

Low Level Design (LLD)

Amazon Sales Data Analysis

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1. Introduction

1.1 What is Low-Level design document?

The goal of the LDD or Low-level design document (LLDD) is to give the internal logic design of the actual program code for the House Price Prediction dashboard. LDD 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.

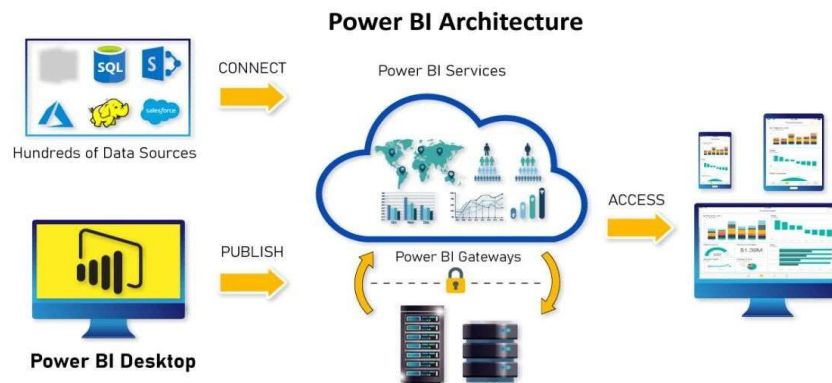
1.2 Scope

Low-level design (LLD) is a component-level design process that follows a step-by-step 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.

2. Architecture

Power BI is a business suite that includes several technologies that work together. To deliver outstanding business intelligence solutions, Microsoft Power BI technology consists of a group of components such as:

- Power Query (for data mash-up and transformation)
- Power BI Desktop (a companion development tool)
- Power BI Mobile (for Android, iOS, Windows phones)
- Power Pivot (for in-memory tabular data modelling)
- Power View (for viewing data visualizations)
- Power Map (for visualizing 3D geo-spatial data)
- Power Q&A (for natural language Q&A)



1. Data Sources

An important component of Power BI is its vast range of data sources. You can import data from files in your system, cloud-based online data sources or connect directly to live connections. If you import from data on-premise or online services there is a limit of 1 GB. Some commonly used data sources in Power BI are:

- Excel
- Text/CSV
- XML • JSON
- Oracle Database
- IBM DB2 Database
- MySQL Database
- PostgreSQL Database
- Sybase Database
- Teradata Database
- SAP HANA Database
- SAP Business Warehouse server
- Amazon Redshift
- Impala 6
- Google Big Query (Beta)
- Azure SQL Database
- Salesforce Reports
- Google Analytics
- Facebook
- GitHub

2.2 Power BI Desktop

Power BI Desktop is a client-side tool known as a companion development and authoring tool. This desktop-based software is loaded with tools and functionalities to connect to data sources, transform data, data modelling and creating reports.

2.3. Power BI Service

Power BI Service is a web-based platform from where you can share reports made on Power BI Desktop, collaborate with other users, and create dashboards. It is available in three versions:

- Free version
- Pro version
- Premium version
- Power BI Service is also known as, “Power BI.com”, “Power BI Workspace”, “Power BI Site” and “Power BI Web Portal”.

This component also offers advanced features like natural language Q&A and alerts.

2.4. Power BI Report Server

The Power BI Report Server is similar to the Power BI Service. The only difference between these two is that Power BI Report Server is an on-premise platform. It is used by organizations who do not want to publish their reports on the cloud and are concerned about the security of their data. Power BI Report Server enables you to create dashboards and share your reports with other users following proper security protocols. To use this service, you need to have a Power BI Premium license.

2.5. Power BI Gateway

This component is used to connect and access on-premise data in secured networks. Power BI Gateways are generally used in organizations where data is kept in security and watch. Gateways help to extract out such data through secure channels to Power BI platforms for analysis and reporting.

2.6. Power BI Mobile

Power BI Mobile is a native Power BI application that runs on iOS, Android, and Windows mobile devices. For viewing reports and dashboards, these applications are used.

2.7 Power BI Embedded

Power BI Embedded offers APIs which are used to embed visuals into custom applications.



3. ARCHITECTURE DESCRIPTION

3.1 Data Description

The dataset contains three tables' Sales, People and Returns data of Amazon for the year 2012, 2013, 2014, 2015

Amazon Sales Data Features

1. Customer ID – It is the unique id that defines the customer
2. Customer name – It provides the name of the customer
3. Segment – It provides the information regarding in which segment the product belongs to.
4. Postal Code – It is the postal code of the customer where the order has to be shipped.
5. City – It provides the name of the city where the product has to be dispatched.
6. State - It provides the name of the state where the product has to be dispatched.
7. Country - It provides the name of the country where the product has to be dispatched.
8. Region - It provides the name of the Region where the product has to be dispatched.
9. Market - It provides the name of the Market where the product has to be dispatched.
10. Product Id - It is the unique id that defines the product.
11. Category – It is the name of the category from which product belong.
12. Sub-Category - It is the name of the sub-category from which product belong.
13. Product Name – It is the name of the product which is sold by Amazon.
14. Sales - It is the price at which Item is Sold.
15. Quantity - It is the quantity of the ordered item.
16. Discount – It is the difference between Sales amount based on list price and Sales amount.
17. Profit – It is the difference between the selling price and cost price.
18. Shipping Cost – It is the amount paid by the seller for shipping the product to the customer
19. Order Priority – It the preference given by the customer if the delivery of the product should be early or not.

