1 $1

City <> City (sheet1 $1)

Step3:-

Drag latitude into rows and longitude into columns and city into detail.

Step4:-

Create a calculated field with the name 'shortest distance' and formula:

(kms only)

Miles ← 3959 * ACOS(SIN(Radians([Latitude-1])) * SIN(Radians([Latitude-2])) + COS(Radians([Latitude-1])) * cos(Radians([Latitude-2])) * cos(Radians([Longitude-2]) - Radians([Longitude-1]))

Kilometers ← 6371

Step5:-

Drag the 'shortest distance and drop into color & label and change it to dimension. And the 'marks type' to line chart.

Step6:-

Arrange the values in the middle of the line.

Qn: Is is possible to create calculated field on latitude (generated) and longitude (generated)?

Ans: On auto generated latitude & longitude fields, it is not possible to create calculated fields.

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Scenario
ADVANCED CHARTS

1.Word Cloud:-
Word Cloud chart is used to visualize text elements and it will highlight them depending on the metric values.

Task1:
Design a work cloud to display year wise, quarter wise Sales.

Step1:-
Drag Quarter into text. Sales into color, size and label. In marks card, click on text.
Step2:-
Drag Year into rows.

Task2:
Design a word cloud to display customer segment wise region wise ship mode wise shipping cost, and total sales.

Step1:-
Drag Ship mode into text,Shipping cost into color, size and label.
Step2:-
Drag sales and drop it into the label.In the marks card, click on text.
Step3:-
Drag customer segment and region and drop it into rows.
Step4:-
Add a Quick Filter for customer segment and region.

2.Bar in Bar chart:
If we place one bar inside another bar then it is known as Bar in Bar chart.
It is used to mainly compare the multiple measures within one pane.
We need to use blended Axis mechanism to build this chart.

Task1:
Design a bar in bar chart to display continent wise total sales and profits.

Step1:-
Drag Continent into columns, Sales into rows, Profit into existing axis.

Step2:-
Drag the measure names and drop it into color.
Step3:-
Click on Analysis in stack marks, click on 'Off'.
Step4:-
Drag the measure names and drop it into the size.

Task2:
Design a bar in bar chart to display continent wise, year wise, quarter wise, total sales and total profits, total order quantity, total shipping cost.

Step1:-
Drag year and quarter into columns, sales into rows, profit into existing axis.
Step2:-
Drag order quantity and shipping cost into measure values.
Step3:-
Click on Analysis in stack marks, click on 'Off'.
Step4:-
Drag the measure names and drop it into size.

3.Grouped Bar chart:
If we combine individual bar charts into a single grouped bars, then it is known as grouped bar chart.
→ It is used to compare by taking multiple values into a single group by showing only the headers from outer dimension.

Task:
Design a grouped bar chart to display region wise, customer segment wise total sales.

Step1:-
Drag the region and customer segment into rows and sales into columns. Drag customer segment into color.
Step2:-
Click on Analysis tab. Select totals and click on add all sub totals.
Step3:-
Create a calculated field with the region required:
IF INDEX() = 2 THEN ATTR([Region]) ELSE " " END
Step4:-

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Drag the calculated field and drop it into rows and select compute using 'Customer Segment'.
Step5:-
Increase the size to Max into the marks card.
Step6:-
To hide the 'Total', right click on Sales -> Total using -> Hide.
Step7:-
To hide the 'Total' label, right click on the total and click on format. In format window, remove total from label.

Assignment Task:
Design a grouped bar to display year wise, month wise total profits.

4.Water-fall chart (or) Flying Bricks chart:
Water fall chart is used to identify each and every value contribution to the cumulative total in the form of flying bars visually. As the Bars appear like Bricks,it is also called as Flying Bricks Chart.

Task:
Design a water fall chart to display category wise total sales.

Step1:-
Drag category into rows and sales into columns. Click on Analysis. Select totals and column grand totals.
Step2:-
Right click on sales in the columns. Select running total.
Step3:-
Drag sales and drop it into color and label. In marks card, click on Gantt Bar.
Step4:-
Create a calculated field with the name '-ve sales' with formula –[Sales].
Step5:-
Drag the '-ve sales' and drop it into size.

Task:
Design a water fall chart to identify: 1. Cumulative effect of the months per year 2. Cumulative effect for all the years based on sales.

Step1:-
Drag year and month into columns. Sales into rows for 2 times.
Step2:-

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Add running total on 2 sales fields: 1. Using pane down 2. Using table down.
Step3:-
In the marks card, click on Gantt bar. Drag sales and drop it into label.
Step4:-
Click on Analysis and show Grand Totals and Subtotals.
Step5:-
Drag the -ve sales and drop it into size.

•

5.Donut Chart:
Donut chart is the combination of:

1. Pie chart and circle
2. 2 Pie charts

Using the Donut chart, we can able to perform the proportionate analysis.It means we can identify each and every value contribution over the total value using 2 pie charts or a pie chart and circle.

Task:
Design a Donut chart to display continent wise total sales.

Step1:-
Create 2 fields: M1 with formula 1, and M2 with formula 1.
Step2:-
Drag M1 and M2 into columns.
Step3:-
Right click on M1 and M2 and click on dimensions.
Step4:-
Right click on M2 and select dual axis and in the tool bar, select entire view.
Step5:-
Click on M1 marks card and select pie chart. Drag continent into color, and label. Sales into label.
Step6:-
Click on size and increase the size of the pie.
Step7:-
Click on M2. Remove the measure names from the color. Click on size and increase the size. Drag sales and drop it into label. Click on label and in the label – Assignment -Center.
Step8:-
Click on edit in the text and in the label add 'Total Sales'.
Step9:-
Click on sales in M1 marks card and select percent of total table calculation.

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Task:
Design a Donut chart to display customer segment wise total quantity ordered every year.

Step1:-
Drag M1 and M2 into rows and convert them to dimension and right click on M2 and select dual axis.
Step2:-
In the tool bar, select entire view.
Step3:-
Click on the M1 marks card and select Pie chart. Drag customer segment into color and label, Order quantity into text and size.
Step4:-
Click on M2. Select circle. Drag order quantity into label. Click on label and select Alignment as Center.
Step5:-
Drag the order date and drop it into columns.

6.Bump chart / Racing chart / Ranking chart:
In tableau, we don't have any default chart to show the ranks visually. We can design bump charts manually to visualize the ranks. These bump charts are also known as Racing or Ranking charts.

Task:
Design a bump chart to display month wise sales ranks every year.

Step1:-
Create a calculated field with the name Rank with formula: INDEX()
Step2:-
Drag Order date into columns. Rank into rows and Month into color.
Step3:-
Right click on Rank. Edit table calculation. Click on Advanced and place both year and month into addressing with 'Year on top'. In sort, select field as Sales – Sum – Descending. In restarting every -> year of Order date. Click on apply and ok.

Task:
Design a bump chart to display category wise ranks in every department.

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7.Funnel chart:

Using funnel chart, we can able to identify the distribution of the values in the form of a funnel.

Task:

Design a funnel chart to display month wise profits contribution.

Funnel type 1:

Step1:-

Drag profit and drop it into rows. Month into color and label.

Step2:-

Drag Profit into size and label. In tool bar, click on entire view.

Funnel type 2:

Step1:-

Create a calculated field with negative profit with formula SUM([Profit])

Step2:-

Drag month into rows. -ve Profit and Profit into columns. Perform dual axis between Profit and -ve Profit.

Step3:-

Click on descending order in the tool bar in all marks card. Select area chart.

Step4:-

Drag month and drop it into label.

8.Dumbell chart / DNA chart:

Using the dumbbell chart, we can identify the range of values in between the minimum and maximum values.

Task:

Design a dumbbell chart to display continent wise profits information.

Step1:-

Drag continent into rows and profit into columns. Change the aggregation of profit to max.

Step2:-

Drag the profit and drop it into the existing axis to perform axis blending. & Change the aggregation of Profit to minimum

Step3:-

Drag the measure names and drop it into color.

Step4:-

Drag the profit and drop it before measure values in the column shelf. Change the aggregation of profit to ~~max~~. min.

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Step5:-
In ~~max~~ min of profit marks card, select 'Gantt Bar'.
Step6:-
Create a calculated field with name length and formula: (MAX[Profit]) – (MIN[Profit]))
Step7:-
Right click on measure values and select dual axis.
Step8:-
Click on ~~max~~ min of profit marks card. Drag the length and drop it into size.

Step9: To show only min & max values click on label in all marks cards, select min/max & click on min (profit) marks card and uncheck "show label" ~~max~~

9.Slope Lines
Slope lines are used to compare the actual values with the target values. If the actual values are more than the targeted values, then we need to tend the slope in the upward direction and color the line in green else we need to tend the slope downwards and we have to color the line in red color.

Task:
Design a slope line to compare the sales and budget sales on coffee chain query.

Step1:-
Connect to coffee chain query.
Step2:-
Drag sales into rows and budget sales into existing axis to perform axis blending.
Step3:-
Drag product and drop it into table (In the marks card, select line).
Step4:-
Create a calculated field with the name color and formula: SUM([Sales]) – SUM([Budget Sales])>0

sum(Sales) - sum(Budget Sales)

Note: By default, tableau give +ve number → Green color and -ve number → Red color.
Step5:-
Drag the field and drop it into color.

Task:
Compare the profits and budget profit for the coffee chain data source.

10.Spark Lines
Spark lines are used to compare the fluctuations and to identify whether the current value is more than the previous value or not in the form of a Spark using a symbol.

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Task:
Design a spark line to display region wise monthly sales and compare whether the current month sales is more than the previous month sales or not.

Step1:-
Drag region into rows and month continuous into columns.
Step2:-
Drag sales and drop it into rows.
Step3:-
Create a calculated field with the name last sales with formula: IIF(Last () = 0) SUM({Sales]), NULL
Step4:-
Drag Last_Sales and drop it into rows. Right click on last sales and select dual axis.
Step5:-
Click on Last_Sales marks card and select circle.
Step6:-
Click on size and increase the size for the circle.
Step7:-
Create a calculated field with the name KPI with formula:
(ZN(SUM[Sales])) – LOOKUP(ZN(SUM[Sales])) – 1)) > 0
Step8:-
Drag KPI and drop it into color of Last_Sales marks card. For true, indicate green color and false, red color.
Step9:-
Right click on the Nulls in the visualization and click on hide indicator.

Task:
Design a spark line to compare continent wise monthly order quantity.

11.Pareto Chart
Pareto chart is based on the pareto principle. It is also known as 80:20 rule. Pareto rule states that 80% of the inputs will be contributed by the 20% of the resources or 20% of the inputs will be contributed by 80% of the resources.

Task:
Design a Pareto chart to display customer wise sales to identify 20% of customers are contributing 80% of sales or not.

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Step1:-
Drag customer name into columns. Sales into rows.
Step2:-
Sort in descending order and select entire view.
Step3:-
Right click on sales. Click on edit table calculation and calculation type as running total and select secondary calculation as percent of total.
Step4:-
Drag customer name into detail.
Step5:-
Right click on the customer name in the detail. Select sort. Sort order as descending. Sort by field Sales → Sum. Click on apply and ok.
Step6:-
Right click on the customer name in the columns. Select edit table calculation. Select calculation type as Running total. Secondary type as percent of total and addressing as customer name. Click on apply and ok.
Step7:-
Right click on sales in the rows and select using compute using → customer name.
Step8:-
Right click on the sales axis. Add reference line and select →Constant → Value as 0.80. Click on ok.
Step9:-
Right click on customer axis and add reference line and select – constant – value as 0.20. click on ok.
Step10:-
Hold the CTRL button. Drag the sales from rows and drop it into color. In the color window, click on advanced and select the centre as 0.80. Click on apply and ok.

Task: Design a pareto chart to display item wise total order quantity.
Note:-
To Create the Advanced Pareto Charts,Add the Reference Lines.

<u>12.Lollipop Chart:-</u>

<u>Task:</u>
Design a lollipop chart in tableau for the continent wise sales.

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Step1:-
Drag continent into rows. Sales into columns. Again drag the sales into columns. Right click on it and select dual axis.
Step2:-
Click on the first sales marks card and select bar and decrease the bar size. Click on second sales card and select circle and increase the circle size.

13.Manually building the charts:

Task:
Build a Tree map, Heat map, Bubble chart, Pie chart manually.

Tree Map:
-Drag category into text. Sales into size, color and label.

Heat Map:
-Drag category into rows, sales into size and label.

Bubble chart:
-Drag category into text, sales into size.
-In marks card, select circle.
-Drag category and sales and drop it into label.

Pie chart:
-In marks card, click on pie chart. Drag category into color and label. Sales into size and angle.

14.Sorted Heat Map:-

Task:
Design a sorted heat map which contains customer wise product wise total sales.

Step1:-
Drag item into columns and customer into rows. Sales into size in tool bar.
Step2:-
Click on descending order and select entire view.

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15. Small multiple heat map / panel chart:-

Task:

Design a small multiple heat map / panel chart to display order priority wise category wise profit and sales information in every ship mode and state.

