FINANCIAL ASSET MANAGEMENT

Project Members -

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FINANCIAL ASSET MANAGEMENT

Problem Background

The investment market is immense with plenty of options to invest in! The concern we have identified is that many people invest in various schemes provided by the market like investment in the stock market, mutual funds, emerging market of cryptocurrency, real estates, etc. However, investors lack a singular platform where they can store their data, analyze their investments and prepare for next sets of investments based on the returns. The data is abundant but less exposure to insightful information. With this background on the problem in our mind, we aim to solve it!

Problem Statement

Investors do not have an integrated view of their investments which, if they had, would leverage them to make rapid investment decisions to track their economic growth - present and future.

Proposed Solution

- ☐ To create admin and customers users profiles and give them appropriate database access with **GRANT** query.
- ☐ To create **TABLE** & **VIEW** in the database with income & investment attributes with data segregation via **NORMALISATION** of different investment portfolios of customers such as Investments in Real Estate, Stocks, Mutual Funds,Cryptocurrency etc.
- ☐ To bulk upload the data with the help of **CSV** files in respective tables.
- ☐ Track the investments - whether it is making a profit or going into loss with the help of **SQL** queries, **JOINs** and Functions.
- ☐ To calculate the returns either profit or loss which are the **SQL FUNCTIONS** of all assets on how the investment is performing with respect to the customer expectations.
- ☐ To write the **STORED PROCEDURES** to give continuous on how his investments are performing.

End Result

- ☐ Bringing the investment data of customers in one place.
- ☐ Customer's data is stored in structured format so it is readily accessible and easy to retrieve.
- ☐ Data stored in Oracle cloud which is far more secure and easy to access at an affordable price.
- ☐ It may give investors an idea how investment is performing with respect to their expectations or future goals.

Entity Details

Entity Name	Entity Definition	Entity Linkage
Customer Details	Customer Detail has all the information of the customers who are using the application. Whenever any new customer sign's up on the application - he will be made to choose a unique ID (Customer_ID). Along with all the basic information this table also holds its login information. All attributes in this table are NOT NULL.	In this application, Customer ID is going to play a very important role. It is a Primary Key in this table - and it is used as a foreign key in all the assets tables. Customer ID used as a foreign key in all assets tables establishes a relationship between an Individual and all its assets.
Income Expense Details	Customers will enter all the basic details related to the income, investment and expense details. All the fields in this table are mandatory.	This table is important to know the investment capacity and it will help to calculate the overall profit report.
Feedback	Feedback will play an imperative role when it comes to improving our database function. We aim to achieve this by taking routined check in with the customer via Feedback Table. It has a rating feature as well which will determine on a particular scale how much we are being optimal to our users and keep improving on the same.	The Feedback table has Feedback_ID as a primary key. Here, we have linked it with the customer table, for us to get a proper view of each customer attribute, by keeping Customer_ID as a foreing key.
Stock Portfolio Details	The Stock Portfolio table will hold the information about the customer's investments in stocks. It has Customer ID as a foreign key which establishes a relation with the customer table.	Here,Stock_Portfolio_ID which is the unique key of this table will be used as a foreign key in the Stock Investment Details table. It will be used to establish a relationship between these two tables.
Stock Investment Details	The Stock Investment Details table holds the information of all the unique stocks held by the customer. This table has Stock_Portfolio_ID as a foreign key which will establish a relationship with the Stock Portfolio Details.	This table can be used to access information about all the stocks held by an Individual by performing various queries.

