

# Low Level Design

Analyze International Debt Statistics

Written By	Shubham Ghadage
Document Version	1.0
Last Revised Date	

## Document Control

### Change Record:

Version	Date	Author	Comments
1.0	1-Feb-2022	Shubham	First LLD created

--	--	--	--

Reviews:

Version	Date	Reviewer	Comments

Approval Status:

Versions	Review Date	Reviewed By	Approved By	Comments

## Contents

1. Introduction
  - 1.1 What is Low-Level Design Document ?
  - 1.2 Scope
2. Architecture
3. Architecture Description
  - 3.1 Data Description
  - 3.2 Connection with Mysql server
  - 3.3 Data Insertion into Database
  - 3.4 Data Transformation
  - 3.5 Data insertion into Tablau
  - 3.6 Data Visualization
4. Unit Test Cases

## 1 Introduction

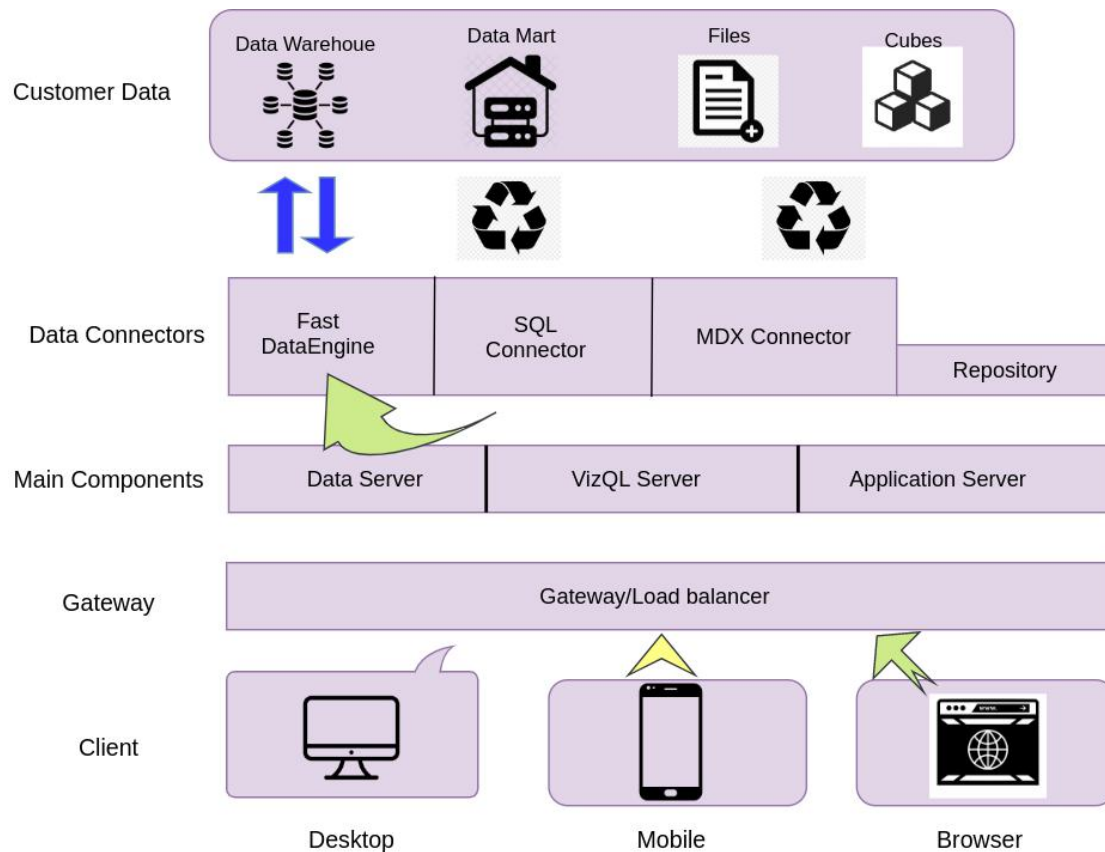
### 1.1 What is Low -Level Design document ?

The goal of the LDD or Low - Level Design document is to give the internal logic design of the actual plan of action for the Analyze International Debt Statistics. LDD describes the data transformation and data cleaning with data visualization for the required end goal. It describes the overall plan of actions and steps in the project.

### 1.2 Scope

Low Level Design (LLD) is a component level design process that follows a step by step refinement process. The process used for required data cleaning, data visualization techniques, data transformation techniques , performance optimization, report generation, dashboard publications etc. Overall , the data organization may be defined during requirement analysis and then refined during data design work.