Return Details Data Features

1. Returned – It give the information whether the product is returned to seller or not by the customer
2. Order ID – It is the unique id associated to the customer regarding their order.
3. Region - It provides the name of the Region where the product has to be dispatched.

People Data Features

1. People – Name of the customer
2. Region – It gives the name of the region from where the customer belongs.

3.2 Data Loading

Step 1: - Open Power BI Desktop Application

Step 2: - Click on Get Data >> Click on excel

Step 3: - Browse to the data file on your system and select

Step 4: - Once Data is loaded click on Transform data in the bottom for further transformation.

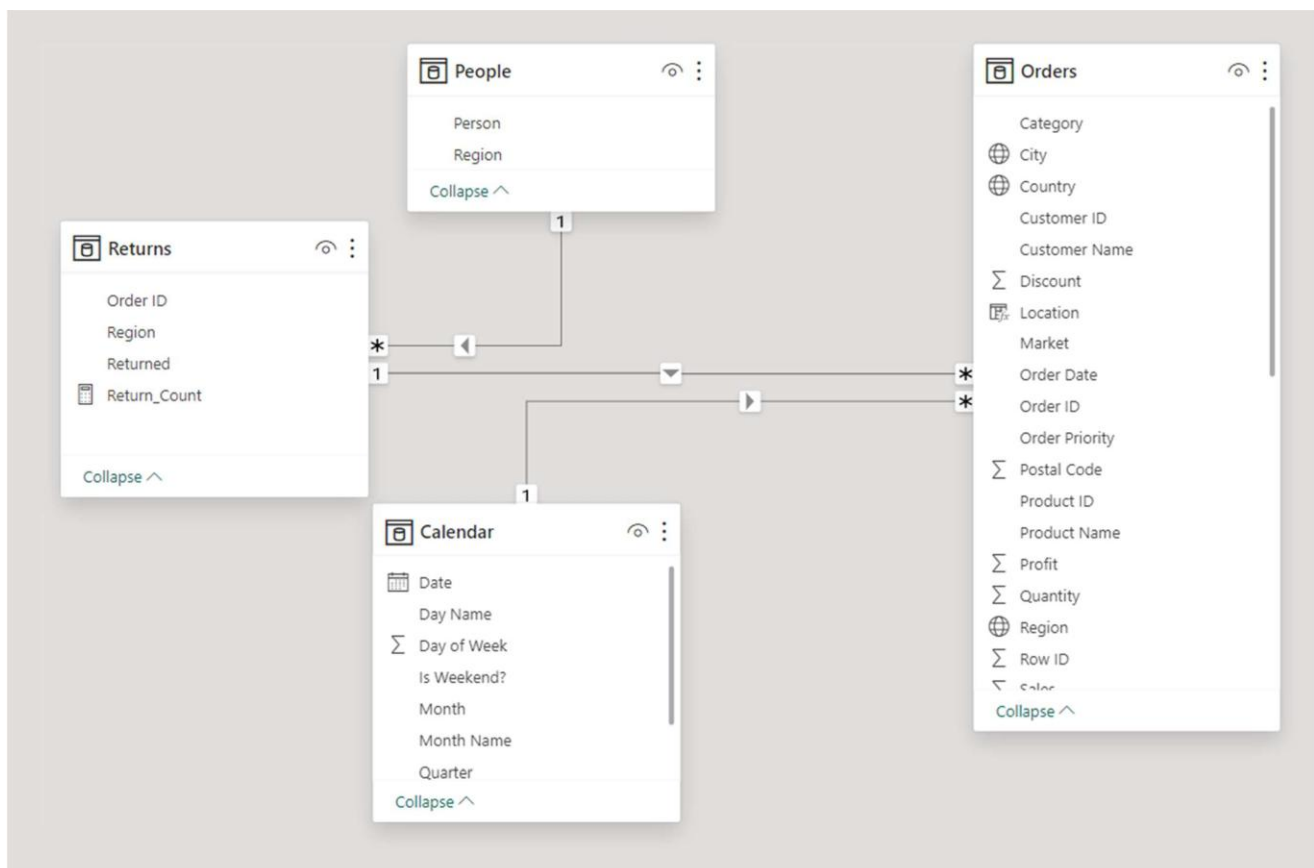
3.3 Data Transformation

In the Transformation Process, we will convert our original datasets with other necessary attributes format and change the features according to the problem statement on Power BI ETL tool Power Query as the data is in excel format. A new **Calendar table** created for easy time intelligence analysis the features are:

1. Day of Week
2. Month name
3. Year
4. Year quarter
5. Month
6. Date

3.3 Data Modelling

After the data is transformed the data is modelled for visualizing and analysis.



3.4 DEPLOYMENT:

After completing Dashboard Follow the Steps to deploy the report

Step 1: - Click on Publish on the ribbon.

Step 2: - A box will pop just click on my workplace and select

Step 3: - Now your report is published just click on open to check your report.

Step 4: - Report is published now explore your report



4. UNIT TEST CASES

Test Case	Description
Slicer of Country, region, state, market, segment, month	Slicer Shows a dropdown
Top 10 sub-category chart	Chart show top 10 sub-category & it works
Charts	All chart showing 0 error.
Tooltip	Tooltip on various pages working properly.
Page Buttons	Page Buttons working properly.