

# Low Level Design

## E-Commerce Dashboard

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**1. Introduction:**

## **What is Low Level Design Document?**

The goal of the Low-level design document (LLDD) is to give the internal logic design of the actual program code for the Sales dashboard. LLDD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document.

## **What is Scope?**

Low-level design (LLD) is a component-level design process that follows a step-bystep refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

## **Project Introduction**

E-commerce is the buying and selling of good and services of goods and services, or the transmitting of funds and data, over an electronic network, primarily the internet. Sales management has gained importance to meet increasing competition and the need for improved methods of distribution to reduce cost and to increase profits. The objective of this project is to perform data analysis and visualisation and built dashboards to provide insights that can help in making data driven decisions to increase sales the company.

## **2. Problem Statement:**

The objective of this project is to analyse the Sales trend. This project will help in identifying major markets in terms of Sales.

## **3. Dataset Information:**

- Order ID : Unique Order ID number per Order
- Order Date : Date of order placed
- Ship Date : Date of order shipping
- Aging: Shipping Days. It is the difference between Order Date and Delivery Date.
- Ship Mode: Shipping Mode
- Product Category : Category of product
- Product: Name of ordered Product
- Sales: Per Order sales (in \$)
- Quantity Ordered : Number of Items Ordered
- Discount: Per order Discount (in \$)
- Profit: Per order Profit (in \$)
- Shipping Cost : total cost of shipping per order (in \$)
- Order Priority : priority of order
- Customer ID: ID of customer
- Customer name : name of customer
- Segment: Segment of ordered product
- City : City from where order was placed

- State: State from where order was placed
- Country: Country from where order was placed
- Region: Region from where order was placed
- Months: Month of Order placed

#### **4. Architecture:**

1. Problem Definition
2. Data Collection
3. Data Pre-processing/Data Cleaning
4. Data Exploration
5. Modelling
6. Deployment

#### **5. Architecture Description :**

##### **5.1 Raw Data Collection:**

The dataset is an open source and taken from Kaggle website.

##### **5.2 Data Pre-processing and Transformation:**

Before building any model, it is crucial to perform data pre-processing and transformation to feed the correct data to the model to analyse and visualise the data. The process includes:

##### **Handling Null/Missing Values:**

There is no null values in the dataset and the dataset is ready for the Next process

##### **Data Transformation:**

- From raw dataset, we must derive some columns which were necessary for data analysis and dashboard building.
- City and State Columns were derived from Purchase Address Column from raw dataset and after extracting columns, Purchase Address column was dropped.
- Based on the Product name, Category Column was created which specified the Category of product like Laptop, Phone, TV etc.

##### **5.3 Reporting:**

Reporting is a most important and underrated skill of a data analytics field. Because being a Data Analyst you should be good in easy and self-explanatory report because your model will be used by many stakeholders who are not from technical background.

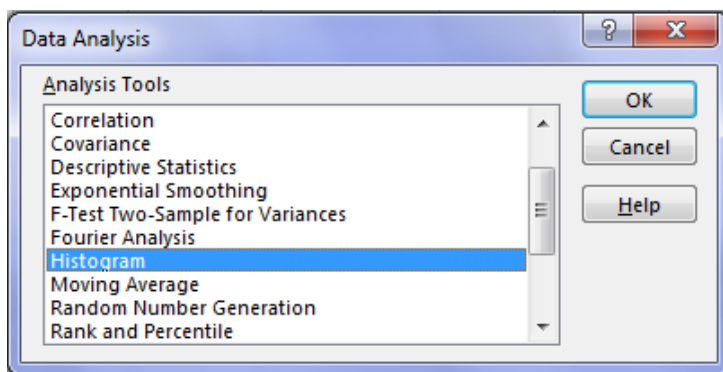
- High Level Design Document (HLD)
- Low Level Design Document (LLD)
- Architecture
- Wireframe
- Detailed Project Report
- Power Point Presentation