## 2. Architecture



## Tableau Server Architecture

Tableau has a highly scalable, n-tier client-server architecture that serves mobile clients, web

clients and desktop-installed software. Tableau Server architecture supports fast and flexible

deployments.

The following diagram shows Tableau Server's architecture:

## Tableau Communication Flow

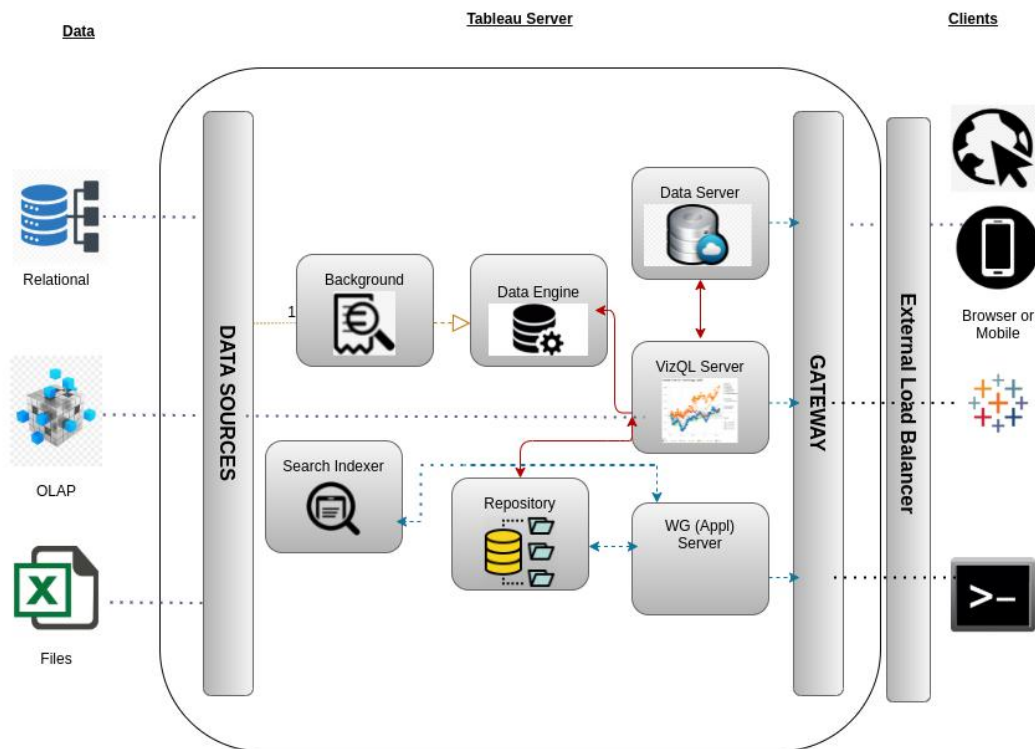


Tableau Server is internally managed by the multiple server processes.

### 1. Gateway/Load Balancer

It acts as an Entry gate to the Tableau Server and also balances the load to the Server if multiple

Processes are configured.

### 2) Application Server:-

Application Server processes (wgserver.exe) handle browsing and permissions for the Tableau

Server web and mobile interfaces. When a user opens a view in a client device, that user starts a

session on Tableau Server. This means that an Application Server thread starts and checks the permissions for that user and that view.

### 3) Repository:-

Tableau Server Repository is a PostgreSQL database that stores server data. This data includes information about Tableau Server users, groups and group assignments, permissions, projects, data sources, and extract metadata and refresh information.

### 4) VIZQL Server:-

Once a view is opened, the client sends a request to the VizQL process (vizqlserver.exe). The VizQL process then sends queries directly to the data source, returning a result set that is rendered as images and presented to the user. Each VizQL Server has its own cache that can be shared across multiple users

### 5) Data Engine:-

It Stores data extracts and answers queries.

### 6) Backgrounder:-

The backgrounder Executes server tasks which includes refreshes scheduled extracts, tasks initiated from tabcmd and manages other background tasks.



## 7) Data Server:-

Data Server Manages connections to Tableau Server data sources

It also maintains metadata from Tableau Desktop, such as calculations, definitions, and groups.

## 3. Architecture Description

### 3.1. Data Description

The data set contains data of world bank consist of records of debt of world bank with other countries.

It has following columns.