Step1:-

Drag order priority and category into columns. Ship mode and state into rows.

Step2:-

Drag profit into color and sales into size.

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Scenario

LODs (Level of Detail Expressions)

- LODs are used to perform the aggregation at the required dimensionality level apart from the visualization level
- LODs will be executed at the data source level against from the table calculations, totals, references which will execute at the tableau level or visualization level.

Advantages:

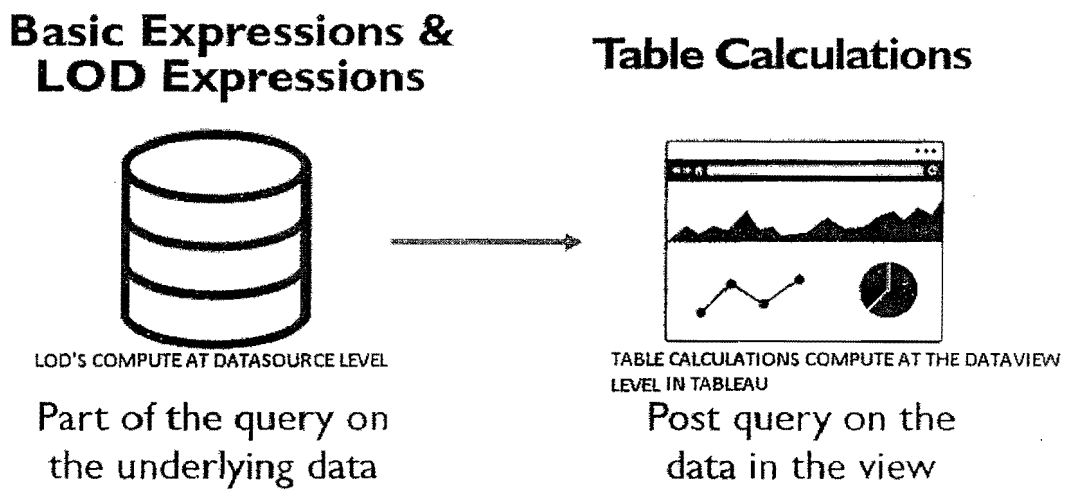
- At data source level execution: It will improve the performance for the large data sources as it will reduce the amount of data to be transferred over the network to the tableau.
- Cohort Analysis: Analysis of data sub groups
- Binning the Aggregates
- Aggregate the aggregates

Syntax:

{ [Part1] [Part2] : Part3 }

Part1: LOD keyword(Fixed,Include,Exclude)
Part2: Dimensionality level
Part3: Required Aggregation (output of LOD)

LOD Execution Level:



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1.FIXED LOD:

Fixed will compute the aggregation at the dimensionality level of the LOD by ignoring the dimensions at the visualization level.

If your viz has the two dimensions : State County

{ fixed [CustomerID] : SUM([Sales]) }

will give you SUM(Sales) for each [CustomerID]

2.INCLUDE LOD:

Include will compute the aggregation by including the visualization dimensions plus LOD dimensions.

If your viz has the two dimensions : State County

{ include [CustomerID] : SUM([Sales]) }

will give you SUM(Sales) for each [State]
[County]
+ [CustomerID]

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3.EXCLUDE LOD:

Exclude will compute the aggregation by excluding the LOD dimensionality from visualization dimensionality.

If your viz has the two dimensions : State County

{ exclude [County] : SUM([Sales]) }

will give you SUM(Sales) for each [State]
[County]
- [County]

←LOD's by Prazval

INCLUDE WITHOUT DIMENSIONALITY:

In the Include if we don't take any dimensionality, tableau will compute the LOD at the visualization dimensionality.

If your viz has the two dimensions : State County

{include : SUM([Sales]) }

will give you SUM(Sales) for each [State]
[County]

←LOD's by Prazval

EXCLUDE WITHOUT DIMENSIONALITY:

In Exclude, if we don't take any dimensions, it will compute the aggregation at the dimensionality level of the visualization.

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If your viz has the two dimensions : State County

{exclude : SUM([Sales]) }

will give you SUM(Sales) for each [State]
[County]

Note:
Include and exclude will work in the same way if we don't have dimensionalities at the LOD level.

FIXED WITHOUT DIMENSIONALITY:
Fixed without dimensionality will compute the aggregation at the data source level or at the complete table level.It is also called as table scoped LOD.

If your viz has the two dimensions : State County

{fixed : SUM([Sales]) }

or just

{ SUM([Sales]) }

will give you the total SUM(Sales) for the whole table

Note:
In tableau always the LODs must be enclosed within curly brackets { }.

Note:

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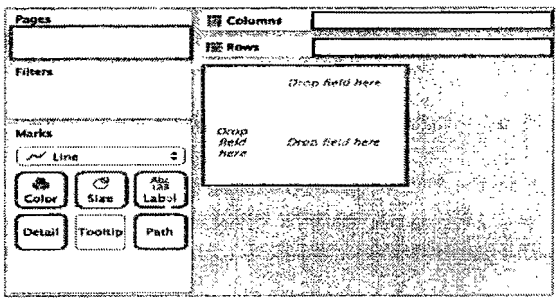
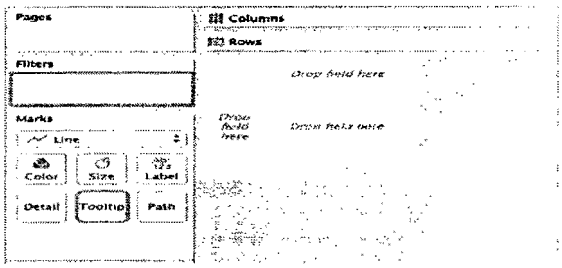
Shelves that define the viz LOD



For a sheet, level of detail is defined by the <u>dimensions</u> in the highlighted shelves

Note:

Shelves that don't affect viz LOD



These shelves affect the sheet behavior <u>without</u> changing its level of detail.

Note:

In LODs Part 1 And Part 2 are optional whereas Part 3 is mandatory.

Note:

The output of the LOD will be in the part3.

Note:

If the dimensionality of the LODs we can add multiple dimensions fields

Note:

Sales * Profit ------> Row level

Sum(Sales) * Sum(Profit) ------> Table level or View level

Sum(Sales) per segment --------> Segment level (Dimensionality level)

Note:

If we perform the aggregation at the level of data source it is called as table scoped LOD.

Task1:

Display Department wise, category wise total sales and also display department sales.

Step-1: Drag department, category into rows, sales into label of the marks card

Step-2: Create a calculated field with the name 'Dept_sales' with formula:

{Fixed [Department] : Sum([Sales])}

Step-3: Drag dept sales & drop it into the visualization to perform blended axis.

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Task2:
Display year wise sales, quarter wise sales, month wise sales, year sales, year+quarter sales.

Step-1: Drag year, quarter, month into rows and sales into text
Note: In the dimensionality declaration only column names are permitted. If we take any functions tableau will throws an error.

Step-1: Create 2 calculated fields:
1) Year with formula: Date part ('year',[order date])
2) Quarter with formula: Date part ('quarter',[order date])
Step-2: Convert year & quarter fields to dimensions.
Step-3: Create 2 calculated fields:
1) Quarter sales with formula: {Fixed[year], [quarter]: Sum([sales])]
2) Year sales with formula: {Fixed [year] : Sum([sales])}
Step-4: Drag year sales, quarter sales into the text table to perform axis blending.

Task3:
Display continent wise total profits and also display max total profit value for every continent across all the countries.

Step-1: Drag continent into rows, Profit into text.
Step-2: Create a calculated field with the name 'max total profit' with formula:
Max({Include[Country/Region] : Sum([Profit])})
Step-3: Drag Max Total Profit and drop it into the visualization to get blended axis.

Task4:
Display department wise sales total order quantity, maximum order quantity across all the categories in every dept and maximum order quantity across all the items for every dept.

Step-1: Drag dept into rows, order quantity into text
Step-2: Create 2 calculated fields:
1) Max category with formula: Max ({Include [category]: Sum ([order quantity])})
2) Max item with formula: Max ({Include[item]: Sum([order quantity])})
Step-3: Drag the 2 fields & drop it into the visualization in the form of blended axis

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Cohort Analysis:

Cohort means sub group. If we perform the analysis by taking the required sub groups of data it is called as cohort analysis

Task5:

Display the sales contribution in the superstore by taking first purchase date of customers

Note: Here first purchase date here is the cohort

Step-1: Create a calculated field with the name First purchase date and formula:

{Fixed [customer name] : Min([order date])}

Step-2: Drag year into rows, sales into columns and First purchase date into color

Step-3: Right click on sales and add percent of total table calculation, and select compute using first purchase date.

Task6:

Display continent wise category wise profits, continent wise profits.

Step-1: Drag continent, category into rows, profit into text of the marks card

Step-2: Create a calculated field with the name continent profits.

{Exclude [category] : Sum([profit])}

Step-3: Drag continent profits & drop it into the visualization

Step-4: Create a calculated field with the name total – profits and formula:

{Fixed : Sum([profits])}

Step-5: Drag the total profits & drop it into the measure values

Task7:

Display year wise, quarter wise, month wise sales, year + quarter sales, year sales.

Task8:

Display how many customers have made 1,2,3, n orders using a histogram.

Step-1: Create a calculated field with the name no. of orders per customer and formula:

{Fixed [customer name] : CountD ([order id])}

Step-2: Drag no.of orders per customer and drop it into rows and convert it to dimension

Step-3: Drag customer name & drop it into columns and convert it to count distinct.

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Note: Filter Execution Sequence:

EXTRACT FILTERS
⇩
DATA SOURCE FILTERS
⇩
CONTEXT FILTERS
⇩
FIXED LOD
⇩
DIMENSION FILTERS
⇩
INCLUDE/EXCLUDE(MEASURE) LOD
⇩
MEASURE FILTERS
⇩
TABLE CALCULATION FILTERS

Task9:

Display each & every country's sales contribution percentage to the total global sales for given market.

Note: Download the global superstore from FTP Server

Step-1: Connect to the global superstore from tableau
Step-2: Click on country geographic field
Step-3: Drag sales & drop it into color & label
Step-4: Right click on sales in the label add table calculation of type percent of total
Step-5: Add a quick filter on market and select US market
Step-6: It will show as 100% instead of showing it's contribution because first filtering is happening and then table calculation is performing.
Step-6: To get the correct output, duplicate the sheet, remove sales from label and create 3 calculated fields:

1) **Country Sales with formula: {Fixed [country] : Sum ([sales])}**
2) **Total Sales with formula: {Fixed : Sum([sales])}**
3) **% of total with formula: country [sales] / total [sales]**

Step-7: Drag % of total and drop it into label
Step-8: For US, tableau will show it's percentage to the total global sales even after filtering because first LOD will takes place and then filter will be executed.

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Task10:

Display all the states in the form of a bucket by the number of CO2 emissions facilities.

Note: Download CO2 data source (.tde file) from FTP server

Step-1: Click on connect to data, select other files and select the file as .tde and select the CO2 file.

Step-2: From dimensions drag state into rows and select count distinct

Step-3: Create a calculated field with the name CO2 facilities per state with formula:

{Fixed [state] : CountD([Facility ID])}

Step-4: On CO2 facilities create a BIN of size 50

Step-5: Drag the bin & drop it into columns

Step-6: Drag state & CO2 facilities per state into label

Step-7: To color with the total emissions, create a calculated field with formula:

{Exclude [state] : Sum([Total reported emissions])}

Step-8: Drag the total emissions & drop it into color

Step-9: Display the view in the presentation mode

Task11:

On state average sales map, display average sales for city in each state

Note: Global Superstore is the data source.

Step-1: Click on state geographic field, drag sales & drop it into color & label and change the aggregation to average

Step-2: Create a calculated field with name Avg sales for city with formula:

AVG({ Include [city] : Sum ([sales])})

Step-3: Drag Avg sales for city & drop it into label

Task12:

Display customer segment wise, year wise total sales and color the visualization with the highest total sales region.

Step-1: Drag customer segment into columns & year into rows, sales into label of the marks card and show me click on highlight table.

Step-2: Create a calculated field with name Max region sales and formula:

Max ({Include [region] : Sum([sales])})

Step-3: Drag the max region sales & drop it into color

Tableau Level-III Notes by Prazval.ks

Task13:

Design a view which contains state wise total report emissions and color the map at the level of
1) County having the highest co2 emissions and also 2) Zip code having the highest co2 emissions

Step-1: Click on State geographic field.
Step-2: Create a calculated field with the name county emissions and formula:
Max (Include[county] : Sum([total reported emissions]})
Step-3: Drag country emissions & drop it into color
Step-4: To color at the zip code level create a field with the name zip code emissions and formula:
Max ({Include[zip code] : Sum([total reported emissions])})
Step-5: Drag zip code emissions & drop it into color

Task14:

What % of the products with in each state exceeded the target profit on coffee chain data source?