## 5.4 Modelling:

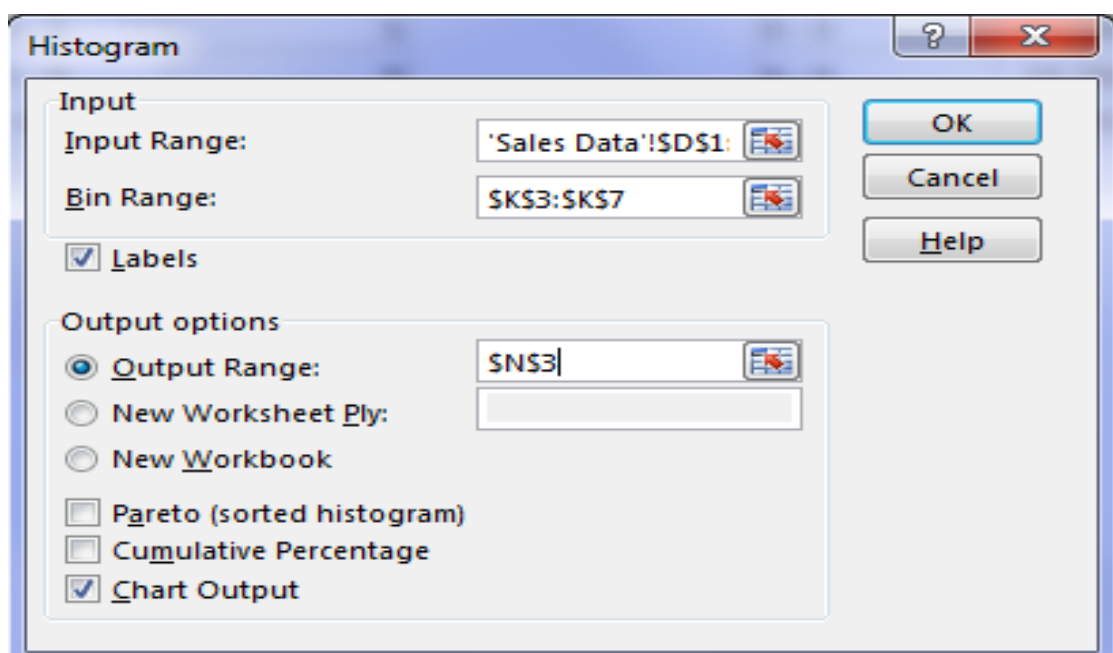
Data Modelling is the process of analysing the data objects and their relationship to the other objects. It is used to analyse the data requirements that are required for the business processes. The data models are created for the data to be stored in a database. The Data Model's focus is on what data is needed and how we must organize data rather than what operations we must perform.

## 5.5 Detailed Procedure:

**Step 1:** Go to Data Tab ➤ Data Analysis



In the histogram dialog box, first, click the Label's Checkbox as we have labels in our data. After that, In the **Input reference box** select the range ("**Sales Data!D1:D51291**") of our data and in the **Bin Range Reference box** select ("**Working!K3:K7**"). In the **Output section**, select range "Working!N3" for a binning table, click Histogram checkbox and then ok.



- Enter the equal sign and then enter the function name and open parenthesis.
- Pass the first Argument is Sum\_Range, select range 'Sales Data'!\$H:\$H, and then enter comma.

- Now, pass the second argument Product Category column “criteria Range1” as ‘Sales Data’!\$F:\$F, enter comma
- Pass the third argument “criteria1” “Working!\$R\$3”, and enter comma.

6	
7	=SUMIFS('Sales Data'!\$H:\$H,'Sales Data'!\$F:\$F,Working!\$R\$3)
8	SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)

Perform the same function to calculate the Quantity in Cell G7.

- In G7, write the equal sign, and then enter the function name and open parenthesis.
- The first Argument is Sum\_Range, select range ‘Sales Data’!I:I, and then enter comma.
- Now, pass the second argument Product Category column “criteria Range1” as ‘Sales Data’!F:F, and enter comma.
- Pass the third argument “criteria1” “\$R\$3,” and enter comma.

For Profit

- In K7, write the equal sign and then enter the function name and open parenthesis.
- The first Argument is Sum\_Range, select range ‘Sales Data’!K:K, and then enter comma.
- Pass the second argument Product Category column “criteria Range1” as ‘SalesData’!F:F, and enter comma.
- Now, pass the third argument “criteria1” “\$R\$3”, and enter comma.

#### Step4: SUMIFS formula to calculate Sales and Profit month wise

Now write the sumifs formula to calculate the Sales and profit month-wise and salesregion-wise.

Enter formula in Cell C4:

- Enter the equal sign and then enter the function name and open parenthesis.
- The first Argument is Sum\_Range, select range ‘Sales Data’!H:H, and then enter comma.
- Pass the second argument month column “criteria Range1” as ‘Sales Data’!U:U, and enter comma.
- Now, pass the third argument “criteria1” “\$B\$4,” and enter comma.
- Pass the fourth argument as Data!F:F product category column, and enter comma.

Enter formula in Cell D4:

- Enter Equal sign then enters function name and open parenthesis
- The first Argument is Sum\_Range, select range ‘Sales Data’!K:K, and then enter comma.



