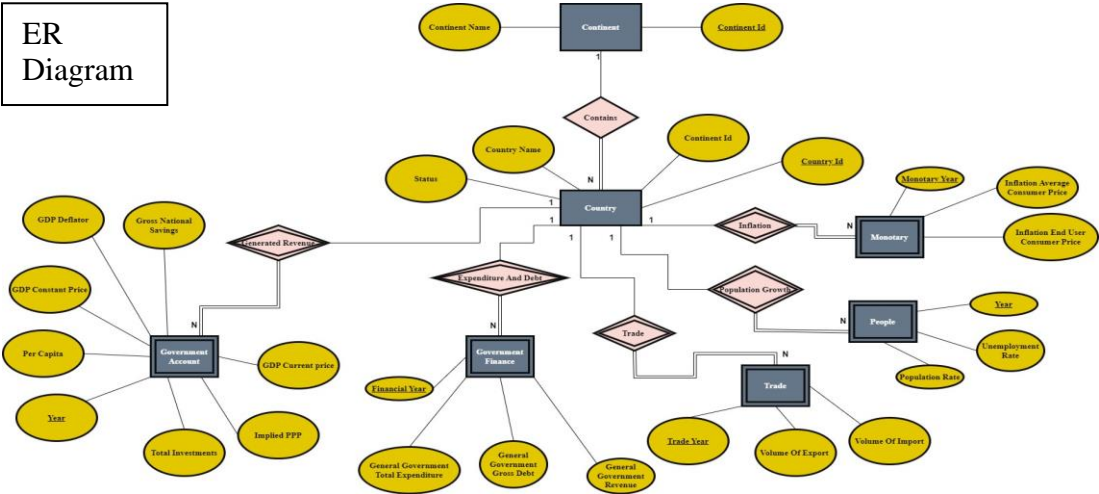


DBMS WORLD ECONOMY PROJECT REPORT .

The world economy database embedded with the interface for CRUD(Create, Read, Update And Delete) operations and other queries which include Nested, Join and Aggregate queries along with Procedures, Triggers and Privileges assignment to new user .With the CRUD and queries during read operation the explanation about what does a particular attribute of a particular entity means is also displayed. Apart from that one can download the data in the form of excel file for any future analysis purpose as it the data is taken from IMF (International Monetary Fund) it is quite accurate.

Streamlit is used for creating frontend and mysql built in library is used for connecting to the mysql database. Pandas library is used for converting the fetched input to dataframe



Continent

Continent_id	Continent_name
--------------	----------------

Country

Country_id	Country_name	Continent_id	status
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Government account

Govt_year	Country_id	GDP constant price(NC)	GDP current price(USD)	GDP, deflator	GDP per capita, current price(USD)	Implied PPP	Total investment	Gross national saving
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Monetary

Monetary_Year	Country_id	Inflation, avg consumer price	Inflation, end of period consumer price
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Trade

Year	Country_id	Volume of imports of goods and services(percent change).	Volume of exports of goods and services (percent change)
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People

People_Year	Country_id	Unemployment_rate	Population_rate
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Finance_Year	Country_id	Government_revenue(NC)	Gross_debt
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Relational Schema

## DDL SQL COMMANDS

COMMAND FOR Creating Continent Table:

Table	Create Table
Continent	CREATE TABLE `continent` ( `Continent_Id` varchar(10) NOT NULL, `Continent_Name` varchar(50) NOT NULL, PRIMARY KEY (`Continent_Id`)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci

COMMAND FOR Creating Country Table:

Table	Create Table
Country	CREATE TABLE `country` ( `Country_Id` varchar(10) NOT NULL, `Country_Name` varchar(50) NOT NULL, `Status` int NOT NULL, `Continent_Id` varchar(10) NOT NULL, PRIMARY KEY (`Country_Id`), KEY `country_ibfk_1` (`Continent_Id`), CONSTRAINT `coun...

COMMAND FOR Creating Government Account Table:

Table	Create Table
government_account	CREATE TABLE `government_account` ( `Country_Id` varchar(10) NOT NULL, `YEAR` int NOT NULL, `GDP_Constant_Price` decimal(15,4) DEFAULT NULL, `GDP_Current_Price` decimal(15,4) DEFAULT NULL, `GDP_Deflator` decimal(15,4) DEFAULT NULL, `GDP_Per_C...

COMMAND FOR Creating Government Finance Table:

Table	Create Table
government_finance	CREATE TABLE `government_finance` ( `Country_Id` varchar(10) NOT NULL, `Financial_Year` int NOT NULL, `General_Government_Revenue` decimal(15,4) DEFAULT NULL, `General_Government_Total_Expenditure` decimal(15,4) DEFAULT NULL, `General_Governmen...