Step-1: Connect to the coffee chain source.
Step-2: Drag state into rows, product into text of the marks card and change the aggregation to count distinct
Step-3: Create 2 calculated fields:

1) **Exceeded target with formula: {Include [product] : If sum([profit]) - Sum([budget profit])>0**
THEN1 ELSE 0 END
2) **% of products with formula: Sum([Exceeded target]) / CountD([Product])**

Step-4: Drag Exceeded target and % of products into visualization in the form of text table

Task15:

On the map at the city level in tool tip for each city, display the total sales at the state level and also at the country level.

Step-1: Click on city geographic field and drag sales into color and size
Step-2: Create a calculated field with the name Country + State sales
{Exclude [city] : Sum([sales])}
Step-3: Country sales with formula: {Exclude[State],[City] : Sum([Sales])}
Step-4: Drag State sales & Country sales into tooltip
Step-5: Click on tool tip, click on insert and select country sales and state sales

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Task16:

Display dept wise, month wise sales and color the visualization at the level of month by ignoring the department

Step-1: Drag dept into columns & month into rows and sales into columns
Step-2: Create a calculated field with the name month sales,
{Exclude[department] : Sum([sales])}
Step-3: Drag month sales & drop it into color

Task17:

Display state wise, facility type wise total reported emissions and color the visualization with the row grand totals & column grand totals on co2 emissions data source.

Step-1: Drag state into columns and facility type into rows from co2 data source
Step-2: Drag total report emissions and drop it into label
Step-3: Create 2 calculated fields
1) Column grand total: {Exclude[facility type] : Sum([total reported emissions])}
2) Row grand total: {Exclude[state] : Sum([total reported emissions])}
Step-4: Drag row grand total and column grand total into color

Task18:

Display category wise sales and also display difference in sales in between selected sub category and the remaining sub categories

Step-1: Drag Category & Sales into rows and columns.
Step 2: Create a parameter with the name Category which includes all the values from the Category field.
Step 3: Create a calculated field with the name Selected Category Sales with formula:
IF[Category] = [Parameters].[Category] THEN [Sales] ELSE 0 END
Step 4: Drag that field and drop it into columns. It will show Sales only for the selected Category.
Step 5: To get Sales in every row, create a calculated field with the formula:
{Exclude[Category] : SUM([Selected Category Sales])}
Step 6: Drag this field and drop it into columns. It will show Sales in every row.
Step 7: To get the difference, Create a calculated field with the name 'Difference' with formula:
SUM([Sales]) – SUM([Selected Category Sales])
Step 8: Drag 'Difference' and drop it into columns and color.

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❖ **Behavior of LODs:**

Always the LOD expressions will work in three different ways:

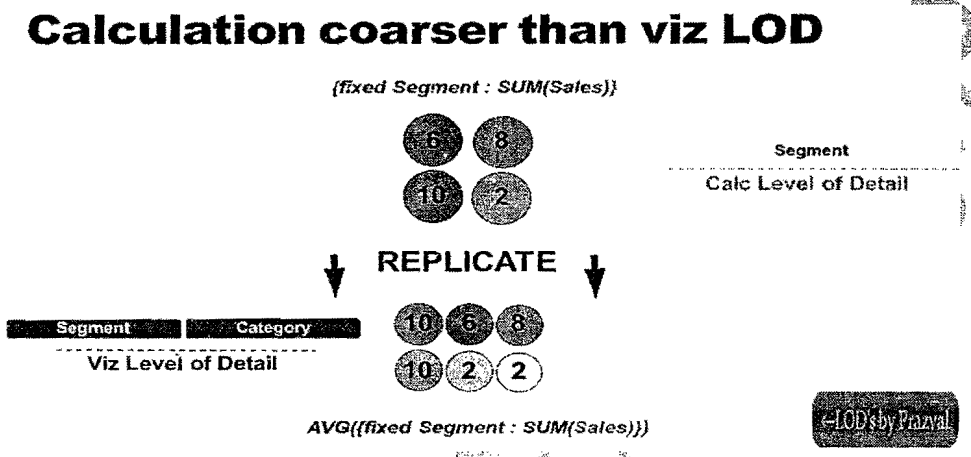
1. Coarser

2. Finer

3. Same

Coarser: If LOD expression / calculation is having lesser no. of dimension than the visualization LOD then it is called as Coarser Behavior.

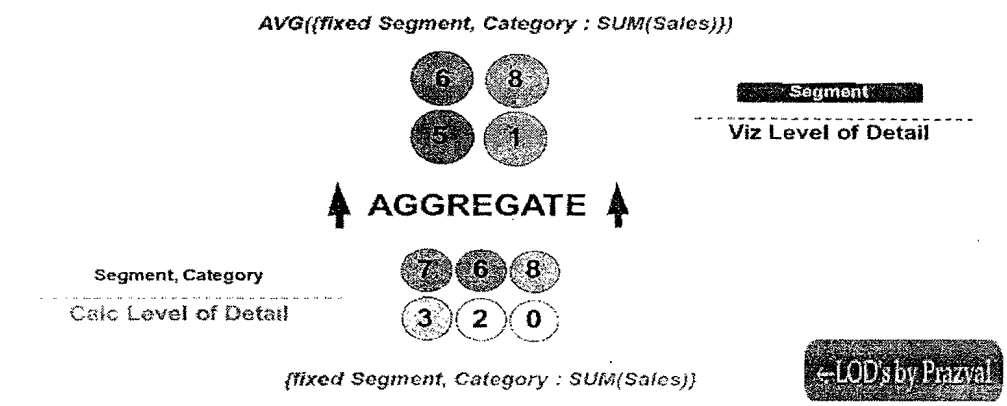
E.g: Calculation coarser than Viz LOD.



Finer:

If the LOD expression / calculation is having more no. of dimensions than the visualization LOD, then it is called as Finer behavior.

E.g: Calculation Finer than Viz LOD:



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Same:

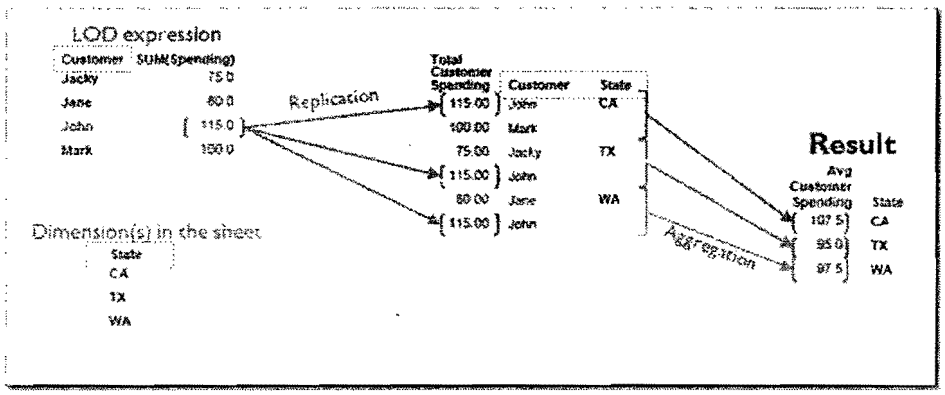
If the LOD expression is having the same no. of dimensions with the visualization LOD then it is called as Same.

Disjoint:

If LOD expression is having one dimension and visualization is having another dimension then tableau is going to perform both the Replication and the Aggregation.

E.g:

What if dimensionalities are disjoint?



{fixed [Customer] : SUM([Sales])}

Note:

'Fixed' key word give the output in Coarser, Finer, Same ways.

Note:

'Include' will give the output either in the Finer or Same way.

Note:

'Exclude' always gives the output in the Coarser way.

Nested LOD Expressions:

Every time with the single LOD expression it is not possible to obtain all the results. Sometimes, we need to take one LOD inside another LOD, which is known as Nested LOD.

Eg:- Inheritance

{fixed [State] : Avg ({ include [Customer] : Sum ([Sales]) } }

is Same as

{ fixed [State] : Avg ({ fixed [State], [Customer] : Sum ([Sales]) } }

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Task1:
Display continent wise max sales value for every customer segment including continent and country.

Step 1: Drag continent into rows.
Step 2: Create a calculated field with the name Nested LOD and formula:
{Fixed[Customer Segment] : Max({Include[Country/Region] : Sum([Sales])})}
Step 3: Drag the Nested LOD and drop it into text of the Marks card.

Task2:
Display no. of unprofitable transactions for every customer across the multiple years.

Step 1: Create a calculated field with name 'Unprofitable_Transaction' and formula:
{Fixed [Customer Name] : Sum(Int([Profit]<0))}
Step 2: Drag Customer Name into rows, Order date into columns and Unprofitable_Transaction into text.

Task3:
Display No. of unprofitable orders for every customer on global superstore data source.

Step 1: Create a calculated field with the name 'No. of Unprofitable Orders/Customers' with formula:
{Fixed[Customer Name] : Sum({Fixed[Order ID], [Customer Name] : Sum(Int([Profit]<0))})}
Step 2: Drag Customer Name into rows, Order ID into text and change the Aggregation of Order ID to Count and drag No. of Unprofitable Items to visualization.

Note:
Fixed will create the field of type both dimensions and measure, whereas Include will create fields of type only measures.
Note:
It is not possible to convert Include and Exclude fields to dimensions.

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Limitations of LODs:

- **Not supported on:**
  - Cubes
  - Google Big query
  - Microsoft JET
  - Ms Access
  - Legacy Ms Excel Connector
  - Legacy Text Connector
  - Actian Vectorwise
  - Datastax
  - Informatica Data Services
  - Splunk
  - Hive < 0.13
  - Impala < 1.2.2
  - Teradata < 12
  - Netezza < 7
  - Limited on Generic ODBC

  Note:
  Even on these data sources, if we want to implement LODs, then just take the extract of the above data sources.

- Won't be materialized in Tableau Extracts (It means LOD fields will not be stored as part of the extract file.
- Sets, combined fields, bins, groups, parameters, table calculations, aggregate calculations, include/exclude LOD calculations cannot be used in the dimensionality expressions until Tableau 9.1.
  Note:
  From tableau 9.2, sets, combined fields, bins can be used in the dimensionality declaration.
- Only field name can be used in the dimensionality expression (E.g. An expression like Max([Order Date]) or Year([Order Date]) or an IF statement cannot be used in the dimensionality expression). But if you use {Exclude[Order Date] : Sum([Sales])} and have [Order Date] in your sheet, Tableau will recognize the date hierarchy and automatically exclude the date parts from calculations level of detail as you drill down.
- Table calculations and ATTR are not allowed in aggregate expression E.g. Fixed[County] : ATTR([State])} or
- {Fixed[County] : Index()} are not supported.
- -Level of detail expressions that use exclude/include key word cannot be used as dimensions.
- -Dimensionality from one source with measure from another blended source cannot be mixed in a level of detail calculation.

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- -All dimensions in dimensionality expression should come from the same data source.
- -Level of detail calculations from secondary sources cannot be used via data blending.

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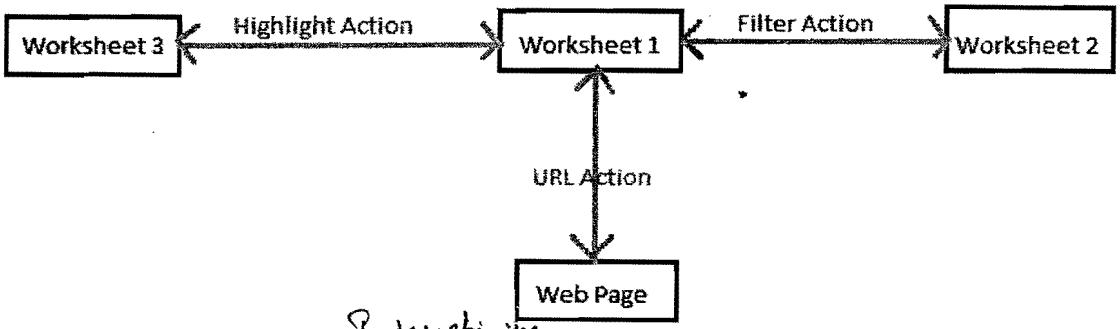
Scenario
Actions

- Actions will add the interactivity and dynamism to the visualizations and it gives us reactions.
- Types of Actions: 3 types



Interacting.

- FILTER ACTION: enables communication b/w one worksheet & the other worksheet, or one dashboard and other dashboard.
- URL ACTION: enables communication b/w worksheet & webpage, or dashboard & webpage.
- HIGHLIGHT ACTION: highlights one worksheet based on the other worksheet or dashboard.

- Running Action Types: We can run the actions in 3 ways:
- HOVER: which automatically runs the action by placing the cursor on the source value.
- SELECT: In this type, we need to select the values manually to run the Action.
- MENU: In this type, tableau will add a hyperlink in the ~~URL~~ Tooltip to run the Action.

Note:
Multiple Value Selection is possible with Select & Menu.

Task:
Display country & state sales geographically and add interactivity in such a way that selection of any country should display states under it. (Please see next 2 sheets for the task demonstration).

