

Low Level Design

Air BNB Data Analysis

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Document Version	0.3
Last Revised Date	14-09-2024

DOCUMENT CONTROL

Change Record:

VERSION	DATE	AUTHOR	COMMENTS
0.1	10- Sept - 2024	Mayank Yadav	Introduction and architecture defined
0.2	11 -Sept - 2024	Nitish Kr Dash	Architecture & Architecture description appended and updated.

Reviews:

VERSION	DATE	REVIEWER	COMMENTS
0.2	13- Sept - 2024	Mayank Yadav	Unit test cases to be added

Approval Status:

VERSION	REVIEW DATE	REVIEWED BY		APPROVED BY	COMMENTS

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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.

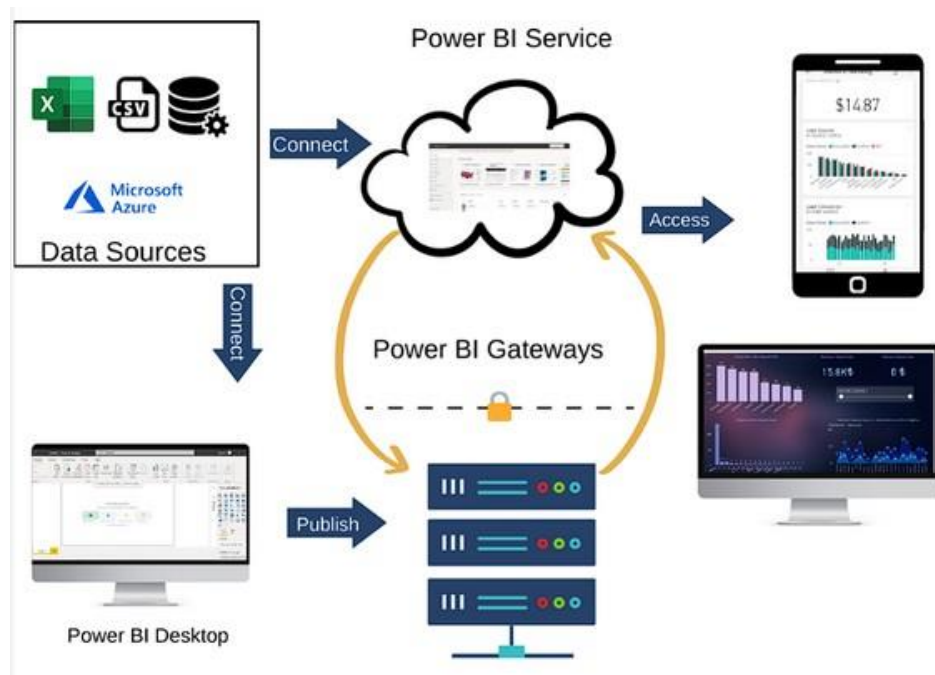
1.2 Scope

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)



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 modeling 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.

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.

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 Data set contains a single table with information on past booking data

- **id** - Airbnb's unique identifier for the listing
 - **name** - Name of the listing
 - **host id** - Airbnb's unique identifier for the host **host_identity_verified**
 - - Host Identity **host name** - Name of the host. Usually just the first name(s).
 - **neighbourhood group** - neighbourhood group **neighbourhood** - neighbourhood
 - **lat**- Uses the World Geodetic System (WGS84) projection for latitude and longitude.
 - **long**- Uses the World Geodetic System (WGS84) projection for latitude and longitude.
 - **country**- country **country code**- country code
 - **instant bookable**- Whether the guest can automatically book the listing without the host requiring to accept their booking request. An indicator of a commercial listing.
 - **cancellation policy**- cancellation policy
 - **room type**- Airbnb hosts can list entire homes/apartments, private, shared rooms, and more recently hotel rooms. Depending on the room type and activity, a residential airbnb listing could be more like a hotel, disruptive for neighbours, taking away housing, and illegal. **Construction year**- Year built of property **price**- How much does a room cost per night
 - **service fee**- service fee
 - **minimum nights**- minimum number of night stay for the listing **number of reviews**- The number of reviews the listing has **last review**- The date of the last/newest review
 - **reviews per month** **review rate**
 - **number**-
 - **calculated host listings count**-calculated host listings count **availability 365**-The availability of the listing x days in the future as determined by the calendar.
 - **license**-The licence/permit/registration number **house_rules**
- 3. Browse to the data file on your system and select**
- **4.Once Data is loaded click on Transform data in the bottom for further transformation.**

airbnb prices.csv

File Origin: 65001: Unicode (UTF-8) | Delimiter: Comma | Data Type Detection: Based on first 200 rows