- Now, pass the second argument month column “criteria Range1” as ‘SalesData’!U:U, and enter comma.
- Pass the third argument “criteria1” “\$B\$4,” and enter comma.
- Pass the fourth argument as Data!F:F product category column, and enter comma.
- Enter the fifth argument as “\$R\$3.”
- Now, copy and paste the formula in Range D4:D15.

Months	Sales	Profit	Regions	Sales
Jan	=SUMIFS('Sales Data'!\$H\$1:\$H\$65536,'Sales Data'!\$U\$1:\$U\$65536,'Working (2)'!\$B\$4,'Sales Data'!\$F\$1:\$F\$65536,\$R\$3)			
Feb	29,776		Canada	
Mar	32,800		Caribbean	
Apr	33,417		Central	
May	33,705		Central Asia	
Jun	30,219		East	
Jul	29,644		EMEA	
Aug	34,088		North	
Sep	33,069		North Asia	
Oct	39,240		Oceania	
Nov	32,598		South	
Dec	34,902		Southeast Asia	
			West	

### Formula used:

**Sales =SUMIFS('original table'!H:H,'original table'!U:U,calculations!B13,'original table'!F:F,calculations!\$D\$5)**

**Profit =SUMIFS('original table'!K:K,'original table'!U:U,calculations!B13,'original table'!F:F,calculations!\$D\$5)**

Months	Sum of Sales	Sum of Profit
Jan	676313	313566.3467
Feb	610240	286102.6233
Mar	686681	317186.0067
Apr	659404	308364.5133
May	672547	313751.2467
Jun	664560	307585.0233
Jul	685152	318703.2
Aug	670788	310442.8433
Sep	658844	305334.4567
Oct	689116	320748.67
Nov	656663	304716.1
Dec	693073	323401.92
<b>Grand Total</b>	<b>8023381</b>	<b>3729902.95</b>

Month	Sales	Profit
Jan	117677	53274.4
Feb	97361	42988.9
Mar	110048	49264
Apr	107029	48287
May	107848	47383.3
June	111250	48876.4
July	119095	53137
Aug	107444	47557
Sep	110696	50175.7
Oct	101689	44411.8
Nov	112861	49946.9
Dec	116409	52295.3

### Step5: SUMIFS formula to calculate Sales region wise

Prepare the formula:

### Formula used:

**Sales =SUMIFS('original table'!H:H,'original table'!T:T,calculations!B28,'original table'!F:F,calculations!\$D\$5)**

Regions	Sum of Sales
Africa	713074
Canada	60003
Caribbean	260495
Central	1735900
Central Asia	321005
East	446468
EMEA	788072
North	750482
North Asia	369816
Oceania	544827
South	1034884
Southeast Asia	500923
West	497432
<b>Grand Total</b>	<b>8023381</b>

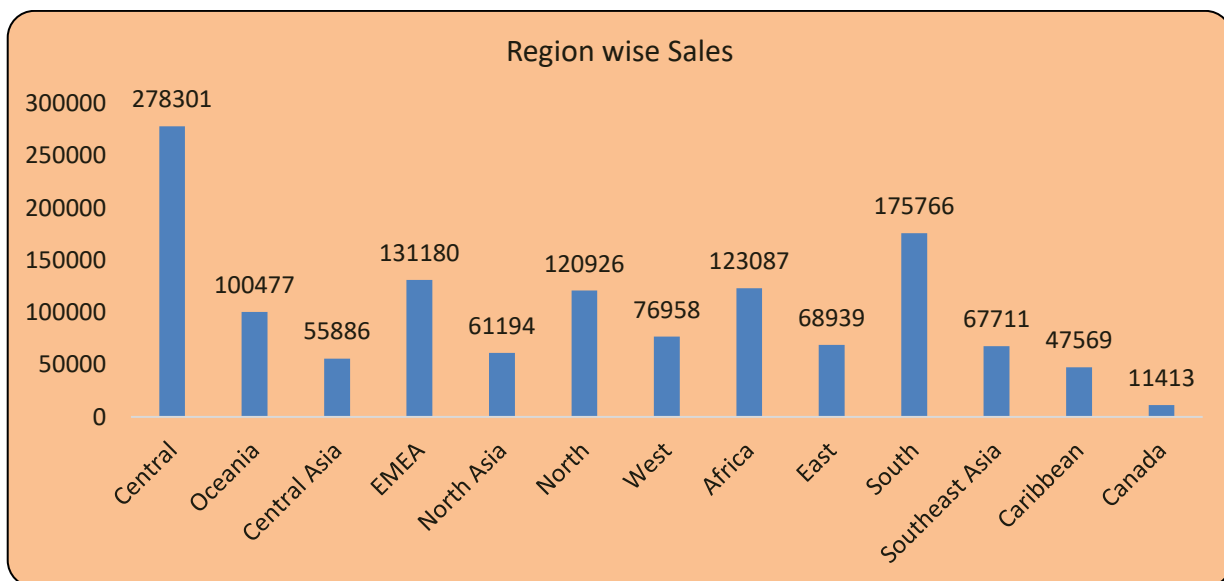
Regionwise Sale	
Regions	Regionwise Sales
Africa	123087
Canada	11413
Caribbean	47569
Central	278301
Central Asia	55886
East	68939
EMEA	131180
North	120926
North Asia	61194
Oceania	100477
South	175766
Southeast Asia	67711
West	76958