Step1:-
Design 2 worksheets which contains Country Sales & State Sales in the form of a Map.
Step2:-

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Click on worksheet tab - click on Actions - Add Action - select filter action. Enter filter action name as Country-State, source as Country and target as State. Run action using Select - click on Ok.
Step3:-
Select any country. Tableau automatically navigates to the State sheet.

Task:
Display Dept wise Category wise Item wise Sales in separate sheets and add interactivity in such a way that selection of any dept should display categories under it. and selection of any category should display items under it.

Step1:--
Design 3 worksheets which contains dept wise sales, category wise sales, and item wise sales. and color code with dept.
Step2:--
Click on worksheet - add 2 filter actions
1. Dept-Category with source as dept & target as category.
2. Category-Item with source as category & target as item.
Step3:-
Select any Dept. It will display categories under it. And select any category. It will display items under it.

Note:
If we create any new sheet, tableau automatically adds all the existing actions to the newly created sheets.

Task:
Display country wise sales geographically and show the detailed information of every country.

Step1:-
Build a symbol map for country wise profits.
Step2:-
Add an URL action with name 'Country-Info' & source as Country sheet. In the URL, enter:
https://en.wikipedia.org/wiki/<Country/Region> (Note: Country/Region is a field)
Note: For URL actions, always use 'Menu' to run the actions.

Step3:
- Select any country. In the tooltip, tableau will display Country-Info. Clicking on it will navigate to the webpage.

Task:
Accessing the FTP server from the worksheet.

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Step1:-
Add a URL action with the name 'FTP Access'. Select the required source sheet. In URL, enter ftp://192.168.1.253:46
Step2:-
In the sourcesheet, from tooltip, click on 'FTP Access'. It will navigate to the FTP server. Enter the username & password.

Task:
Accessing an external folder from tableau worksheet.

Step1:-
Create a new folder in the desktop with an empty text file inside that folder and copy the path of the folder.
Step2:-
Add a URL action with the name 'ExternalFolderAccess'. In source, select required sheet and in the URL, paste the folder location.

Note:
When we clear the sheets after adding the action, the action will not be deleted because actions will get saved into the tableau workbook.

Task:- Display Continent wise Country wise Total Profits and add filter action within that Sheet.

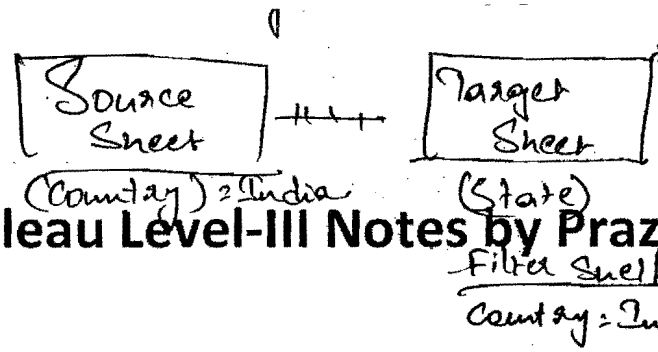
→ Row: Continent Country.
Label: Profit.

→ Menu → worksheet → Actions → Add Action → filter Source, Target as Continent - Country Sheet. & Select "Show all values".

→ Select any Continent → it will Show Countries under it
Deselect / Clear the Selection then it will Show all values.

Note:- In Tableau filter action Output will be Controlled in 3 ways by using Clearing the Selection.

1. Leave the filter (means after unselect the Source ~~value~~ Sheet also target Sheet Contains filtered Output)
2. Show all values (means after unselect the Source ~~value~~ Sheet it Shows a values in target Sheet)
3. Exclude values
(means after unselect in Source Sheet it Shows no values in target Sheet)



(Source field selection will be added to the filter shelf in target sheet. filter values changes dynamically depending on the selection in the source sheet)

Filter Shelf
Country = India.

Highlight Actions:

Using highlight actions we can able to highlight the required part of visualisation (or) required values across the multiple visualisation.

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toget the good performance.
Even it is possible to create more than 30 worksheets & Dashboard.

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Scenario
DASHBOARDS

- Dashboard is the visual display of the most important information needed to achieve one or more objectives which fits entirely on a single computer screen so it can be monitored in one glance.
- Note: Always, try to build the minimalistic dashboards (or) dashboard with minimalism which means use the simplest & fewest elements to create the maximum effect.
- In tableau, dashboard is a collection of multiple worksheets & dashboard objects.

- Dashboard Objects:
- 1.Images 2.Webpages 3.Text Objects 4.Blank Pages 5.Containers(horizontal, vertical).

- Dashboard Prerequisites: Before building any dashboard, we need to perform few requisites:
  1.Data Preparation (understanding the data)
  2.Organizing the data
  3.Visualizing the data

1.Data Preparation:
- Identify all the ID fields & group them under single folder (In real time, we rarely use the ID fields).
- Group all the measures into a single folder named 'Measures' & set the default aggregation for every measure.
- Divide all the dimension fields into 4 Ws:
  - WHAT - resources, entities, attributes
  - WHO - consumers, agents
  - WHERE - geographies
  - WHEN - date & time

2.Organizing the Data:
In the data organization, we need to create:
  - Hierarchies on the existing fields
  - Calculated fields
  - Hiding/Deleting the unwanted fields
- Note: If we delete any field from the tableau workbook, it will be removed from the tableau end but not from the actual data source.

3.Visualizing the Data:
- We need to build the required visualizations at the worksheet level and before creating the dashboard we need to identify the top priority visualizations and the other visualizations and place them in the dashboard in the following way:

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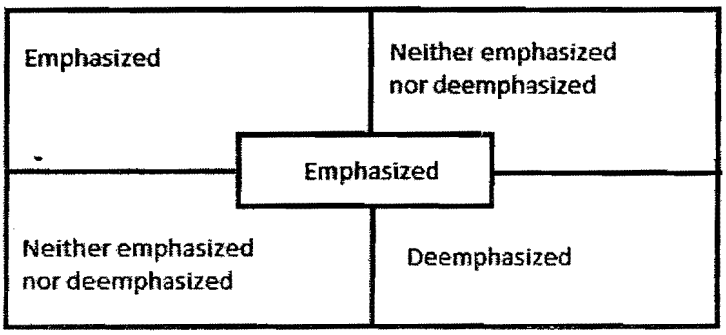
- Align important views in the center or in the upper left hand corner.
- Align less important views in the lower right hand corner.
- Drive actions from high level views to low level views.
- Show them to business users and ask them for their feedback.



- Note: To the dashboard, we can add the objects in 2 ways:
- Tiled (fixed).
- Floating (dynamic) - new feature from T 8.0.

Task1:
Building a basic dashboard in tableau which contains year wise profits, month wise sales, category wise total order quantity.

Step1:-
Create 3 worksheets:
1. Year wise profits
2. Month wise Sales & color code with year
3. Category wise order quantity & color code with order quantity

Step2:-
Using floating, place the year in the upper left corner, month in the upper right corner and category in the bottom.
Step3:-
Add filter actions for year-month, and month-category (Dashboard tab - Actions)
Step4:-
Select any year. It will display months under it. Select any month. It will display categories under it. (Note: In dashboard worksheet, right click on dashboard - we can hide & unhide all sheets).

Task2:
Design a master detailed dashboard for country wise profits, month wise sales, category wise no. of customers & orders.
Note: Master detailed dashboard means selection of any values in the master sheet should display the detailed information in the detailed sheets.

Step1:-

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Create 3 sheets:
1. Country_Profits
2. Month_Sales
3. Category_Info in the form of text table using blended axis.

Step2:-
Create a dashboard. Using tiled, place country_profits at the top. Below it, place Month_sales and Category_Info side by side.
Step3:-
On the country sheet, click on dropdown at the top right and select 'use as filter'.
Step4:-
Select any country. In the detailed sheets, it gives us the detailed information.

Note:
- 'Use as filter' is the second way to add the filter action.
- To place the tiled objects in the floating way, hold the shift button and drag the required object and place it into the required sheet.
- In dashboard, always place the sheets in the entire view mode.

Task3:
Design a multi master dashboard which contains:
- year wise profits - master1
- dept wise profits - master2
- month wise profits, category wise profits - details.

Note:
If we have multiple masters in the dashboard, one master should not be affected by the actions of the 2nd master.

Step1:-
Create the above master and the detailed sheets. and Create a new dashboard.
Step2:-
Place both the masters in the first row and details in the second row.
Step3:-
Select 'Use as filter' & 'Ignore the actions' for both the masters.
Step4:-
Select any year. It will display required months & category information. Similarly select any dept.

Note:
Always hide the underlying sheets in the dashboard by right clicking on the dashboard and select 'hide all sheets'.

Task4:
Design Action Boards with the following sheets:
- Dashboard1 - Continent Sales, Country Sales
- Dashboard2 - State Sales, City Sales

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- Dashboard3 - Item Sales

Step1:-
Design 3 dashboards with the above sheets and rename the dashboards as ActionBoard1, ActionBoard2, ActionBoard3.
Step2:-
Click on ActionBoard1 dashboard and add 2 filter actions - Continent-Country, Country-State.
Step3:-
Click on ActionBoard2 dashboard and add 2 filter actions - State-City, City-Item.
Step4:-
Click on ActionBoard3 dashboard and add URL action with name 'Item Image' & with the following URL: www.bing.com/images/search?q=<Item>
Step5:-
Select any continent. It will show all the countries under it. Select any country. It will navigate to the states. Select any state. It will navigate to the cities under it. Select any city. It will navigate to the items under it. Select any item. In the tooltip, click on Item Image. It will show us the required Item Image.

Task5:
Design a hiding dashboard in tableau with the following dashboards:
Dashboard1 - Continent Sales, Country Sales
Dashboard2 - State Sales, City Sales
Dashboard3 - Postal Code wise Sales, Item wise Sales

Step1:-
Create 3 dashboards with the above sheets.
Step2:-
Click on Dashboard1 and add 2 filter actions - Continent-Country, Country-State
Step3:-
Click on Dashboard2 and add 2 filter actions - State-City, City-Postal Code
Step4:-
Click on Dashboard3 and add a filter action - Postal Code-Item
Step5:-
Click on any continent. It will display countries under it. Click on any country. It will display states under it.
Step6:-
To hide the target sheets in the filter actions, select Exclude all values for clearing the selection.
Step7:-
Select any continent. It will display countries under it. Unselect the continent. It will hide the country information except the sheet name.
Step8:-
To dynamically display the title, create a calculated field with the formula: "Country Sales" in a new worksheet and rename the sheet as 'Title1'.
Step9:-

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Drag the 'Title1' worksheet in the form of title using floating above the country sales map.
Step10:-
Repeat the same for all the remaining sheets.
Step11:-
Select any continent & again unselect it. It will hide the country map and title.
Step12:-
Check for all the remaining dashboards.
Step13:-
Add a back button and forward button to all the dashboards by creating separate sheets for them.

Task6:
Design a sheet selected dashboard with the following sheets:
Sheet1 – Year Sales
Sheet2 – Month Sales
Sheet3 – Category Sales

Step1:-
Create a dashboard with the above 3 sheets.
Step2:-
Create a parameter with the name 'Sheet_Selector' with list with the following values: Year, Month, Category,All. Note: It is not possible to place a parameter directly into the filter shelf.
Step3:-
Create a calculated field with the name 'Selection' and in the formula, take the ['Sheet_Selector'] parameter.
Step4:-
Click on the year sheet – Drag the selection field and drop it into filters – select 'custom value list' and enter the values: All, Year.
Step5:-
Click on the month sales sheet – Drag the selection field and drop it into filters – select 'custom value list' and enter the values: All, Month.
Step6:-
Click on the category sheet – Drag the selection field and drop it into filters – select 'custom value list' and enter the values: All, Category.
Step7:-
Click on the dashboard and hide the titles for all the 3 sheets.
Step8:-
Show the sheet selector parameter in the dashboard.
Step9:-
Using floating, place the sheet selector parameter at the upper middle of the dashboard.
Step10:-
In the parameter, select Year. It will display only year sales by hiding the other sheets.

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Step11:-
To add the titles dynamically, create 3 calculated fields:
1. Year with formula "Year Sales"
2. Month with formula "Month Sales"
3. Category with formula "Category Sales"
Step12:-
Create 3 worksheets:
1. Year Title. Drag year field into rows and label. Hide the header.
2. Month Title. Drag month field into rows and label. Hide the header.
3. Category Title. Drag category field into rows and label. Hide the header.
Step13:-
On the dashboard, using floating place the title sheets on the relevant worksheets.
Step14:-
Click on the year sales sheet – right click on selection filter – select 'apply to worksheets' – click 'selected worksheets' – select 'year title'.
-Similarly, apply the month sales filter to month title worksheet and category sales filter to category title worksheet.
Step15:-
Name the dashboard as 'sheet selected' dashboard, and hide all the sheets.
Step16:-
In the dashboard parameter, select any value and check whether sheet and the title are changing dynamically or not.

