Low Level Design
Amazon Sales Data Analysis

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Contents

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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 modeling)
- Power View (for viewing data visualizations)
- Power Map (for visualizing 3D geo-spatial data)
- Power Q&A (for natural language Q&A)

Power BI Architecture
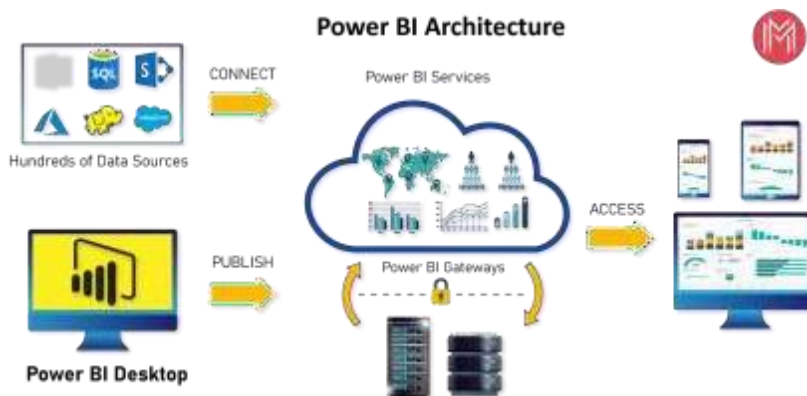
1. Data Sources

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
- Google BigQuery (Beta)
- Azure SQL Database
- Salesforce Reports
- Google Analytics
- Facebook
- GitHub

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.

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*.

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.

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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.

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.

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.

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 tables Customer and Sales data of Amazon for the year 2017,2018,2019

Amazon Sales Data Features

1. **Custkey** – It is a Unique Id used to define a customer.
2. **Datekey** – It is the date on which transaction took place.
3. **Discount amount modified**– It is the difference between Sales amount based on list price and Sales amount.
4. **Invoice Date** – It is the date on Which the Ordered delivered and invoice created.
5. **Invoice Number** – It is a Unique number generated by the system after making of invoice
6. **Item Class** – It is the class of the Item.
7. **Item Number** – It is a Unique number used to define an item.
8. **Item** – It is the name of the item for which transaction took place.
9. **Line Number** – It is the number of line from which it is ordered.
10. **List Price** – It is the price quoted by the manufacturer.
11. **Order Number** – It is the Unique Number for the particular order.
12. **Promised delivery date** – It is the date provided on which delivery is expected.
13. **Sales Amount** – It is the Product of Sales Price and Quantity.
14. **Sales amount based on List Price** – It is the product of List price and Quantity.
15. **Sales Cost amount** – It is the amount caused for making sales of the item.
16. **Sales Margin amount** - It is the difference between Sales amount and Sales cost amount.
17. **Sales Price** – It is the price at which Item is Sold.
18. **Sales Quantity** – It is the quantity of the ordered item.
19. **Sales Rep**. – It is the unique number or Id of the sales representative.
20. **U/M** – It Is the Unit of measurement for particular item.

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Customers Features

1. **Address Number**– It is a Unique Id used to define a customer.
2. **Business Family**– It is the date on which transaction took place.
3. **Customer**– It is the difference between Sales amount based on list price and Sales amount.
4. **Customer Number**– It is the date on Which the Ordered delivered and invoice created.
5. **Customer Type** – It is a Unique number generated by the system after making of invoice
6. **Phone**– It is the class of the Item.
7. **Region Code**– It is a Unique number used to define an item.
8. **Division**– It is the name of the item for which transaction took place.
9. **Regional Sales Mgr**– It is the number of line from which it is ordered.

100 Sales Records Features

1. **Country**– It is a Unique Id used to define a customer.
2. **Item type**– It is the date on which transaction took place.
3. **Order Id**– It is the difference between Sales amount based on list price and Sales amount.
4. Region– It is the date on Which the Ordered delivered and invoice created.
5. **Sales channel** – It is a Unique number generated by the system after making of invoice
6. **Order priority**– It is the class of the Item.