## COMMAND FOR Creating Monetary Table:

Table	Create Table
monetary	CREATE TABLE `monetary` ( `Country_Id` varchar(10) NOT NULL, `Year` int NOT NULL, `Inflation_Average_Consumer_Price` decimal(20,4) DEFAULT NULL, `Inflation_End_Of_Period_Of_Consumer` decimal(20,4) DEFAULT NULL, PRIMARY KEY (`Country_Id`,`Year`))...

## COMMAND FOR Creating People Table:

Table	Create Table
people	CREATE TABLE `people` ( `Country_Id` varchar(10) NOT NULL, `Year` int NOT NULL, `Unemployment_rate` decimal(15,4) DEFAULT NULL, `Population_rate` decimal(15,4) DEFAULT NULL, PRIMARY KEY (`Year`,`Country_Id`), KEY `people_ibfk_1` (`Country_Id`...

## COMMAND FOR Creating Trade Table:

Table	Create Table
trade	CREATE TABLE `trade` ( `Country_Id` varchar(10) NOT NULL, `Year` int NOT NULL, `Volume_Of_Import_Goods_And_Services` decimal(15,4) DEFAULT NULL, `Volume_Of_Export_Goods_And_Services` decimal(15,4) DEFAULT NULL, PRIMARY KEY (`Year`,`Country_Id`))...

## CRUD OPERATION SCREEN SHOTS

### READ Operation :

#### Continent Table

Continent	
Column Description :	
Continent Id : Unique Id for all Continents	
Continent Name : Names of Continents	
Continent ID	Continent Name
0 AF	SOUTH_AFRICA
1 AS	ASIA
2 AT	AUST
3 EU	EUROPE
4 LAC	LATIN_AMERICA_AND_SOUTH_AMERICA

#### Country Table

Country			
Column Description :			
Country Id : Unique Id for all Countries			
Country Name : Names of Countries			
Status :			
Status = 0 : Developing Country    Status = 1 : Developed Country			
Country ID	Country Name	Status	Continent Id
0 AR	ARGENTINA	0	LAC
1 AT	AUSTR	0	AT
2 BD	Bangladesh	0	AS
3 BG	BULGARIA	0	EU
4 BR	BRAZIL	0	LAC
5 BS	THE BAHAMAS	0	LAC
6 BT	BHUTAN	0	AS
7 BY	BELARUS	0	EU
8 CD	D.R.CONGO	0	AF
9 CL	CHILE	1	LAC

Government Finance Table:

Government Finance

Column Description :

Country Id : Unique Id for all Countries

Year : Year

General Government Revenues(National Currency In Billions)

Government Revenues, often referred to as government revenues, represent the funds collected by a government from various sources to finance its operations and public services.

General Government Total Expenditure(National Currency In Billions) : General Government Total Expenditure, often referred to as government expenditure or public expenditure, represents the total amount of money spent by a government during a specific time period, usually a fiscal year.

General Government Gross Debt(National Currency In Billions) : General Government Gross Debt, commonly referred to as government debt, is the total amount of money that a government owes to creditors, including domestic and foreign lenders, as a result of borrowing to cover budget deficits or finance various expenditures.

	Country ID	Financial Year	General Government Revenues	General Government Total Expenditure	Gen
0	AR	2018	4,940.7	5,742.99	
1	AR	2019	7,261.81	8,220.03	
2	AR	2020	9,198.32	11,558.52	
3	AR	2021	15,506.69	17,509.34	
4	AR	2022	27,580.4	30,784.36	
5	BD	2018	2,344.15	3,417.92	
6	BD	2019	2,403.63	3,999.83	
7	BD	2020	2,684.68	4,219.33	
8	BD	2021	3,304.92	4,577.68	
9	BD	2022	3,470.48	4,998.89	

Monetary Table :

Monetary

Column Description :

Country Id : Unique Id for all Countries

Year : Year

Inflation Average Consumer Price(Index) : Inflation, often measured as the Consumer Price Index (CPI), is an economic indicator that tracks the average change in the prices of a basket of goods and services commonly purchased by a typical consumer over time.

Inflation End Of Period Of Consumer(Index) : "Inflation End of Period of Consumer" is a reference to a specific method of measuring inflation that tracks the change in consumer prices over time by considering price levels at the end of a specified period.