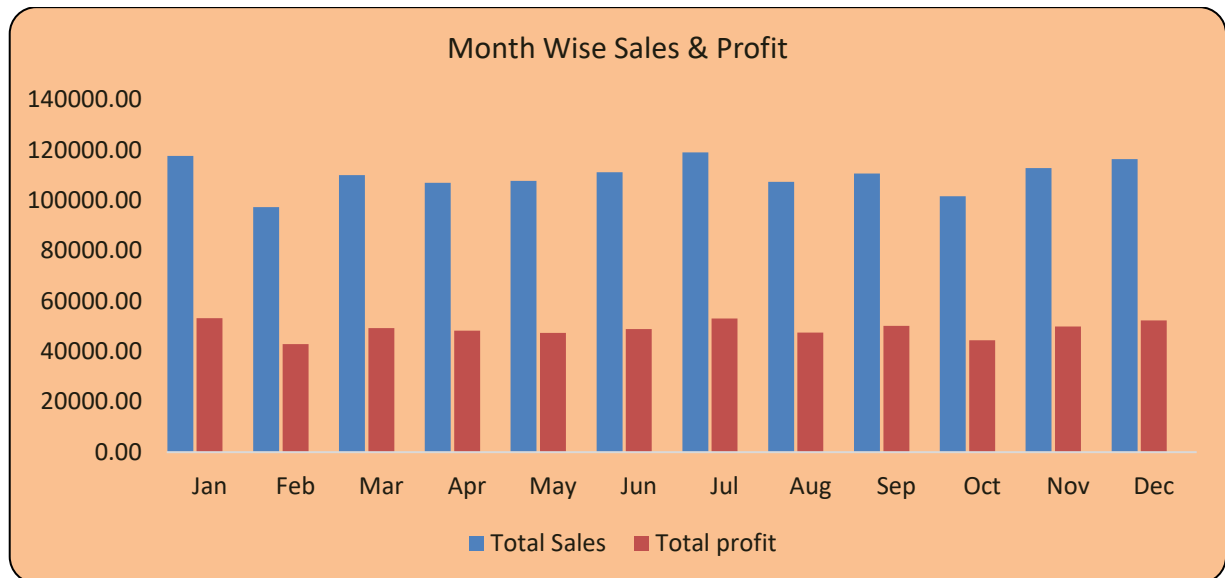
## Step 6: Create Column Chart

- Create Column Chart of a month-wise table and region-wise table

### Steps Followed:

Select the column pertaining to month wise sales and profit and region wise sales and then click on Insert -> Data -> Chart and click on clustered 2D Chart to get outputs below.





### Link the table with combo box.

#### Code Used :

Using SUMIFS function and pulling data from sales table:

Sales Box Value = SUMIFS('Sales Data'!\$H:\$H,'Sales Data'!\$F:\$F,Working!\$F\$141)

Quantity Box Value =SUMIFS('Sales Data'!\$I:\$I,'Sales Data'!\$F:\$F,Working!\$F\$141)

Profit Box Value = SUMIFS('Sales Data'!\$K:\$K,'Sales Data'!\$F:\$F,Working!F141)

### Create a dashboard

Perform the same steps for other tables to create chart.