Country Name - It describes the name of the country.

Country Code - It describes the country code of the country.

Counterpart Area Name - It describes the counterpart area.

Counterpart Area Code - It describes the counter part area code.

Series Name - It describes the name of series

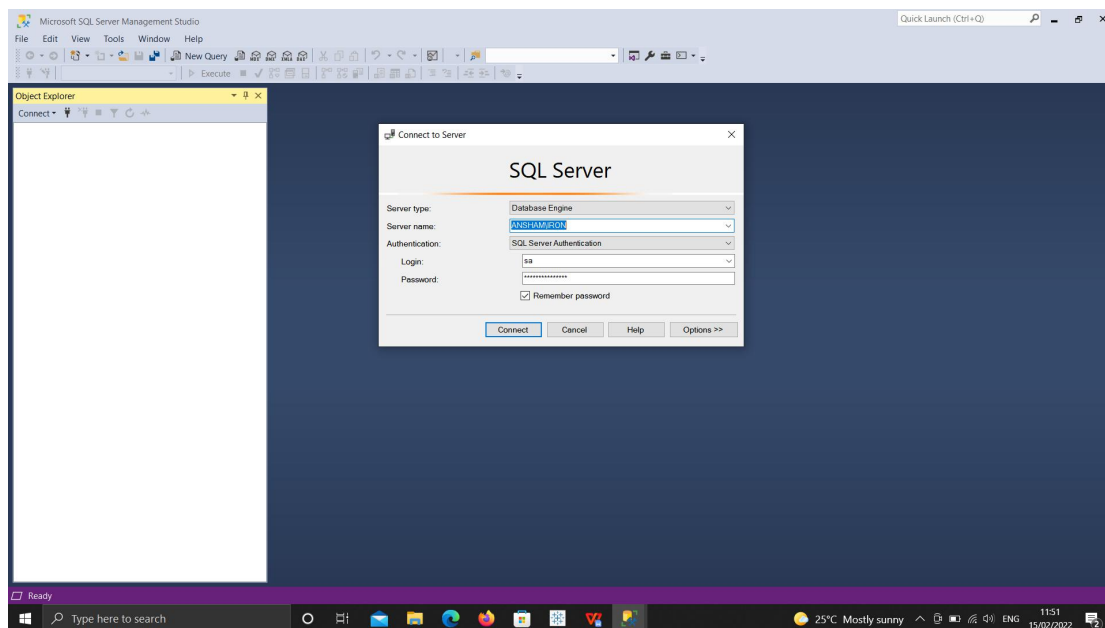
Series code - It describes the code of the series name

Rest are the years in which different countries take loans from world bank

## 3.2 Make the SQL connection and set up the data source

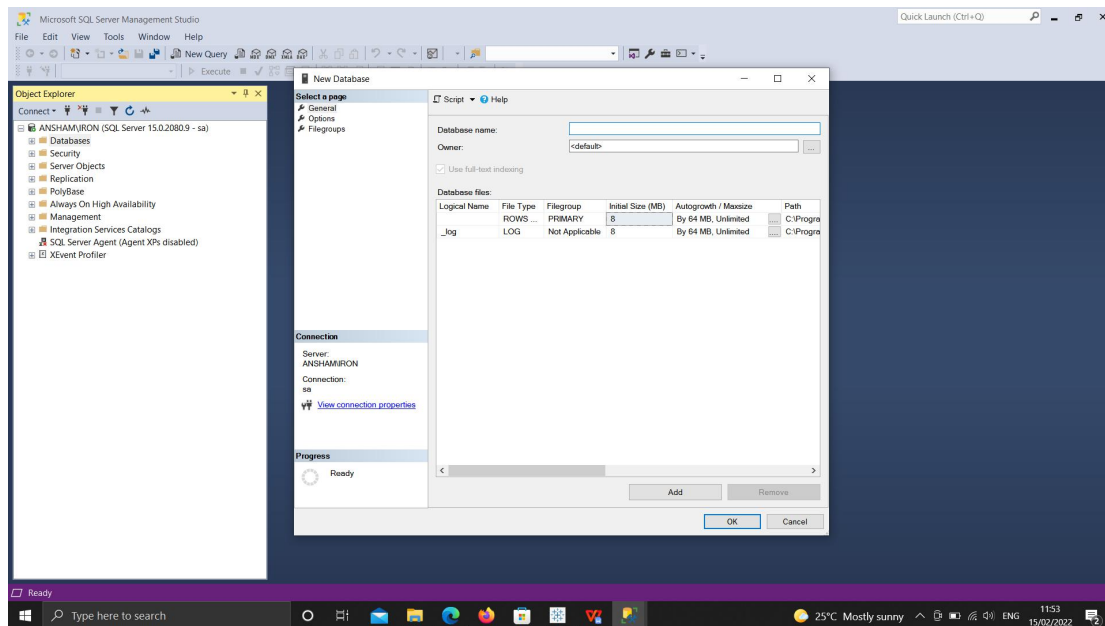
### Step 1

Connecting to the database.