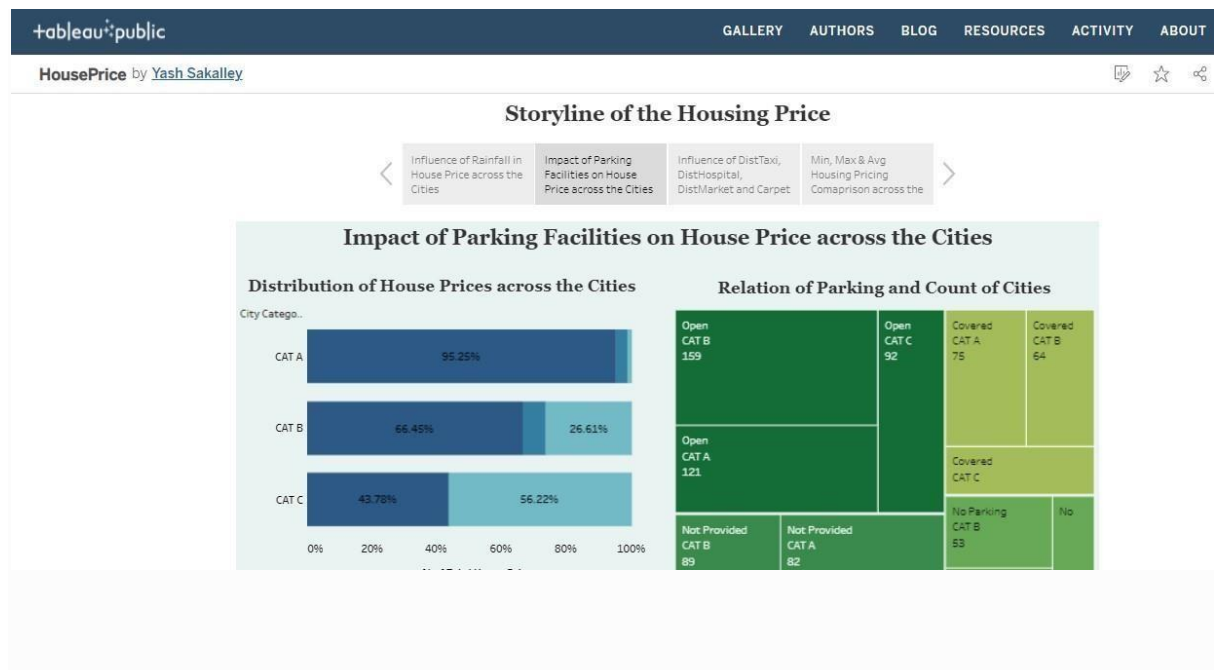
room_id	survey_id	host_id	room_type	country	city	borough	neighborhood	reviews
10176931	1476	49180562	Shared room		Amsterdam		De Pijp / Rivierenbuurt	
8935871	1476	46718394	Shared room		Amsterdam		Centrum West	
14011697	1476	10346595	Shared room		Amsterdam		Watergraafsmeer	
6137978	1476	8685430	Shared room		Amsterdam		Centrum West	
18630616	1476	70191803	Shared room		Amsterdam		De Baarsjes / Oud West	
5790170	1476	29968916	Shared room		Amsterdam		De Pijp / Rivierenbuurt	
934060	1476	5037506	Shared room		Amsterdam		Oostelijk Havengebied / Indische Buurt	
19590049	1476	132687356	Shared room		Amsterdam		Westerpark	

Buttons: Extract Table Using Examples, Load, Transform Data, Cancel

3.2. 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 csv format.