Mutual Funds Portfolio Details	The MutualFunds Portfolio table will hold the information about the customer's investments in mutual funds. It has Customer ID as a foreign key which establishes a relation with the customer table.	Here,Mutual_Portfolio_ID which is the unique key of this table will be used as a foreign key in the Mutual Funds Investment Details table. It will be used to establish a relationship between these two tables.
Mutual Funds Investment Details	The Mutual Funds Investment Details table holds the information of all the unique mutual funds held by the customer. This table has Mutual_Portfolio_ID as a foreign key which will establish a relationship with the Mutual Funds Portfolio Details.	This table can be used to access information about all the mutual funds held by an Individual by performing various query operations.
Cryptocurrency Transactions Details	Cryptocurrency Transactions is intended to have day to day transaction information about the total amount of investments done by the customer into multiple crypto currencies.	This table has Transaction_ID as a Primary key and Crypto_ID and Customer_ID as foreign key.
Cryptocurrency Investment Details	Cryptocurrency Investment Details has details about various cryptocurrency(such as Bitcoin, Ethereum, Ripple etc.) that are held by the Customer. Apart from this, it has other details such as Buy_Value,units, current_value, profit_lossFlag that are important to calculate the benefit or loss that the customer is bearing due to any related investments into Crypto.	We have kept Crypto_ID as a primary key for this table.
Foreign Exchange Transaction	The purpose of the Foreign Exchange Transaction table is to maintain the records of the daily transactions of buy and sell of all customers for the Foreign Exchange Asset. This table gives complete history of all the transactions ever made.	Here, Transaction_ID is the unique key for each transaction record. This table is further linked to the Foreign Exchange Details table, where we can get the rest of the currency details.

Foreign Exchange Details	The purpose of the Foreign Exchange Details table is to hold all the basic attributes of currency. This table also holds the latest value of all the currency as per the market, which is later used to calculate the net profit or loss of customer's investment in the Currency asset.	Here, Currency_ID is the unique key. The table provides all the necessary details of currency that supports the transaction table.

Document Entity and Attribute Importance with Data types defined

Table Name - Customer Details			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Customer_ID	PK	VARCHAR2(10)	Unique customer ID
Customer_Name	NOT NULL	VARCHAR2(40)	Customer's name
Date_of_Birth	NOT NULL	DATE	Date of Birth of customer
Age	NOT NULL	NUMBER(2)	Age of the customer
Contact_Number	NOT NULL	NUMBER(10)	The contact number of customer
Zip_Code	NOT NULL	NUMBER(5)	Zip code of customer's address
State	NOT NULL	VARCHAR2(20)	State residency of customer
Address	NOT NULL	VARCHAR2(50)	Address of customer
Profile_Creation_Date	NOT NULL	DATETIME	Date when the profile was created
Password	NOT NULL	VARCHAR2(8)	Password of customer
Security_Answer	NOT NULL	VARCHAR2(40)	Answer to the security question

Table Name - Customer Financial Table			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Customer_ID	PK	VARCHAR2(10)	Unique customer ID
Primary_Income	NOT NULL	NUMBER(10)	Primary Income of customer
Secondary_Income	NOT NULL	NUMBER(10)	Secondary Income of customer
Employment_Type	NOT NULL	VARCHAR2(10)	Employment type of Customer
Customer_Estimated_ Investment	NOT NULL	NUMBER(10)	Estimated Investment amount of Customer

Table Name - Feedback			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Feedback_ID	PK	VARCHAR2(10)	Unique customer ID
Customer_ID	FK	VARCHAR2(10)	Unique feedback ID
Asset_ID	NOT NULL	VARCHAR2(10)	Unique ID of Asset
Asset_Name	NOT NULL	VARCHAR2(10)	Asset name of rating
Asset_Rating	NOT NULL	NUMBER(1,1)	Rating given by the customer
Asset_Feedback	NOT NULL	VARCHAR2(200)	Feedback in words

Table Name - Stock Transaction Details			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Transaction_ID	PK	VARCHAR2(10)	Unique Transaction ID
Stock_ID	FK	VARCHAR2(10)	Stock ID related to Stock ID in Stock Details Table
Customer_ID	FK	VARCHAR2(10)	Customer ID related to Customer ID in Customer Table
Stock_Transaction_Date	NOT NULL	DATETIME	Date and time of transaction
Number_Of_Units	NOT NULL	NUMBER(10)	Number of Units of stocks traded
Stock_Unit_Price	NOT NULL	NUMBER(10)	Cost per unit of the stock
Transaction_Type	NOT NULL	CHAR	Type of Transaction - “B” for Buy, “S” for sale