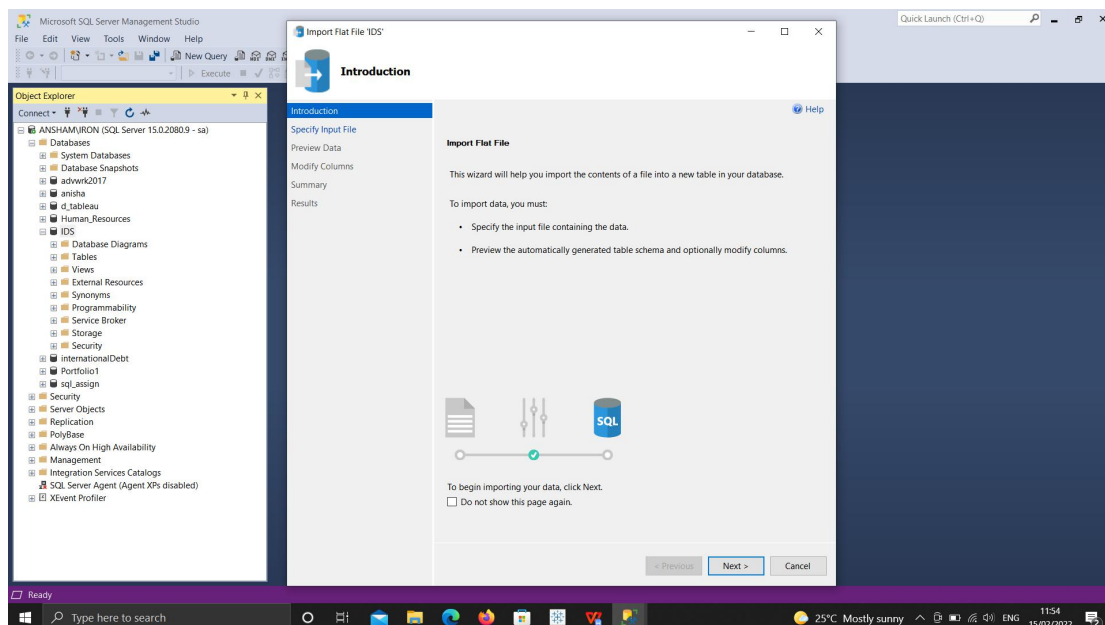
### Step 2

Creating database to store the data files.



## Step 3

Importing the data files into the database.



## 3.3. Data Insertion into Database

- Database Creation and connection - Create a database with name passed. If the database is already created, open the connection to the database.
- Table creation in the database.