Products Features

1. **Product_category**– It is a Unique Id used to define a customer.
2. **Product line**– It is the date on which transaction took place.
3. **Value-**

Region Features

1. **Region code**– It is a Unique Id used to define a customer.
2. **Region Name**– It is the date on which transaction took place.

Division Features

1. **Division**– It is a Unique Id used to define a customer.
2. **Division Name** – It is the date on which transaction took place.

Currency Table Features

1. **Code**– It is a Unique Id used to define a customer.
2. **Countries** – It is the date on which transaction took place.
3. **Currency –** medium of exchange of money for different countries
4. **Exchange rate USD –** price that USD currency can be exchanged for another currency

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Quarterly sales Features

1. **Month**– It is a Unique Id used to define a customer.
2. **SalesVolume** – It is the date on which transaction took place.

Forecasted sales Features

1. **actual**– It is a Unique Id used to define a customer.
2. **forecast**– It is the date on which transaction took place.

3.2 Data Loading

Step 1: - Open Power BI Desktop Application

Step 2: - Click on Get Data → Click on excel
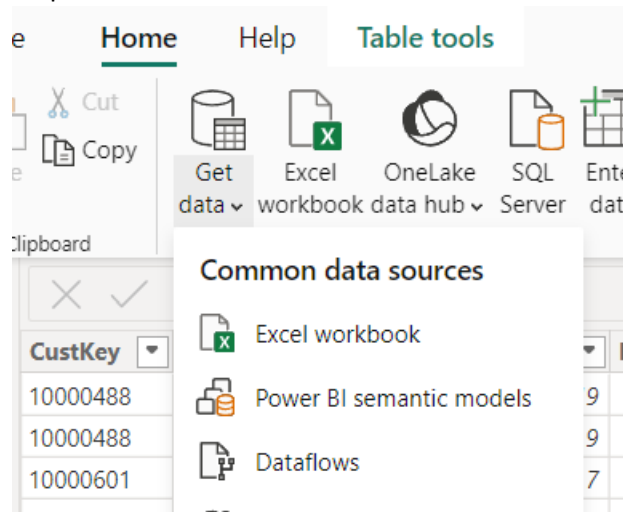
Step 3: - Browse to the data file on your system and select

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 Dim_ date 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.

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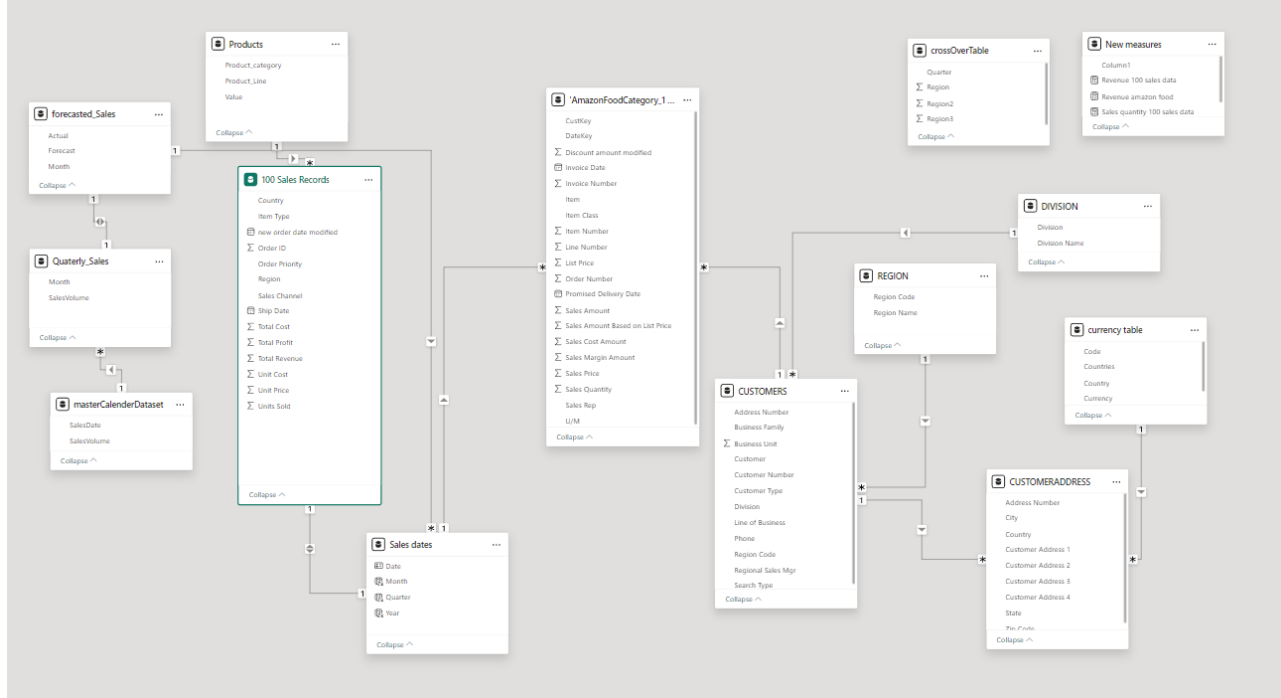
3.4 DEPLOYMENT:

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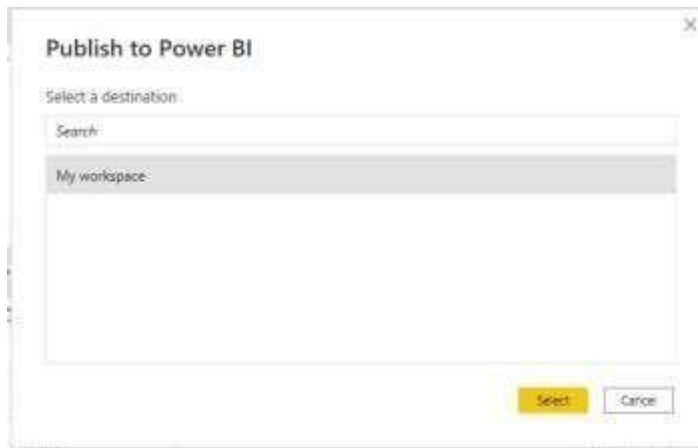
Step 3:- Now your report is published just click on open to check your report.

Step4:- Report is published, now explore the report

Amazon food sales key insights report

$18.43M
Revenue amazon food

3M
sales quantity amazon food

Revenue amazon food by Country

$18.43M (20%)	$18.43M (20%)
$18.43... (20%)	$18.43... (20%)
$18.43M (20%)	

Country
- AU
- CA
- IR
- UK
- US

Revenue amazon food by Quarter
Q1, Q2, Q3, Q4

Year, Month
- Select all
- 2017
- 2018
- 2019

Top 10 customers by Revenue

Country: AU CA IR UK US

| Customer	Revenue amazon food
Vanstars	$0.8M $0.8M $0.8M $0.8M $0.8M $3.97M
Kerite Company	$0.8M $0.8M $0.8M $0.8M $0.8M $3.84M
Taligent Midstore	$1.66M
Fokas Midstore	$1.61M
Salias Gigaplace	$1.58M
Fills	$1.52M
NBX Stores	$1.43M
ActionWorld Shop	$1.17M

Top 10 items by Revenue

Country: AU CA IR UK US

Item	Revenue amazon food
Better Fancy Canned Sardines	$1.3M $1.3M $1.3M $1.3M $1.3M $6.32M
Red Spade Foot-Long Hot Dogs	$4.69M
Discover Manicotti	$3.83M
Ebony Prepared Salad	$3.62M
Imagine Popsicles	$3.47M
Atomic Mint Chocolate Bar	$2.89M
Red Spade Turkey Hot Dogs	$2.70M
Moms Sliced Turkey	$2.44M

Amazon food sales market anaysis

sales quantity amazon food by Customer and Country

Country: AU CA IR UK US

Customer	sales quantity amazon food
Talarians	2M
PageWave Me...	2M
Xilinix Midstore	3M
Matradi Mega...	1M
Target Gigstore	1M
Userland Maxi...	1M
Acer Supersto...	1M

sales quantity amazon food by Region Name

Region ...
- Intern...

sales quantity amazon food by Division Name

Division ...
- Intern...
- Dome...

Year, Month
- Select all
- 2017
- 2018
- 2019

sales quantity amazon food by State

Sum of Sales Quantity by Region Name