Table Name - Stock Details			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Stock_ID	PK	VARCHAR2(10)	Unique ID of Stock
Stock_Name	NOT NULL	VARCHAR2(10)	Name of Stock
Stock_Ticker_Symbol	NOT NULL	VARCHAR2(10)	Ticker Symbol of Stock
Stock_Exchange	NOT NULL	VARCHAR2(10)	Name of Exchange where the stock was traded
Stock_Industry_Type	NOT NULL	VARCHAR2(10)	Type of Industry - “Healthcare”, “FinTech”
Stock_Current_Price	NOT NULL	NUMBER(10,2)	Current Price of Stock

Table Name - Mutual Fund Transactions			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Transaction ID	PK	VARCHAR2(10)	Unique ID of transaction
Mutual Scheme ID	FK	VARCHAR2(10)	Unique ID of mutual scheme
Customer ID	FK	NUMBER(10)	Unique ID of customer
Mutual_Transaction_Date	NOT NULL	DATETIME	Date record for specific transaction
Mutual_Transaction_Price	NOT NULL	NUMBER(200)	Money Invested by customer in mutual funds
Mutual_Units	NOT NULL	NUMBER(200)	Total units by customer for mutual fund
Mutual_NAV_Price	NOT NULL	NUMBER(100	Net asset value of Mutual fund
Mutual_Transaction_Type	NOT NULL	VARCHAR2(1)	Buy or Sell Flag

Table Name - Mutual Fund Details			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Mutual Scheme ID	PK	VARCHAR2(10)	Fund ID
Mutual_Name	NOT NULL	VARCHAR2(40)	Name of the Mutual Fund
Mutual_Risk	NOT NULL	VARCHAR2(10	Risk in categories e.g High, Low etc
Mutual_Current_NAV	NOT NULL	NUMBER(100)	Current market value of net asset value of that mutual fund

Table Name - CryptoCurrency Transactions			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Transcation_ID	PK	VARCHAR2(10)	Unique ID of Transaction
Crypto_ID	FK	VARCHAR2(10)	Unique CRYPTO ID
Customer_ID	NOT NULL	VARCHAR2(10)	Unique ID of Customer
Crypto_Transaction_Date	NOT NULL	DATETIME	Date record for specific transaction
Crypto_Units	NOT NULL	NUMBER(10	Crypto units bought by customer
Crypto_Transaction_Price	NOT NULL	NUMBER(10)	Invested amount by customer
Crypto_Transaction_Type	NOT NULL	VARCHAR2(1)	Purchase or sell flag

Table Name - Cryptocurrency Details			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Crypto_ID	PK	VARCHAR2(10)	Unique ID of CryptoCurrency
Crypto_Name	NOT NULL	VARCHAR2(15)	Name of CryptoCurrency
Crypto_Symbol	NOT NULL	VARCHAR2(15)	Symbol of the currency
Crypto_Exchange	NOT NULL	VARCHAR2(15)	Name of the CryptoCurrency's Exchange platform
Crypto_Current_Price	NOT NULL	NUMBER(10)	Current price of the currency

Table Name - Foreign Exchange Transactions			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Transcation_ID	PK	VARCHAR2(10)	Unique ID of Transaction
Customer_ID	FK	VARCHAR2(10)	Unique ID of Customer
Local_Currency_ID	NOT NULL	NUMBER(10)	Unique ID of currency invested
Purchased_Currency_ID	NOT NULL	NUMBER(10)	Unique ID of currency which was purchased
Currency_Transaction_ Date	NOT NULL	DATETIME	Date record for specific transaction
Local_Currency_ Investment	NOT NULL	NUMBER(10)	Money Invested by customer in Currency
Purchased_Currency_ Amount	NOT NULL	NUMBER(10)	Amount of currency which was purchased
Currency_Transaction_ Type	NOT NULL	VARCHAR2(1)	Purchase or sell flag