<u>Task7:</u>
Building an index dashboard in tableau.

Step1:-
Create 5 calculated fields:
1.MD with formula "Master-Detail"
2.MM with formula "MultiMaster-Detail"
3.Hiding with formula "Hiding Space Board"
4.AD with formula "Action-Board"
5.SS with formula "Sheet Selector"
Step2:-
Create 5 work sheets: AD, MM, SS, MD, H
Step3:-
Click on AD worksheet – Drag AD field and drop into rows and text of marks card – hide the header.
Step4:-
Click on MM worksheet – Drag MM field and drop into rows and label – hide the header.
Step5:-
Similarly, repeat above step for remaining sheets.
Step6:-
Create a dashboard with name 'Home Page'

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-Drag the vertical container into mid of the dashboard.
-Drag the above 5 sheets and place them into the container using floating.
-Click on dashboard tab and add 5 filter actions:
1.AD: source as homepage – AD & target as ActionBoard1 – Continent sales and country sales.
2.MD with source as homepage – MD & target as Master-Detail dashboard.
3.MM with source as homepage – MM & target as MultiMaster dashboard.
4.SS with source as homepage – SS & target as sheet selector dashboard.
5.Hiding with source as homepage – H & target as Hiding dashboard.
-Run all the actions using select and add back button in all the target dashboards. Add filter action to it to navigate to the homepage or index page.
-Add a text object in the floating way with the name 'INDEX' to the homepage dashboard.
-Select any dashboard and check the navigation.

1/5/16

- Dashboard Creation ways of Types:
  - Basic Dashboard, Master - Detail, multi - master.

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Scenario

FORMATTING

- Formatting allows the users to add the required font types, alignments, border and shading to the required visualizations in tableau.
- Formatting can be performed at 3 levels.
  1.At sheet level
  2.At dashboard level
  3.At storyboard level

- Formatting is an important part for both the analysis and the presentation.

- Formatting methods:
  :::3 ways:::
  1.Using side pane
  2.Using marks card
  3.Using text box

  Note:
- -In the side pane, formatting can be performed: At sheet level, At rows level, At columns level.
- -At sheet level, we can add formatting for everything (worksheet, pane, header, tooltip, etc)
- -At the rows and columns level, we cannot format worksheet, pane, tooltip.

Task:
Design a text table which contains category wise, continent wise sales and format the visualization.

Step1:-
Drag continent into columns, Category into rows. Add a Quick Filter for continent.
Step2:-
Drag Profit into label.
Step3:-
To add formatting, click on format tab – click on font.Set the required font, alignment, shading, borders.
Step4:-
Click on format tab – select filter – set the required font and shading.
Step5:-

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Create a dashboard and place the raw sheet and the formatted sheet and compare the charts.
Step6:-
To add formatting at the dashboard level, click on dashboard – select format and set the required format.

Task:
Design a text table which contains continent wise, customer segment wise order priority wise profits and individually format the fields.

Step1:-
Drag continent, customer segment into rows. Order priority into columns. Profit into label of marks card.
Step2:-
Click on format tab – select font – In the format side pane window, select Fields drop down and select each and every field and assign the required formatting.
Step3:-
Right click on the field labels – select format and add the required formatting for field labels.

Note:
We can copy the formatting from one sheet by clicking on format tab – copy formatting and we can paste that into the target sheet by clicking on the format tab in the target sheet and selecting paste formatting.

- Formatting Limitations:

1. If we perform formatting of the Quick Filter or Parameter at the sheet level, Tableau will not show the formatted output. Whereas if we show the same parameter or Quick Filter at the dashboard level, Tableau will show the format output.
2. Order of precedence: If we format side pane, later we can modify it in marks card and text box. Whereas if we format in text box and if we modify later at marks card or side pane, tableau will not apply those changes.

- ADVANCED FORMATTING:

In Tableau, with the tooltip labels, formatting it is possible to perform advanced designing in tableau like descriptive tooltips, stars in tooltips, custom labeling, formatted indicators, etc.

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Task 1:

Design a descriptive tooltip in Tableau for year wise no. of customers in every continent.

Step1:-
Drag year into columns, customer ID into rows, and change the Agr to count distinct.
Step2:-
Click on tooltip in the marks card – remove the existing tooltip information and modify in the following way:
In <YEAR[Order Date]>, there were <CNTD[Customer ID]> Customers in <Continent>
(Note: We have to insert fields using insert button).
Step3:-
Select any data point. Check whether it is showing descriptive tooltips or not.

Task 2:

Perform conditional formatting in tableau for year wise profits and in the tool tip describe whether the current year profit is less or more than the previous year.

Step1:-
Drag year into columns. Profit into rows. Continent into color.
Step2:-
Create a calculated field with the name YOY and formula:
(ZN(SUM([Profit])) – LOOKUP(ZN(SUM([Profit])),-1))
/
ABS(LOOKUP(ZN(SUM([Profit]))-1))
Step3:-
Create a calculated field with the name 'More' and formula:
IF [YOY]>0 THEN "More" END
Step4:-
Create a calculated field with the name 'Less' and formula:
IF [YOY]<0 THEN "Less" END
Step5:-
Drag YOY, Less, More into detail.
Step6:-
Click on tooltip and modify the tooltip in the following way:
In <Year(Order Date)>, there were Profits
In <Continent>, <AGG(YOY)><AGG(Less)><AGG(More) than previous year
Step7:-

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Select any data point and check the tooltip info.

Formatting Labels:

Task:
Formatting the labels and designing the calendar sheet in tableau.

Step1:-
Design a tree chart to display month wise sales and profits.
Step2:-
In the tooltip, remove everything and place only month.
Step3:-
Select any month in the tree and check the tooltip.

Task:
Designing a calendar.

Step1:-
Drag month into columns. Year into rows.
Step2:-
In Marks card, select square.
Step3:-
Drag sales, profit, profit ratio into label and profit ratio into color.
Step4:-
Click on label and click on selected.
Step5:-
Right click on the month header – click on format – click on header & select dates – click on dropdown and select first letter.
Step6:-
Hide field labels for month and year.
Step7:-
Set the row divider to none for rows (in formatting borders).

Task:
Designing a bar chart on the tooltips on the fly to display continent wise profit contribution across multiple years.

Step1:-
Drag continent into columns, color. Profit into rows.
Step2:-

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Create 4 calculated fields:
1.2010 Profit % with formula:
SUM(IF YEAR([Order Date])=2010 THEN [Profit] END
/
(WINDOW_SUM(SUM([Profit])))
2.2011 Profit % with similar formulas as above (just change the year to 2011)
3.2012 Profit % " " 2012
4.2013 Profit % " " 2013
Step3:-
Create 4 calculated fields:
1.2010 Bar with formula: LEFT("Alt+219",[2010Profit%] * 100) Note: Visit www.alt-codes.net for alt codes.
2.2011 Bar with formula as above (just change to 2011 Profit%)
3.2012 Bar " " 2012
4.2013 Bar " " 2013
Step4:-
Drag all the 8 calculated fields and drop it into tooltip. Click on tooltip and modify in the following way:
2010<AGG(2010 Bar)><AGG(2010 Profit%)> - change color
2011<AGG(2011 Bar)><AGG(2011 Profit%)> - change color
2012<AGG(2012 Bar)><AGG(2012 Profit%)> - change color
2013<AGG(2013 Bar)><AGG(2013 Profit%)> - change color

Step5:-
For all the 8 calculated fields, let the addressing as Cell (Right click on field – compute using – cell)
Step6:-
Select any continent and check whether it is showing Bar or not.

Task:
In the tooltip, display Stars and Smileys for country wise total profits.

Step1:-
Design a map for country wise profits.
Step2:-
Create a calculated field with name Profit_Stars and formula:
IF SUM([Profit])>1000000 THEN 5
ELSEIF SUM([Profit])>=500000 AND SUM([Profit])<=1000000 THEN 4
ELSEIF SUM([Profit])>0 AND SUM([Profit])<=500000 THEN 3
ELSE 0

END
Step3:-
Create a calculated field with name Stars and formula:
LEFT('***',[Profit_Stars]) Use Alt code Alt+42**
Step4:-
Create a calculated field with name Smileys and formula:
LEFT('☺☺☺☺☺'[Profit_Stars]) Use Alt code Alt+1

Step5:-
Drag Stars, Smileys into tooltip and modify it in the following way:
<Country>
Profit<Sum(Profit)>
<AGG(Stars> -change color
<AGG(Smileys> -change color

Step6:-
Select any country and check the output.

<u>Task:</u>
Showing the score cards without using shapes.
<u>Note</u>: Refer to 4B sheet in workbook.

Step1:-
To get the score cards, right click on the SUM(Sales) in the marks card – Format – In format, click on pane – In number, click on drop down – Select custom – In custom, enter format as Δ0%, ∇0%, 0 (using alt codes)

<u>Note:</u>
- **The format is positive number, negative number, 0**
- **From T 9.0, to improve the tooltip's behavior tableau has added responsive tooltips (instant tooltips)**
- **To hide the command options on the tooltip, select tooltip and uncheck 'include command buttons'.**

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Scenario

REFERENCES

- References are used to identify the distribution of values along the Axis. There are 4 diff types of References:

1. Reference Bands
2. Reference Bands
3. Reference Distribution
4. Reference Box-Plots(New from Tableau 8)

Note:-

- Upto Tableau 7,we are having only 3 types of references namely Lines, Bands and Distribution. Box Plot is new option From Tableau 8.
- We can add 'n' no. of Reference lines,to one visualization.

1. Reference Lines:

- Reference lines will add a line to the visualization depending on the computation (or) constant value.

Task 1:

Display continent wise total sales and reference lines for minimum, maximum, average values.

Step1:-

Drag continent and sales and drop into rows and columns.

Step2:-

Right click on Sales axis. Select add 'Reference Line'. Select 'Scope' as 'Entire Table', computation as 'Average', label as 'Custom'. Select the Line color, Fill above, Fill below. Click on Apply & ok.

Step3:-

Repeat the same to add Reference Lines for Minimum and Maximum.

Task 2:

Display line on each and every bar for continent wise sales.

Step1:-

Drag continent into columns and sales into rows.

Step2:-

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Right click on sales axis. Select Add reference lines. Scope as 'per cell'. In the label, 'None', 'Sum'-Sales. Click on apply and ok.

Task 3:

Display continent wise customer segment wise profits and add a line for the average value of profit for each and every continent.

Step1:-
Drag continent and customer segment and drop into rows. Profit into columns.
Step2:-
Right click on Profit Axis. Add reference line. Scope as 'Per pane', Computation as 'Average'. Select Line, Fill above, Fill below. Click on Apply and ok.

2. Reference Bands:

- Banding means coloring(Shading) the region of the visualization by taking a range. ((i.e. Band from – Band to)

Task 4:

Display continent wise profits and perform banding from minimum to average and average to maximum.

Step1:-
Drag continent into columns, and profit into rows.
Step2:-
Right click on the Profit axis – select Add reference line, band or box. Select 'Band'. Scope as 'Entire Table' and Band from 'Min', Band to 'Avg'.
Step3:-
Add one more Band from 'Avg', Band to 'Max'.

3)Reference Distribution:

- Reference Distribution will identify the distribution of values along the Axis using a computation.
- The different types of computation are:
  1. Confidence Interval(upto Tableau 8)
  2. Percentages
  3. Percentiles
  4. Quantiles
  5. Standard Deviation

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❖ **Confidence Interval:(Not Avaiable from Tableau 9):-**

-Confidence Interval is used to perform a prediction on the value distribution by taking some confidence interval.

$$CI = \bar{x} \pm Z_{\frac{\alpha}{2}} \left[\frac{\sigma}{\sqrt{n}}\right]$$

DISTRIBUTION:-

Confidence Interval $\boxed{(CI) = \bar{x} \pm Z_{\alpha/2}\left[\frac{\sigma}{\sqrt{n}}\right]}$

We can get Approximate Value.

x = Mean

Z_α = Confidence Interval %

σ = standard deviation

n = Total No. of observation.

Continent (vs) Sales

x=Mean = WINDOW_AVG(SUM[Sales])

σ = WINDOW_STDEV(SUM[Sales])

n = 6

$Z_{\frac{0.95}{2}} = Z_{0.475}$; α = 95% ; Go to Google & enter 'z'-Table.

1.9 + 0.06 = 1.96 → observe/get from Table.

∴ CI± = [Mean] ± (1.96*([STD.DEV]/SQRT(6)))

Task 5:

For continent wise sales, perform the distribution at 95% confidence interval. And also at 60-80% of Average Sales.

Step1:-

Drag continent into rows. Sales into columns.

Step2:-

Right click on Sales. Select Add Reference Line. Select Distribution. Computation as '95%, Confidence Interval'. Click on Apply and ok.

Step3:-

Add one more distribution at 60-80% of Avg Sales.