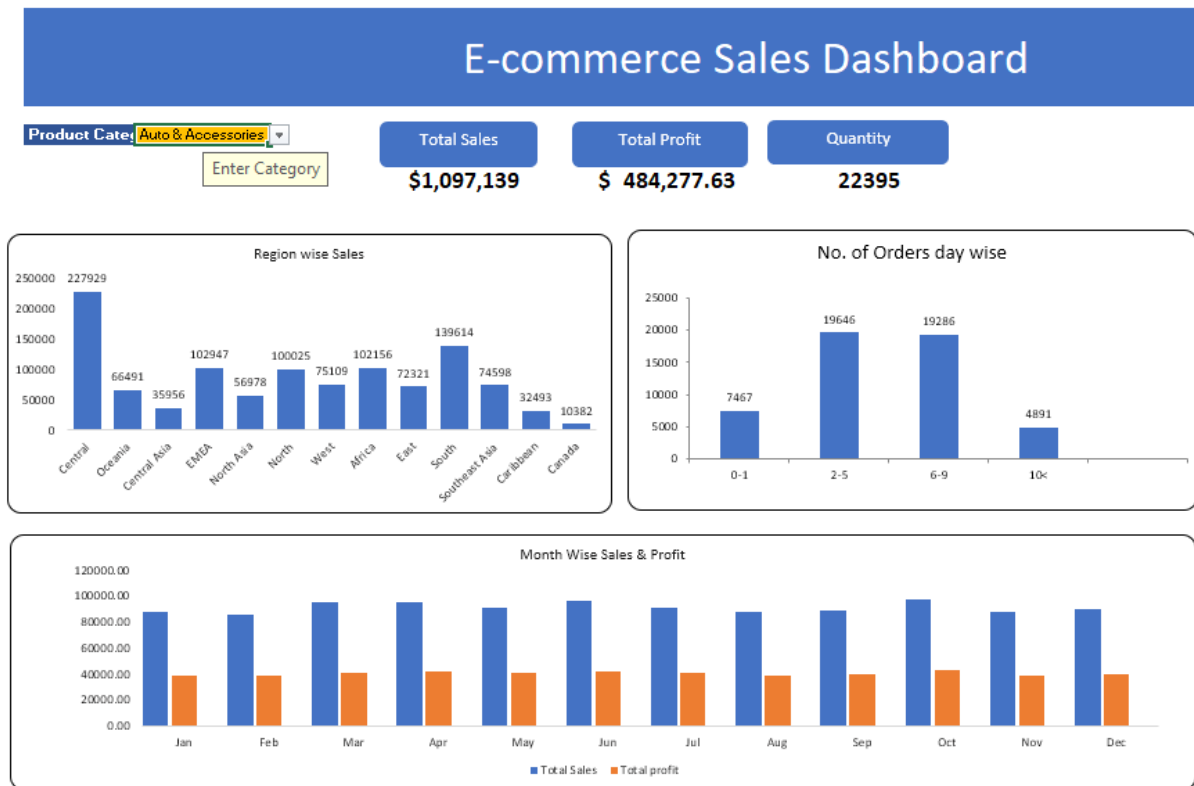
Now, this is our sales Dashboard, we have applied some color in the interior of cells and data series to format it.

**Created as per requirements meticulously designed and it matches with the sample output**

## 5.6 Deployment:

Created Dashboard As shown Below:

For Auto & Accessories: -



## Electronics:

## E-commerce Sales Dashboard

Product Category: **Electronic**

Enter Category

Total Sales

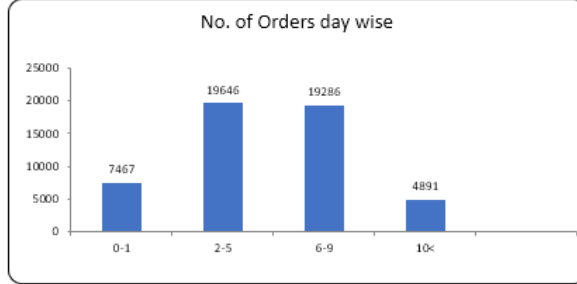
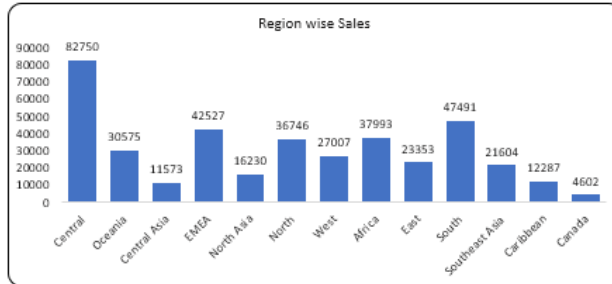
\$394,738

Total Profit

\$ 174,175.04

Quantity

8211



## For Fashion: -

## E-commerce Sales Dashboard

Product Category: **Fashion**

Total Sales

\$5,212,097

Total Profit

\$ 2,483,852.63

Quantity

92071