Table Name - Foreign Exchange Details			
Column Name	**Constraints**	**Datatype**	**Role of attribute**
Currency_ID	PK	VARCHAR2(10)	Unique ID of Currency
Currency_Name	NOT NULL	VARCHAR2(15)	Name of Currency
Currency_Country	NOT NULL	VARCHAR2(25)	Name of the Currency's Country

Extended Business Rules

- ☐ Admin can grant or revoke access from any Customer.
- ☐ Each Customer can have investment in one, more or all assets.
- ☐ Customers can have transaction records of any asset for an unlimited number of times.
- ☐ Customer transactions history details will be stored for the investment analysis.
- ☐ Customers can give zero to one feedback per asset each.
- ☐ Each Customer will have one financial information table which tells about investment expenditure.

Security Rules

ADMIN

- ☐ **ADMIN** has all the access.
- ☐ **ADMIN** can add many **CUSTOMER** details in the CUSTOMER_DETAILS table.
- ☐ **ADMIN** can create and give access to **MODERATOR** and **CUSTOMER**.

MODERATOR

- ☐ **MODERATOR** can add the transaction details of all the customers.
- ☐ **MODERATOR** has read only access to the Feedback table.
- ☐ **MODERATOR** can perform add or update data in the Asset Details table.

CUSTOMER

- ☐ **CUSTOMER** has read only access to all the database tables.except the Feedback and Customer Details Table.
- ☐ **CUSTOMER** can update his profile details in the Customer Details table.
- ☐ **CUSTOMER** can submit(update) his feedback for his own assets in the Feedback table.

ShortComings

- ☐ Real time transactions are not being updated; they are manually updated by the moderator.
- ☐ NAV, Stock price ,crypto price is added manually by moderator based upon timestamp of that day’s market.

ER Diagram


Customer Details
PK Customer_ID
Customer_Name
Date_of_Birth
Age
Contact_Number
Zip_Code
State
Address
Profile_Creation_Date
Password
Security_Answer
Customer Financial Details
PK Customer_ID
Primary_Income
Secondary_Income
Employment_Type
Customer_Estimated_ Investment
Feedback
PK Feedback_ID
FK Customer_ID
Asset_ID
Asset_Name
Asset_Rating
Asset_Feedback
Stock Transactions
PK Transaction_ID
FK Stock_ID
FK Customer_ID
Stock_Transaction_ Date
Stock_Units
Stock_Unit_Price
Stock_Transaction_ Type
Mutual Fund Transactions
PK Transaction_ID
FK Mutual_Scheme_ID
FK Customer_ID
Mutual_Transaction_ Date
Mutual_Transaction_ Type
Mutual_Units
Mutual_NAV_Price
Mutual_Transaction_ Type
Cryptocurrency Transactions
PK Transaction_ID
FK Crypto_ID
FK Customer_ID
Crypto_Transaction_ Date
Crypto_Units
Crypto_Transaction_ Price
Crypto_Transaction_ Type
Foreign Exchange Details
PK Transaction_ID
FK Customer_ID
Currency_Transaction_ Date
Local_Currency_ID
Purchased_Currency_ID
Local_Currency_ Investment
Purchased_Currency_ Amount
Currency_Transaction_ Type
Stock Details
PK Stock_ID
Stock_Name
Stock_Ticker_Symbol
Stock_Exchange
Stock_Industry_Type
Stock_Current_Price
Mutual Fund Details
PK Mutual_Scheme_ID
Mutual_Name
Mutual_Risk
Mutual_Current_NAV
Cryptocurrency Details
PK Crypto_ID
Crypto_Name
Crypto_Symbol
Crypto_Exchange
Crypto_Current_Price
Foreign Exchange Details
PK Currency_ID
Currency_Name
Currency_Country
Purchased_Currency_ Current_Price