❖ **Quantiles:**

QUANTILES:-

Quantile = n*(p/q)

n = no. of observation

p = position

q = No. of Quantiles

Example:- 12, 16, 9, 8, 7, 11, 6 → 7 values. I would like to find out 4 tiles. How to do

Ascending → [6, 7 | 8, 9 | 11, 12 | 16]

6, 1st tile value = 7 * (1/4) ≈ 2 th in visual

7, 2nd tile value = 7 * (2/4) ≈ 3.4

8 3rd tile value = 7 * (3/4) ≈ 6 . . . .

6, 7, 8, 9, 11, 12, 16 ← values

1, 2, 3, 4, 5, 6, 7 ← positions

No. of tiles = 4

. In quantiles, distribution will be performed depending on the no. of tiles.

Each and every tile indicates equi-sized portion.

$\boxed{\text{Quantile} = n * (p/q)}$ ✓

Ex: 6, 7, 8, 9, 11, 12, 16

1st tile value = 7 * (1/4) 2nd value.

1st tile value = 7

2nd tile value = 7 * (2/4) = 4th value

2nd tile value = 9

3rd tile value = 7 * (3/4) = 6th value

3rd tile value = 12

4th tile value = 7 * (4/4) = 7th value

value = 16.

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Note:

- In tableau, the bullet graphs can be built using the reference distribution and the lines.
- Bullet Graph is based on Reference Lines →To compare actual value with target values.
- To one visualization, it is possible to add 'n' no. of reference lines.

4.Box Plot (or) Box Whisker Plot: (new feature from 8.0)

- Used to identify distribution of values. It is mainly used in Statistics.

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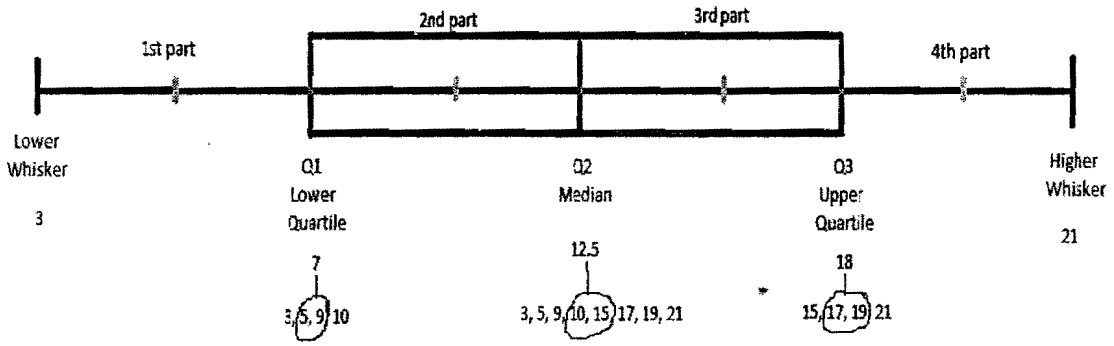

- In Box Plots, Tableau indicates 50% of the values in the form of Box and 50% of the values in the form of whisker (line).
- In Box plots, Tableau indicates lowest & highest values in the form of lines which are known as lower & higher whiskers.
- Then it finds the median which is known as Q2.
- After finding the median, again it finds the median in b/w lower whisker & median which is known as Lower Quartile and it will be indicated with Q1.
- It will shade Q1 and Q2 in one color.
- Again it finds the median in b/w Q2 and higher whisker and it will be indicated with Q3 which is known as Upper Quartile.
- It will shade Q2 and Q3 in one color.
- The values in b/w Q3 and Q1 are known as Inter Quartile Range (IQR).

Note: Tile means Part.

Task:

Design a Box plot for continent wise total sales.

Step1:-

Drag Continent into columns. Sales into rows.

Step2:-

Click on Show me -and select Box plot.

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Scenario

PIVOT TRANSFORMATIONS

- Sometimes in Tableau, we need to transform the data into a required format with the help of custom SQL.

- **SQL Clauses:**

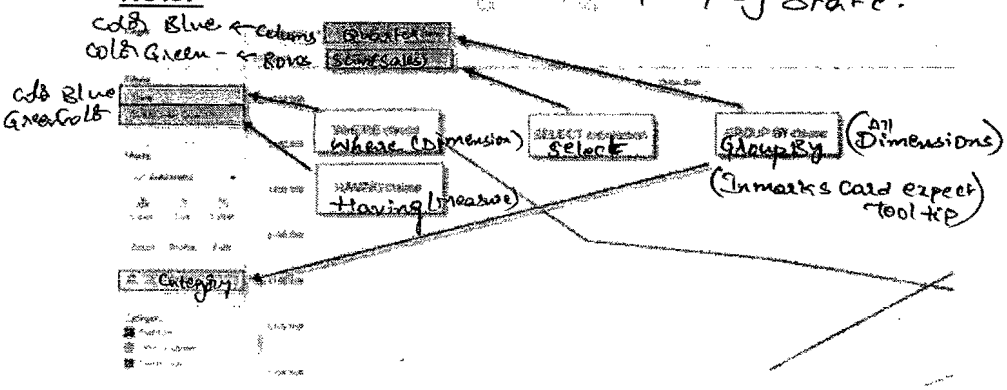
1.SELECT: It contains required list of columns (or) all columns.
2.FROM: It contains the data source.
3.WHERE: It contains conditions on the row level data (or) non aggregated data. (All dimensional filters will be applied on where clause.) / ungrouped.
4.GROUP BY:It is used to group the data. (It performs data grouping & It helps in combining aggregate & non-aggregate columns in select clause).
5.HAVING: It contains conditions on the aggregated data. (All aggregated measure filters will be applied on the having clause.)
6.ORDER BY:It orders the data – ascending or descending order.

NOTE:- In the Select list, it's not possible to mix aggregate & non-aggregate columns. If u want to combine then we have to take all the non aggregate columns in Select list to Group By.
Eg:- Select State, Sum(Sales) from Data.txt (INVALID)
Select State, Sum(Sales) from Data.txt Group by State. (VALID)

Execution Order:

1.Data source: From
2.Row level filtering: Where
3.Group By
4.Having
5.Select, Order By

Note:-



- **Set Operators:**

1.Union: It combines the data from 2 sets and it results unique data. (eliminate duplicate)
2.Union All: It combines the data from 2 sets and it results complete data (along with duplicates).

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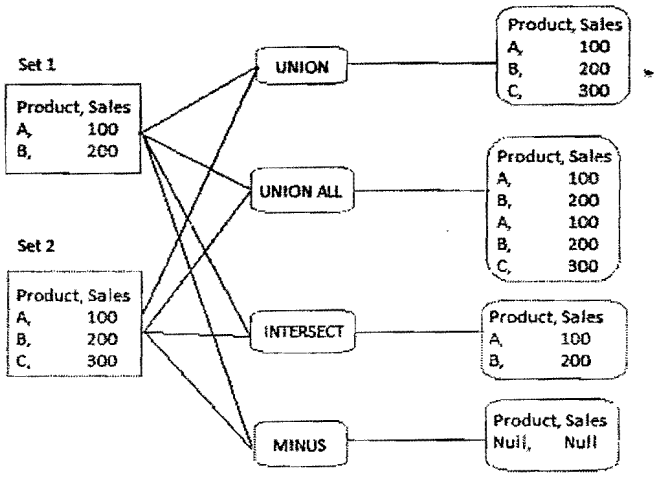
3.Intersect: It combines data from 2 sets and it results in unique matching records.
4.Minus: It combines the data from 2 sets and it gives data only part of set1 if we perform set1-set2.

E.g:



<u>Rules to Perform Set Operations:</u>
1.Both the data sets should have same no. of columns.
2.Data types of the respective columns should match in all the sets. E.g 1st column data type in 1st set should match with 1st column data type in 2nd set and so on.

<u>Task:</u>
Transform the following data using Tableau.

Input data:

Branch,	Q1 ,	Q2,	Q3	,Q4
Hyd,	10,	12,	14,	16
Bang,	20,	22,	24,	26
Chennai,	10,	10,	10,	10

Req Format:

Branch,	Quarter,	Profit
Hyd,	Q1,	10
Bang,	Q1,	20
Chennai,	Q1,	10

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Step1:-
Create a text file with the above input data,name it as "CSQ" and connect to tableau in legacy mode,Click on that file
Step2:-
Click on data tab and click on convert to Custom SQL
Step3:-
Modify the Custom SQL in the following way:

```
SELECT [CSQ#txt].[Branch] AS [Branch],
   'Q1'       AS [QUARTER],
  [CSQ#txt].[Q1] AS [PROFIT]

FROM [CSQ#txt]

UNION

SELECT [CSQ#txt].[Branch] AS [Branch],
   'Q2'       AS [QUARTER],
  [CSQ#txt].[Q2] AS [PROFIT]

FROM [CSQ#txt]

UNION

SELECT [CSQ#txt].[Branch] AS [Branch],
   'Q3'       AS [QUARTER],
  [CSQ#txt].[Q3] AS [PROFIT]

FROM [CSQ#txt]

UNION

SELECT [CSQ#txt].[Branch] AS [Branch],
   'Q4'       AS [QUARTER],
  [CSQ#txt].[Q4] AS [PROFIT]

FROM [CSQ#txt]
```

we have to Create it

Note: Set operators will combine multiple columns into a single column.

Task:- Controlling the Custom SQL dynamically using as Parameter.

Steps:-
1. Connect to Superstore excel in Legacy mode.
2. Click on 'Data' → Convert to Custom SQL
3. In Custom SQL window remove all the columns except City, Region, Sales, Shipmode
4. Click on Insert Parameter & Create a new Parameter.
5. Parameter Name: Region; Type: String; Allowable values as: List
   Add From field: 'Region' OK.
6. In Custom SQL window, Enter "where [Region] = <Parameters.[Region]>" OK
7. Click on Sheet; Drag No of Records in rows & Show Parameter
8. To Add One more Parameter. Right click on Custom SQL → Edit Datasource
9. Click on Drop down of Custom SQL → Edit Custom SQL → AND [Shipmode] = <Parameters.Shipmode>". OK, & Goto Sheet Show Parameter control

Step5:-
Drag Branch, Quarter into rows. Profit into text.
Step6:-
Drag Measure names into columns. Right click on measure names in the view. Select Edit alias and change the alias name to profit.

Task:
Performing Pivot transformations on online data.

Step1:-
Download online data from FTP/Blog.
Step2:-
Connect to the online data Excel File in the legacy mode. Click on input data.
Step3:-
Click on data tab – and click on convert to custom SQL. Copy the following into custom SQL:

```
SELECT  [Input_Data$].[Survey_ID] AS [Survey_ID],
  'Coffee'            AS [ROW],
 [Input_Data$].[Q1_a_1] AS [Q1_1],
 [Input_Data$].[Q1_a_2] AS [Q1_2],
 [Input_Data$].[Q1_a_3] AS [Q1_3]

FROM [Input_Data$]

UNION

SELECT  [Input_Data$].[Survey_ID] AS [Survey_ID],
  'Tea'           AS [ROW],
 [Input_Data$].[Q1_b_1] AS [Q1_1],
 [Input_Data$].[Q1_b_2] AS [Q1_2],
 [Input_Data$].[Q1_b_3] AS [Q1_3]

FROM [Input_Data$]

UNION

SELECT  [Input_Data$].[Survey_ID] AS [Survey_ID],
  'Water'             AS [ROW],
 [Input_Data$].[Q1_c_1] AS [Q1_1],
```

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[Input_Data$].[Q1_c_2] AS [Q1_2],
[Input_Data$].[Q1_c_3] AS [Q1_3]

FROM [Input_Data$]

Step4:-
Click on go to worksheet – Drag Survey ID, Row into rows. Measure Names from dimensions into columns and Measure Values from measures into label of marks card.

Note:

- **Combining multiple select statements with set operators is known as VERTICAL JOIN.**
- **SQL statement containing set operators is known as compound query where each and every individual query is known as Component query.**

Task:
Convert the research expenditure data using Custom SQL and display country wise indicator wise % GDP depending on the selection of the year. (Download The file from FTP Server) (Country, Indicator name, Year, GDP) } Military Expenditure also same as Research Expenditure

Task: Performing automatic Pivot from Tableau 9.

Note:- Automatic Pivot is new option from Tableau 9.

Steps:- > Connect the bank data file which we used in Task 1.

> In data Source page by holding Control button select Q1 Q2 Q3 Q4 columns & drop down in the right most top corner & click on drop down in right most top corner & select 'pivot'.

> Automatically tableau will transform the fields to 'Pivot field names' & 'Pivot field Values'. Rename those 2 field to Quarter, Profits by clicking on drop down in the right most.

Note:- Every time its not posible to get desired Outputs by using automatic Pivoting. Then again we have to make use of Custom SQL.