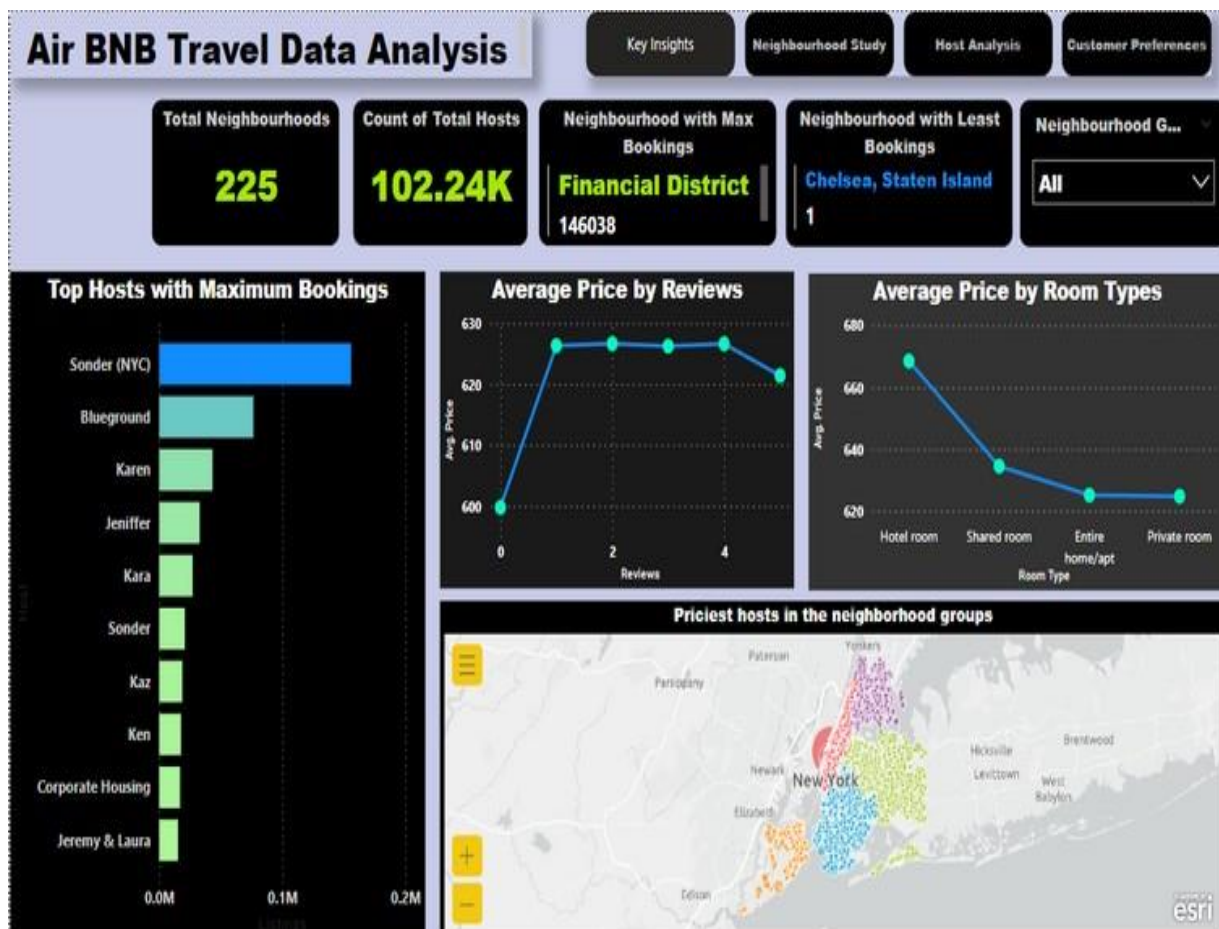
Along with which, we will be doing some data cleaning. Removing errors and treat missing values and so on.



3.3. Deployment

After creating the Dashboard in Power View, to deploy the report ;

1. Click on Publish on the ribbon, to publish the report
2. A pop up will show up, where we just click on my workplace and select
Now your report has been published.



4. Unit Test Cases

Page Buttons	Page buttons working properly
Charts	All charts show 0 error
Tooltips	Tooltips on all charts show required information
Slicer of Neighbourhood Groups	Slicer of Neighbourhood groups works properly