	Country ID	Year	Inflation Average Consumer Price	Inflation End Of Period Of Consumer
0	AR	2018	283.959	345.167
1	AR	2019	436.015	530.979
2	AR	2020	619.207	722.878
3	AR	2021	918.961	1,091.12
4	AR	2022	1,584.57	2,125.43
5	BD	2018	230.243	224.75
6	BD	2019	242.848	237.152
7	BD	2020	256.563	251.43
8	BD	2021	270.822	265.616
9	BD	2022	287.477	285.704

Trade Table :

Trade

Column Description :

Country Id : Unique Id for all Countries

Year : Year

Volume Of Import Goods Of And Services(percent change) : The "Volume of Import Goods and Services (percent change)" is a measure that tracks the percentage change in the volume or Quantity of goods and services imported by a country over a specific period.

Volume Of Export Of Goods And Services(percent change) : The "Volume of Import Goods and Services (percent change)" is a measure that tracks the percentage change in the volume or Quantity of goods and services imported by a country over a specific period.

	Country ID	Year	Volume Of Import Of Goods And Services	Volume Of Export Of Goods And Services
0	AR	2018	-6.107	-0.399
1	BD	2018	19.504	6.322
2	BG	2018	5.763	1.737
3	BR	2018	7.332	3.417
4	BS	2018	-2.789	23.799
5	BT	2018	5.102	7.555
6	BY	2018	5.284	5.917
7	CD	2018	30.517	30.026
8	CL	2018	8.603	4.906
9	CN	2018	7.263	3.991

People Table :

People

Column Description :

Country Id : Unique Id for all Countries

Year : Year

Unemployment Rate : The unemployment rate is a key economic indicator that measures the percentage of the labor force that is unemployed and actively seeking employment.

Population(In Millions) : Total Population in that year

	Country ID	Year	Unemployment Rate	Population
0	AR	2018	9.2	44.495
1	BD	2018	None	161.356
2	BG	2018	5.273	7
3	BR	2018	11.7	208.495
4	BS	2018	10.35	0.377
5	BT	2018	3.4	0.735
6	BY	2018	4.825	9.448
7	CD	2018	None	85.12
8	CL	2018	7.377	18.751
9	CN	2018	3.8	1,405.41

Government Account Table :

Government Account

Column Description :

Country Id : Unique Id for all Countries

Year : Year

GDP Constant Price(National Currency In Billions) : GDP at constant prices" (also known as "Real GDP" or "GDP in constant dollars") is a measure of a country's economic output or Gross Domestic Product (GDP) that has been adjusted for inflation.

GDP Current Price(US Dollars In Billions) : "GDP at current prices" or "Nominal GDP" refers to the Gross Domestic Product (GDP) of a country that is calculated using the current market prices for goods and services produced in a given year

GDP Deflator(Index)

GDP deflator, also known as the GDP price deflator or implicit price deflator, is a measure used to calculate the inflation-adjusted or real GDP by comparing the current market prices of goods and services to a base year.

GDP Per Capita(USD Units)

Domestic Product (GDP) per capita in USD (United States Dollars) is a measure that represents the average income or economic output of each individual in a country

GDP Implied PPP(National Currency / International Dollars) : GDP at implied purchasing power parity (GDP at implied PPP) is a measure of Gross Domestic Product (GDP) that has been adjusted for differences in price levels between countries using the concept of purchasing power parity (PPP)

Total Investments(percent GDP) : Investment percent in GDP

Gross National Savings(percent GDP): Savings percent after investment

	Country Id	Year	GDP Constant Price	GDP Current Price	GDP Deflator	GDP Per Capita	Implied PPP
0	AR	2018	707.377	524.431	2,084.43	11,786.43	14.22%
1	BD	2018	23,745.74	321.379	111.146	163,566.73	30.39%
2	BG	2018	97.421	66.428	112.876	9,489.66	0.68%
3	BR	2018	1,189.65	1,916.93	588.757	9,194.15	2.22%
4	BS	2018	11.144	12.756	114.462	33,876.5	0.89%
5	BT	2018	67.025	2.509	243.871	222,399.93	19.37%
6	BY	2018	122.32	60.011	100	6,351.76	0.66%
7	CD	2018	12,670.75	48.037	615.12	564.342	810.08%
8	CL	2018	189,434.87	295.428	100	15,755	407.99%
9	CN	2018	84,426.81	13,841.81	108.47	65,160.65	4.22%

CREATE Operation

Inserting Into Continent Table

Queries Create Read Update Delete

Continent Country Government Account Government Finance Monetary People Trade

Continent Name

Atlantica

Continent ID

AC

Insert Into Continent

Inserted: Atlantica, AC

After Insertion

Queries Create Read Update Delete

Continent

Column Description :

Continent Id : Unique Id for all Continents

Continent Name : Names of Continents

	Continent ID	Continent Name
0	AC	Atlantica
1	AF	SOUTH_AFRICA
2	AS	ASIA
3	AT	AUST
4	EU	EUROPE
5	LAC	LATIN_AMERICA

## UPDATE Operation

### Updating Continent Id For Previously Inserted Value

Before

The screenshot shows the 'Update' tab selected in the top navigation bar. Below it, the 'Continent' tab is active. The form contains two input fields: 'Updated Continent Name' with the value 'Atlantica' and 'Updated Continent ID' with the value 'AN'. Below these fields are two buttons: 'Update Continent Id' and 'Update Continent Name'. A green feedback message at the bottom states 'Updated Continent: Atlantica, AN'.