Task 11:

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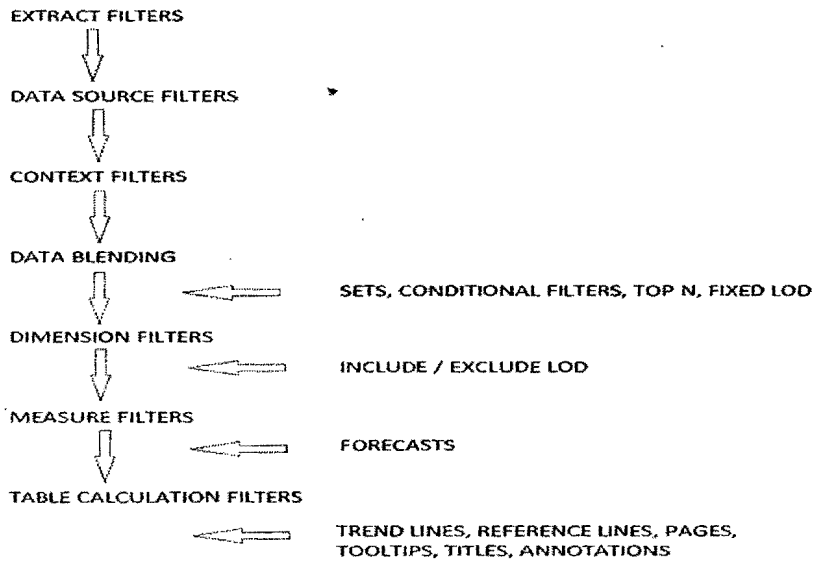
Scenario

ORDER OF OPERATIONS

The Query Pipeline (9.0):



Task:

Display Top 10 Products in each city based on total amount whose average bottle price is greater than 15$.

Note:-

->Three filters:
1. **City – context filter, independent**
2. **Top 10 Products – dimension filter, dependent**
3. **Average bottle price – measure filter, independent**

->As per the default execution, first context filter will execute, Top N filter will execute and at the bottom the measure filter will execute.

->Here as the city context filter and bottle price measure filter has execute before the product dimension filter because product is having Top N and it should be dependent on the above 2 filters.

->To execute 'TopN' at the bottom, obtain the 'TopN' using table calculation '(Index)', where the table calculation will execute at the bottom of the query.

Step1:-

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Drag city into filters and add it to the context, bottle price into filter, select average and click on next select at least and enter the value as 15.01. click on apply and ok.

Step2:-

Create a calculated field with the name index with the formula INDEX().

Step3:-

Drag city, description, index into rows and convert index to discrete.

Add a quick filter on city and index.

Step4:-

Right click on the index. Click on edit table calculation. Select advanced and place both city and description into addressing. Select sort by field → Total → Sum → Descending, in restarting select every city. Click on apply and ok.

Step5:-

Drag total and drop it into text.

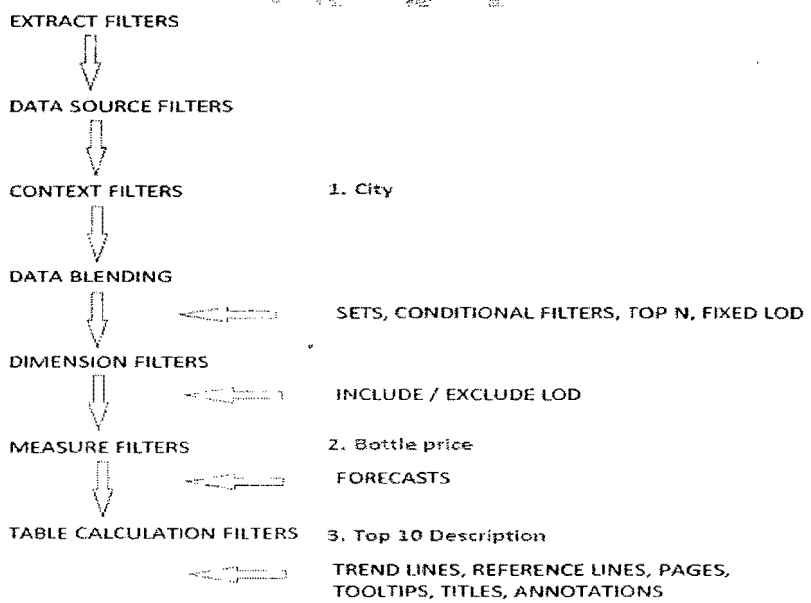
Step6:-

Select any city and in the index, select only 1 to 10.

Step7:-

Click on descending order in the tool bar.

<u>Query Execution with Table Calculation Filter:</u>



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Note:-

Always input to the table calculation functions must be from single data source.

Task2:

In the map display the average no. of bottle sold per person per county.

Step1:-

Click on geographic field

Step2:-

Create a calculated field with the name 'Bottle per person' with formula:

SUM[Bottle Quantity] / SUM[Sheet1(Iowa Population)],[2010 Population])

//Data source1 //Data source2

Step3:-

Drag the bottles per person and drop it into color and label.

Step4:-

To get the % of total, create 2 fields:

1. % of Total using LOD with formula:

SUM([Total])/SUM({SUM([Total])})

2. % of Total using table calculation with formula:

SUM([Total])/Total(SUM([Total]))

Step5:-

Drag % of Total LOD table calculation into label.

Step6:-

Add a Quick Filter on country. Select any county and check the values. LOD will show the same percentage whereas table calculation will show 100%.

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Execution with LODs:

EXTRACT FILTERS
⇩
DATA SOURCE FILTERS
⇩
CONTEXT FILTERS
⇩
DATA BLENDING ⇦ 1. Total Quantity & Population
⇩ ⇦ 2. % of Total
DIMENSION FILTERS ⇦ 3. City Filter
⇩
MEASURE FILTERS
⇩
TABLE CALCULATION FILTERS

Execution order with Table Calculations:

EXTRACT FILTERS
⇩
DATA SOURCE FILTERS
⇩
CONTEXT FILTERS
⇩
DATA BLENDING ⇦ 1. Bottle Quantity & Population
⇩
DIMENSION FILTERS ⇦ 2. County Filter
⇩
MEASURE FILTERS
⇩
TABLE CALCULATION FILTERS 3. % of Total

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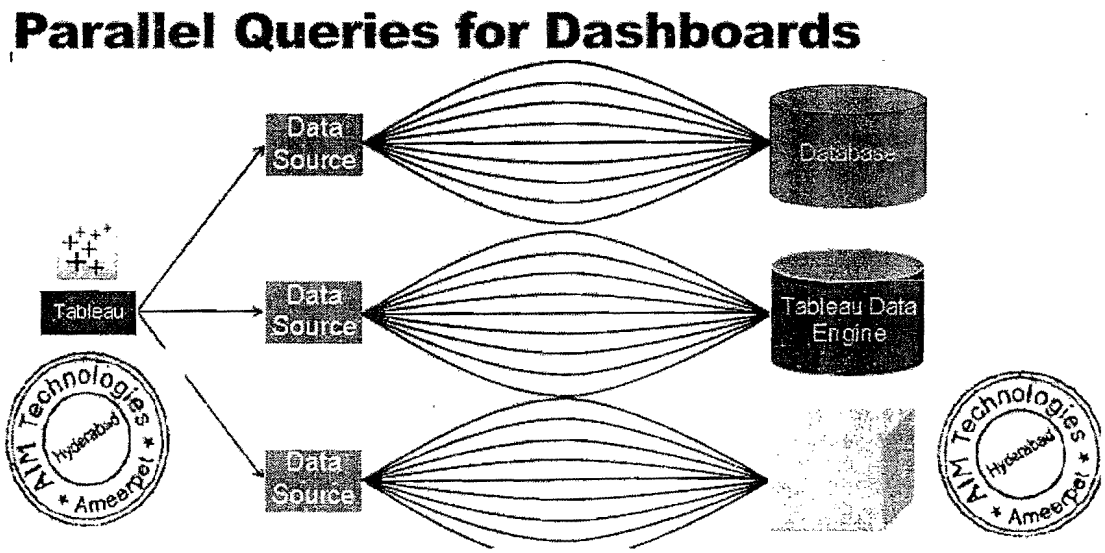
Scenario
PERFORMANCE TUNING (9.0)

- New features from Tableau 9.0 and 9.1 are:
1. Parallel Queries
2. Query fusion
3. External Query Cache
4. Data Engine Parallel plans
5. Data Engine Vectorization
6. Context Filters Improvements
7. Simple Query Generation

1.Parallel Queries:

- From Tableau 9.0, if we build a dashboard, and if we perform any operations on the dashboard for each and every operation, Tableau will generate a query.
- All generated queries will execute parallely from Tableau 9.0.
- Parallel Queries features for Dashboards:
  1. Eliminate duplicate queries
  2. Identify batches of independent queries
  3. Order the queries for cache hits
  4. Send independent queries in parallel



- Note: Till Tableau 8.0, the query execution was Serial / Sequential.
- Note: In Tableau 9,it can execute up to maximum of 16 parallel queries.

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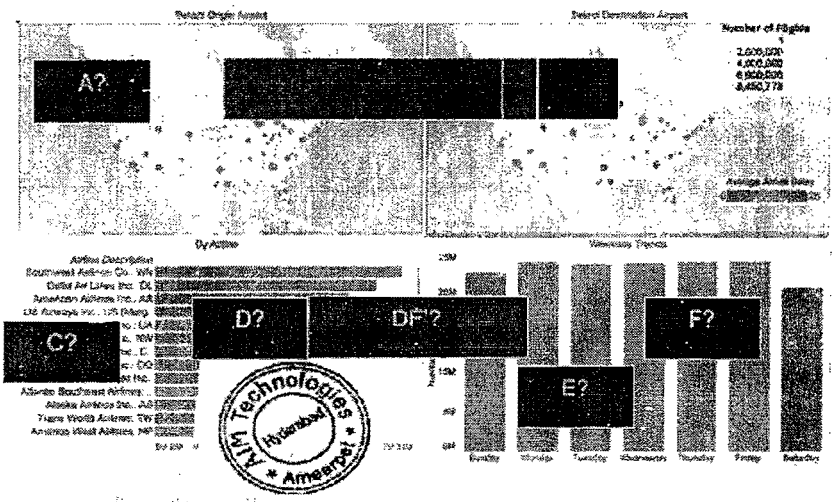
- **Note: Limitations of Parallel Queries:**
  1. **Queries cannot always run in parallel**
  2. **Dependencies between the queries**
  3. **Limit in connections to the backend data source**
  4. **Limit to database degrees of parallelism**
  5. **The database may choose to run queries serially**

2.Query Fusion:

- **Query fusion means combining the multiple individual queries into a component query.**
- **Till Tableau 8.0, all the queries in the dashboard will run independently even though if the query is repeating multiple times. To overcome the multiple query executions from Tableau 9.0, query fusion is introduced where it can able to combine multiple related queries into a single query.**

Query Fusion



Task:

Implementing query fusion in Tableau.

Step1:-

Create a dashboard in Tableau 8.3 which contains:

1. Country profits
2. Customer segment wise profits
3. Item wise sales with year quick filter

Step2:-

Click on help tab →Setting and Performance → Start performance recording

Step3:-
On the dashboard, select anyone country, customer segment using tooltip and in year quick filter select 2012.
Step4:-
Again click on help tab and stop performance recording.
Step5:-
In the performance recording workbook, decrease the timeline it will display the execution time for all the queries and layouts.
Step6:-
Repeat the same in Tableau 9.2 and check the no. of queries and query execution time, it will be less than Tableau 8.0.

- **Note: Tableau will record the performance in the form of:**
1. **Time line**
2. **Events**
3. **Query**

3.External Query Cache:
- **For the live connections till Tableau 8.0, it will store the live connection data temporarily in Tableau. The location is Tableau Temp → Temp directory.**
- **Once if we close Tableau, it will remove the temp file.**
- **From Tableau 9.0, to reduce the load time, cache is storing permanently in Tableau.**

Features:
- **Faster response and reduced load on backend datasources.**
- **Faster to read results from memory or from disk.**
- **9.0 caches persisted when restarted**
- **9.0 server caches are shared between processes and nodes on server.**

4.Data Engine Parallel Plans:
- **Using multiple cores wherever possible.**
- **Runs Joins and Aggregations in parallel.**
- **Table is scanned in parallel**
- **Splits computation across cores**

5.Upgrade:
In every new version, Tableau will add the new features so one basic performance tuning technique is upgrade to the latest major release.

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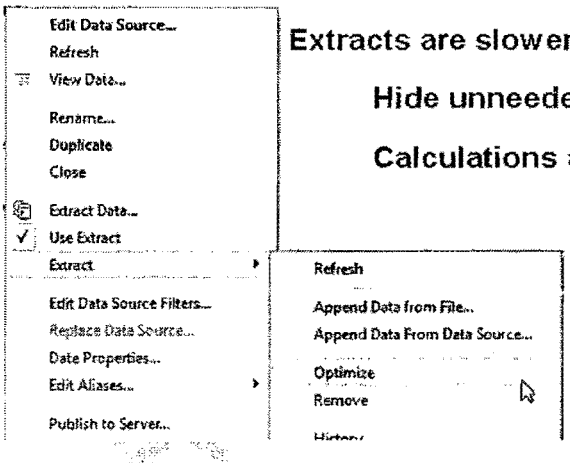
- Note: From Tableau 9.0, we have a new option called as 'Auto Upgrade' which will automatically upgrade to new release.

