Low Level Design

WINE DATA ANALYSIS

Written By	Devendra Kandpal
Document Version	0.1
Last Revised Date	

DOCUMENT CONTROL

Change Record:

VERSION	DATE	AUTHOR	COMMENTS
0.1	27- Jan - 2023	Devendra Kandpal	Introduction and architecture defined

Reviews:

VERSION	DATE	REVIEWER	COMMENTS
0.1	27- Jan - 2023	Devendra Kandpal	Unit test cases added

Approval Status:

VERSION	REVIEW DATE	REVIEWED BY		APPROVED BY	COMMENTS

Contents

1. Introduction

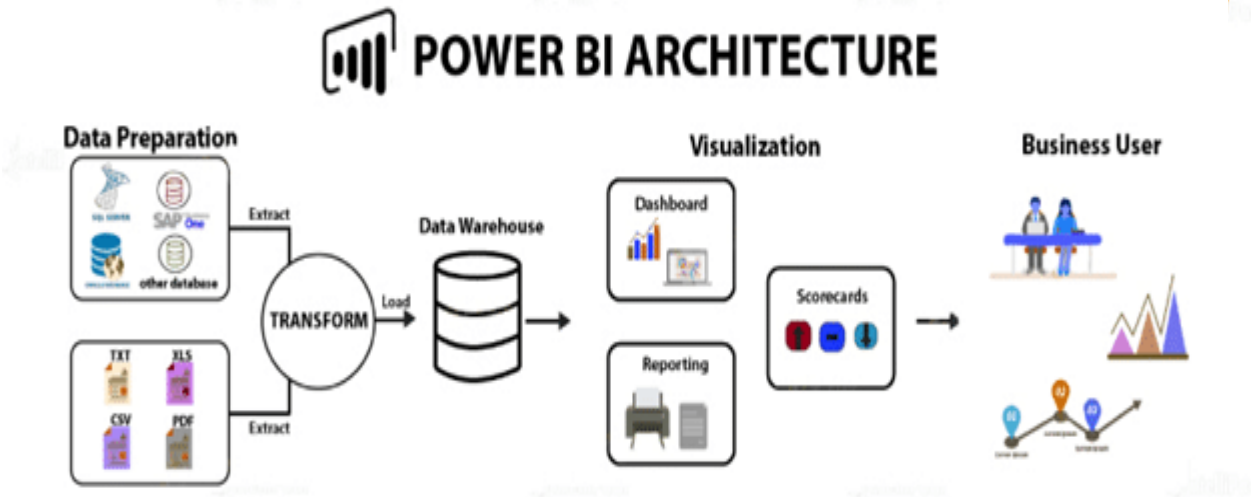
1.1 What is Low-Level design document?

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 Wine Data Analysis 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 Architecture

MS Power BI architecture consists of four major steps that explain the whole process from data sourcing to the creation of reports and dashboards. Various technologies and processes work together to get the required results with extreme precision.

- **Sourcing data:** Power BI extracts data from various servers, Excel sheets, CSV files, and databases. The extracted information can be directly imported to Power BI, or a live service link is established to receive it. If you directly import the data in Power BI, it will only be compressed up to 1 GB. Post that, you can only run live queries on your chunky datasets.
- **Transforming the data**: Before visualizing the data, cleaning and pre processing it should be done. This means removing useless or missing values from rows or columns. Following that, certain rules will be applied to transform and load the datasets into the warehouse.
- **Report and publish:** After cleaning and transforming the data, reports will be created based on requirements. A report is a visualization of the data with different filters and constraints presented in the form of graphs, pie charts, and other figures.
- **Creating dashboards:** Power BI Dashboards are created by pinning individual elements or pages of live reports. Dashboards should be created after you have published your reports to the BI service. When the reports get saved, the visual maintains the filter settings chosen so that the user can apply filters and slicers.

Power BI Service Architecture

The Front-end Cluster

The front-end cluster acts as a medium between the client and the on-cloud servers in the Power BI data flow diagram. After the initial connection and authentication using Azure Active Directory, the client can interact with the datasets located across the globe.

The Back-end Cluster

The back-end cluster manages datasets, storage, reports, visualizations, data connections, data refreshing, and other services in Power BI. At the cluster, web clients have only two points to interact with the information, i.e., Azure API Management and Gateway Role. These components are responsible for authorizing, routing, authentication, load balancing, etc.

Now that you know about the Power BI architecture and its works, let’s discuss the Power BI dashboard and its unique features of Power BI.

Power BI Dashboard

Power BI dashboard is a single-page visualization generated from different reports based on your datasets. In other words, it is a canvas that brings different elements representing multiple datasets together. A report can be of multiple pages, but a dashboard will only be of a single page.

Data visualizations attached to a BI dashboard are called tiles. You can alter these tiles by adding or removing some of them as per requirements

3. Architecture Description

3.1. Data Description

The dataset contain data about the wine and like which country produce wine, in which provinces they produce, whats the price and what is the rating/quality of wine out of 100.

1. Countrys: Country that produces wine.

2. Points/Ratings: Tells us that how much points people have given to the wine out of 100 .

3. Price:Tells us about the price of wine in a different country. Same wine may cost different in different country.

4. Provinces: Provinces that produce wine in their respect provinces.

5. Region 1 and Region 2:Thia ia the region inside the province which produces wine.

6. Variety: This gives the names of different variety produce by the winery.

7.Winery :This is the actual plavce where the wine prepare. Countries or Province have one or many winery.

3.2. Data Transformation

In the Transformation Process, we will convert our original datasets with other necessary attributes format. In this all the null and errored value have been replaced with the correct value as it have connection to the numeric data.

4. Unit Test Cases

TEST CASE DESCRIPTION	EXPECTED RESULTS
Country Side Bar graph	When clicked on bar of the country, all the data that is present in the report will get updated.
Matrix of the province	When we click on the particular provience then all the graph get autometically updated accordingly
Product Rating	This table give us the information about the Variety of wine, their price and the rating according to the country and proviences. .
Card and Map	Map gives the geographical location of the country and provinces where as the card gives the information about the revenue earned by the country and province by selling wine. Card also tell us about the most loved winery of the country and provience.