c. Insertion of files in the table

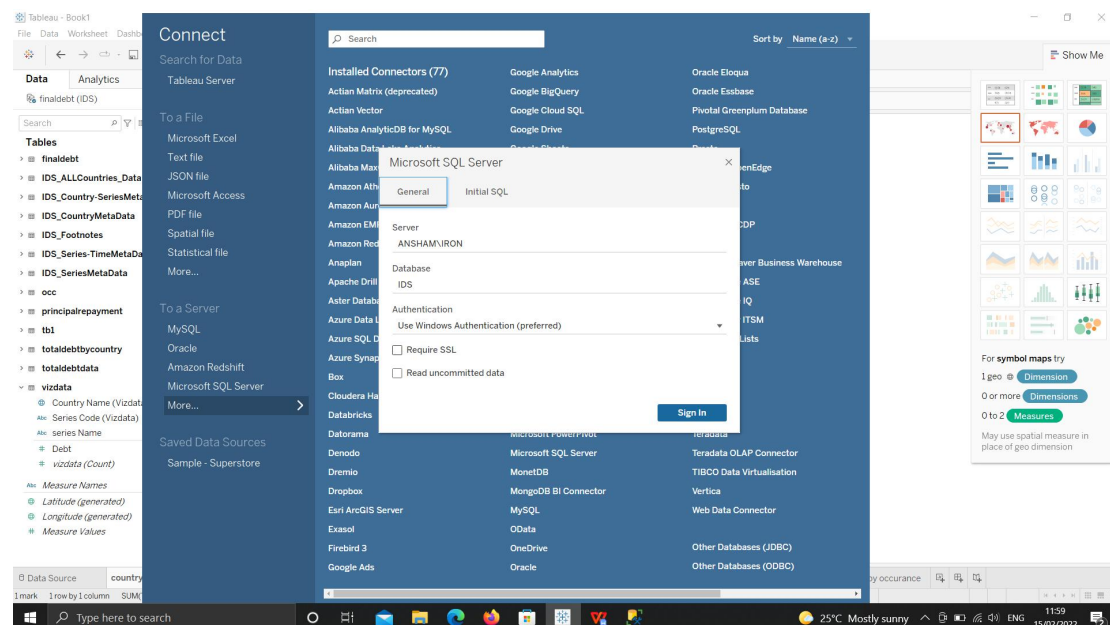
### 3.4. Data Transformation

In the Transformation Process, we will convert our original datasets with other necessary attributes format. And will merge it with the Scrapped dataset.

### 3.5. Export Data from Database

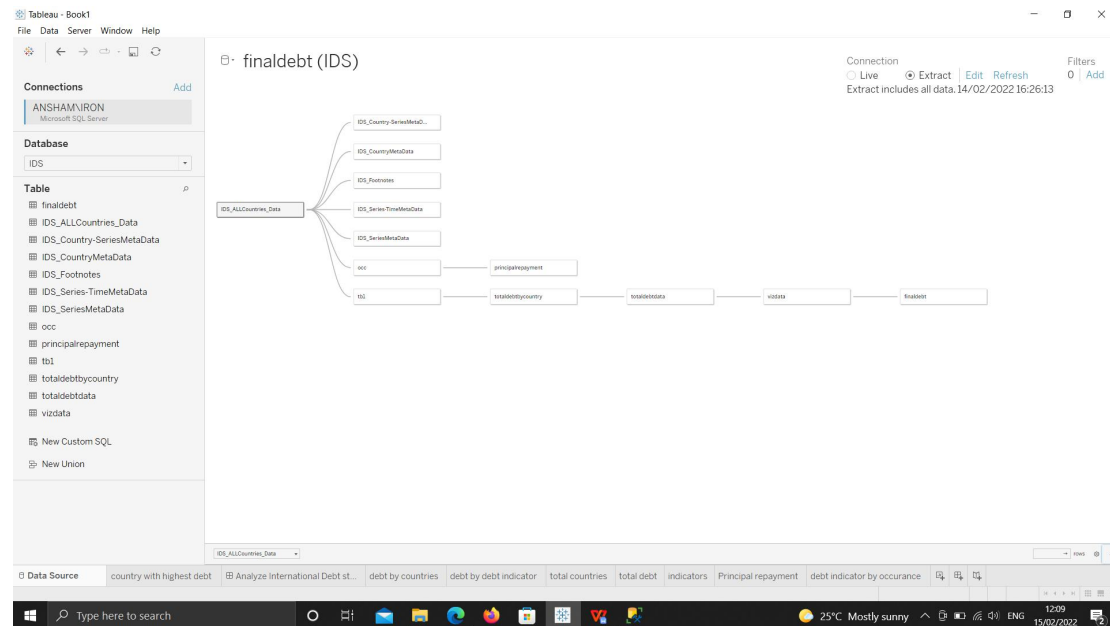
Data Export from Database - The data in a stored database is exported as a datatable file to be used for data visualizations.

### 3.6 Connecting the final data to tableau.



### 3.7 Data visualization

It is done in tableau when final data is inserted into the tableau.



## 4 Unit Test Cases

Test Case Description	Expected Result
Finding number of Distinct countries	The result can be a KPI with card visual .
Finding out Distinct Debt Indicators	It can be a filter of distinct debt indicators.
Total Amount of Debt owed by countries	It can be a bar chart of countries with their total debt amount
Country with highest debt	It can also be a card visual.

Average amount of debt across indicators	It can be a table or a horizontal bar chart visual
Highest amount of principal repayments	It can be a card visual or a pie chart
Most common debt indicators	It can be visualize with the pie chart.
Conclusion	It can be a text box.