After

The screenshot shows the 'Read' tab selected in the top navigation bar. Below it, the 'Continent' tab is active. The form contains a dropdown menu for 'Continent' with a downward arrow. Below this, the 'Column Description' section shows 'Continent Id : Unique Id for all Continents' and 'Continent Name : Names of Continents'. A table displays the updated data:

	Continent ID	Continent Name
0	AF	SOUTH_AFRICA
1	AN	Atlantica
2	AS	ASIA
3	AT	AUST
4	EU	EUROPE
5	LAC	LATIN_AMERICA_

## DELETE Operation

### Deleting newly inserted continent

Deleting

The screenshot shows the 'Delete' tab selected in the top navigation bar. Below it, the 'Continent' tab is active. The form contains a text input field for 'Enter the Continent Id You Want To Delete' with the value 'AN'. Below this field is a button labeled 'Del(Continent Id) : AN'. A green feedback message at the bottom states 'Deleted Successfully'.

After Deletion

The screenshot shows the 'Read' tab selected in the top navigation bar. Below it, the 'Continent' tab is active. The form contains a dropdown menu for 'Continent' with a downward arrow. Below this, the 'Column Description' section shows 'Continent Id : Unique Id for all Continents' and 'Continent Name : Names of Continents'. A table displays the data after deletion:

	Continent ID	Continent Name
0	AF	SOUTH_AFRICA
1	AS	ASIA
2	AT	AUST
3	EU	EUROPE
4	LAC	LATIN_AMERICA_AND_SOUTH_AMERICA

## Functionalities

- 1) Top 5 countries with highest population growth .

```
Syntax : CREATE PROCEDURE GovernmentRevenueExpenditureRatio(IN country_code VARCHAR(10), IN
analysis_year INT) BEGIN SELECT Country_Id, Financial_Year, General_Government_Revenue,
General_Government_Total_Expenditure, (General_Government_Revenue /
General_Government_Total_Expenditure) AS Revenue_Expenditure_Ratio FROM
GOVERNMENT_FINANCE WHERE Country_Id = country_code AND Financial_Year = analysis_year; END ;
```

- 2) Government revenue to government expenditure ratio for a particular country and for a particular year.

```
Syntax : CREATE PROCEDURE GovernmentRevenueExpenditureRatio(IN country_code VARCHAR(10), IN analysis_year INT) BEGIN SELECT Country_Id, Financial_Year, General_Government_Revenue, General_Government_Total_Expenditure, (General_Government_Revenue / General_Government_Total_Expenditure) AS Revenue_Expenditure_Ratio FROM GOVERNMENT_FINANCE WHERE Country_Id = country_code AND Financial_Year = analysis_year; END ;
```

- 3) Calculating average unemployment for a particular country between 2018 to 2022

```
Syntax : CREATE PROCEDURE CalculateAvgUnemploymentRate(IN country_code VARCHAR(10)) BEGIN SELECT Country_Id, AVG(Unemployment_rate) AS Avg_Unemployment_Rate FROM PEOPLE WHERE Country_Id = country_code AND Year BETWEEN 2018 AND 2022 GROUP BY Country_Id; END ;
```

Triggers :

- 1) Trigger when an insertion takes place in government account to store country Id and year with date and time.

```
Syntax : CREATE TRIGGER audit_government_account_insert_trigger AFTER INSERT ON GOVERNMENT_ACCOUNT FOR EACH ROW BEGIN INSERT INTO audit_trail_government (action_type, action_time, country_id, year) VALUES ('INSERT', NOW(), NEW.Country_Id, NEW.YEAR); END;
```

- 2) Trigger when a deletion takes place in continent to store country Id and year with date and time.

```
Syntax : DELIMITER // CREATE TRIGGER audit_continent_delete_trigger AFTER DELETE ON CONTINENT FOR EACH ROW BEGIN INSERT INTO audit_trail_continent (action_type, action_time, continent_id, continent_name) VALUES ('DELETE', NOW(), OLD.Continent_Id, OLD.Continent_Name); END; //DELIMITER ;
```