6.Best practices of using live and extract connections:

- Use a live connection if:
  - You need the latest data
  - If database is very fast

- Use extract if:
  - Database is slow
  - Reduce load on database
  - Data changes slowly
  - Package a dashboard with its data
  - Extracts are slower to create but usually faster to use
  - Hide unneeded fields
  - Calculations are pre computed
  - Offline access
  - Tip: Optimize the extract

Extracts



Extracts are slower to create but *usually* faster to use

Hide unneeded fields

Calculations are pre-computed

Offline access

Tip: Optimize the extract!

- Note: If we optimize the extract within the .tde file, Tableau going to create secondary structure to store the computed results and to run the query faster. It means if we have one complex calculation instead of executing it each and every time, if we optimize the extract then Tableau will compute it advancely and stores its value in the secondary structures until it will be optimized for the next time.

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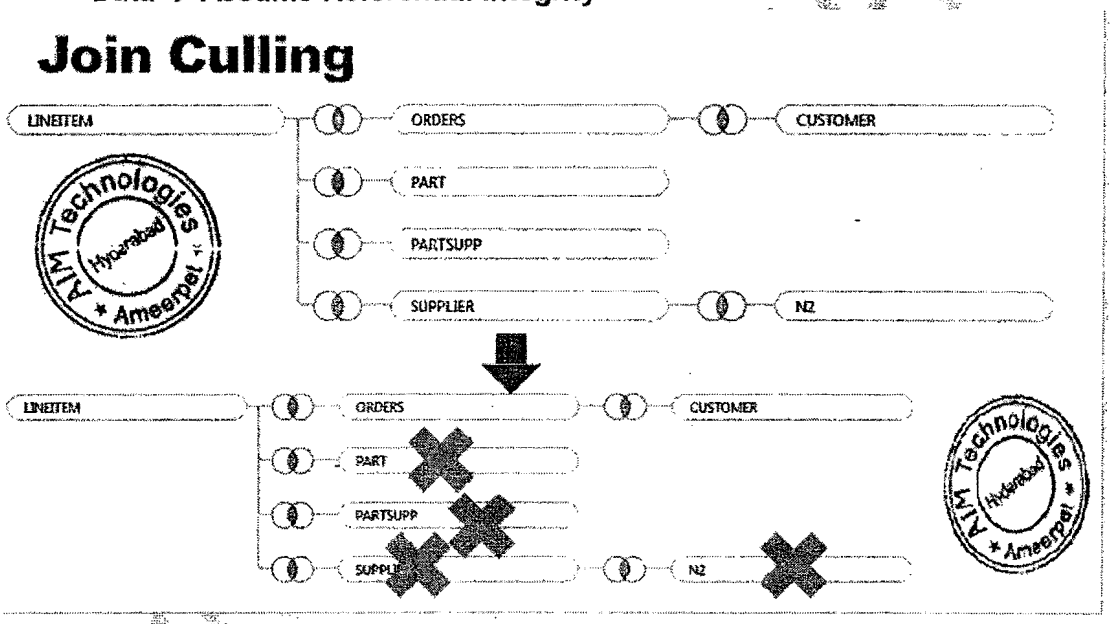
- **Limitations of Extract Optimizations:**

1. **Optimization will not work for Table calculations, R expressions.**
2. **It will not work for Now (), Today() functions.**

7.JOIN CULLING:

Join culling is the behaviour which kills the tables which are not part of the visualizations at the time of query execution. It can be achieved using 'Assume Referential Integrity'. It is going to assume that all the other tables are not used and it is going to assume the Reference (Primary key and Foreign key relationship) between the used tables.

- **Note: To add the 'Assume Referential Integrity' in the data source page: Data → Assume Referential Integrity**



8.Context Filters:

- **Usually slower before Tableau 9.0**
- **Creating a temp table will be very slow if large.**
- **Indexes on the original table can't be used.**
- **Join culling cannot happen.**

Tip: Hide unneeded fields so that context can be narrower.
Tip: Use data source filter instead.

Now faster in Tableau 9.0 +:

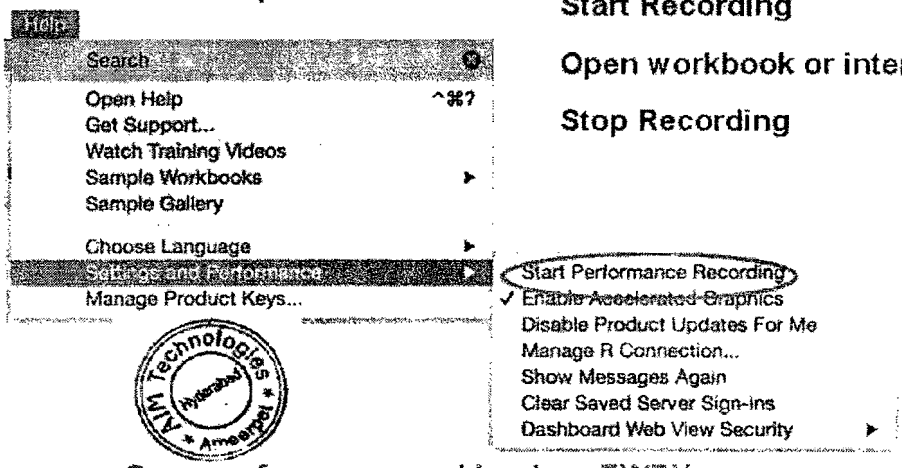
- **Context filters use sub queries**
- **Join culling works**

- No initial set up costs for the temp table creation

9.Use the performance records option: to understand the dashboard performance and to compute the best layout, and also to work with the Tableau support.

Performance Recorder

Tableau Desktop



Start Recording

Open workbook or intera

Stop Recording

Save performance workbook as TWBX

Tableau Level-III Notes by Prazval.ks

Scenario

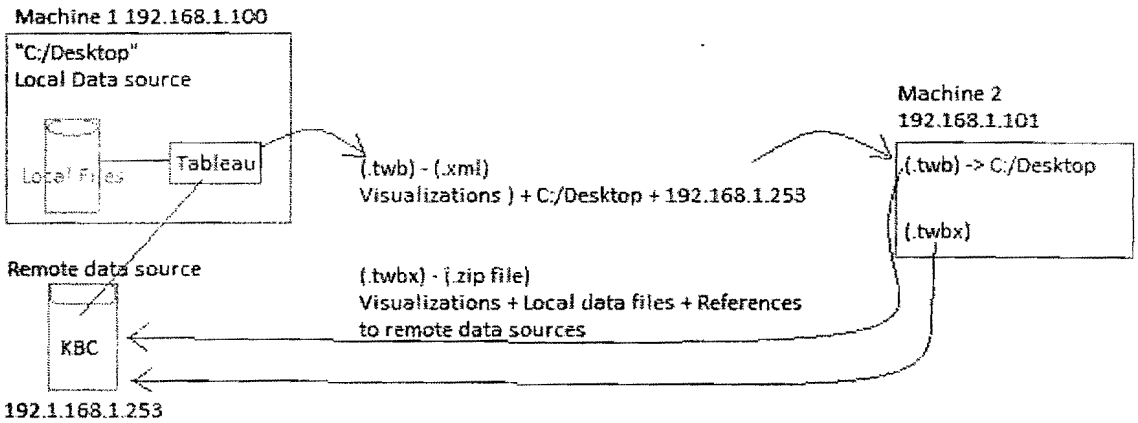
SAVING OPTIONS & MIGRATION:

In Tableau, we can save our work at 2 levels:

1. At work book level
2. At work sheet level.

1. AT WORK BOOK LEVEL: At the work book level again the work will be saved in 2 ways:
1..TWB (tableau work book)
2..TWBX (tableau packaged work book)

1.TWB:
-Tableau work book stores the visualizations and the reference to the data sources. If we have the local data sources and if we save our work in the form of .twb and if we share it to the other machine, in the other machine it is going to reference the local files if they are not available it shows an error.



Note: .TWB will be stored in the form of XML.

2.TWBX:
-Tableau packaged workbook contains visualizations + copy of local data sources + References to remote data sources in the form of a single packaged file.
-It is highly recommended to share our work in the form of .TWBX.

Note:

- .TWBX can be stored in the form of .ZIP file also.
- To unpackage .TWBX file, right click on it and select unpackage.

8/5/16 * .TWBX will be stored in the encripted format

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2. AT WORK SHEET LEVEL:

At worksheet level, we can save our work in the form of tableau book mark (.TBM).

Tableau Book mark:

- **Tableau book mark is the snapshot of one worksheet which stores the visualization + Reference to local data sources.**
- **The book mark will be stored into the book marks folder of the Tableau repository.**

Task:

Creating a book mark in tableau.

Step1:-

Connect to superstore and drag continent into rows and profit into columns.

Step2:-

Click on window tab – click on book mark – click on create book mark – save.

Step3:-

Open a new work book – click on window tab – click on book mark – select the required book mark.

Note: Book mark will be stored in the format of XML.

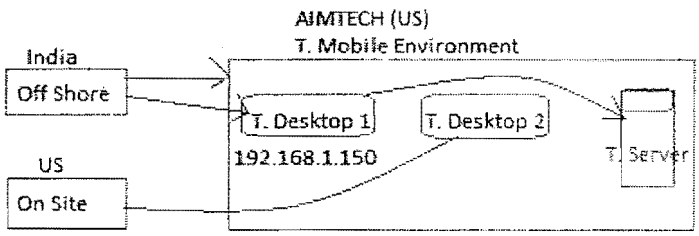
21/5/16 * Bookmarks can be open from any work book with in the same machine.
* It is not recommanded to share the bookmark across multiple machines because it just stores the data connection information.

- **MIGRATION STRATEGIES:**

In Tableau, we will migrate our work in 4 different ways:

1. Single Environment Migration	**40 to 50%**
2. Off shore / On site Migration	**30 to 40%**
3. Local Environment Migration	**5 to 10%**
4. Global / External Migration	

1.Single Environment Migration:



21/5/16 • In Tableau if we build any workbook one version we can able to open that workbook in that version current version. but not the before version. If we want to open any workbook on the before versions we need to change version in the xml.

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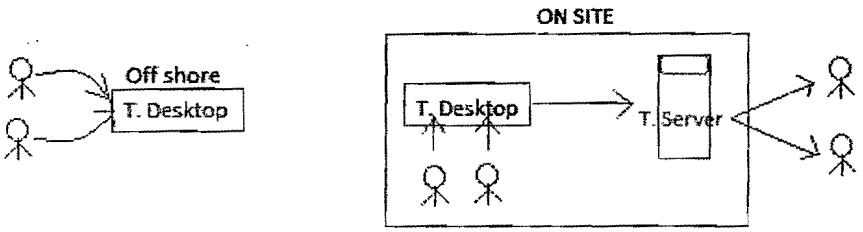
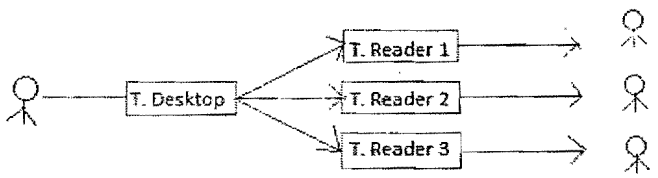
In Single Environment migration, both the offshore and onsite teams they will act as a single environment and they will do the complete work with in that environment.

2. <u>Offshore/Onsite Migration:</u>



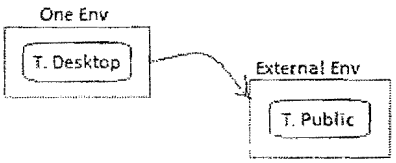
Sometimes in the real time, client will not give the access to their machines. In those cases, we need to configure a separate environment in the offshore to perform the initial development and later we can share it to the onsite or client environment. The chance of having it in the real time is 30 to 40%.

3. <u>Local Migration:</u>



In Local migration, developers will perform their work in the T. Desktop and they will share their visualizations to the end users using FTP server or over emails. All the end users they will access as the visualizations using T. Reader. This kind of configuration involves very less costing and it is suitable for low level clients. Change of using it in real time is 5 to 10%

4. <u>Global/External Migration:</u>



In global migration, we will share all the visualizations from T. Desktop to the T. Public. Anyone can able to access those visualizations once if we share it to the T. Public. This type of migration usually we don't use in the real time.

Task: opening 9.3 workbook in 9.1 (Higher version to lower version)?

Step1: open the workbook in the format of .twb

Step2: Right click on .twb workbook & select open with notepad.

Step3: In the notepad window copy version = 9.3 click on edit tab & click on replace

Step4: Paste that version Find : version='9.3'

Replace : version='9.1'

& click on Replace all (button) & Save the changes.

Step5: open 9.1 click on file click on open & open the workbook from required location.