**DATABASE DESIGN**

**1. EMPLOYEE\_DATA** Table contains details of each EMPLOYEE of the bank

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| FIRST\_NAME | VARCHAR2 | 20 BYTE | NOT NULL | First Name of Employee |
| LAST\_NAME | VARCHAR2 | 20 BYTE |  | Last Name of Employee |
| TRADER\_ID | NUMBER | 15 | PRIMARY KEY | Unique ID of Employee |
| PASSWORD | VARCHAR2 | 30 BYTE | NOT NULL | System generated password of employee |
| ADDRESS | VARCHAR2 | 50 BYTE | NOT NULL | Address of employee |
| DATE\_OF\_JOINING | DATE |  | NOT NULL | Date of Joining |
| DATE\_OF\_BIRTH | DATE |  | NOT NULL | Date of birth |
| PRIMARY\_PHONE\_NO | NUMBER | 15 | NOT NULL | Primary phone number |
| SECONDARY\_PHONE\_NO | NUMBER | 15 |  | Secondary phone number |
| EMAIL\_ID | VARCHAR2 | 30 BYTE | NOT NULL | Email ID |
| ROLE\_ID | NUMBER | 20 | FOREIGN KEY | Kind of role of the employee |
| TRANSACTION\_LIMIT | NUMBER | 20 | NOT NULL | Maximum amount a trader is allowed to trade in a single day |
| MANAGER\_ID | NUMBER | 15 | NOT NULL | ID of the reporting manager of the employee |
| TRADER\_STATUS | VARCHAR2 | 20 BYTE | NOT NULL | Status(Active or Inactive) |

**4. ROLE** Table contains details of bank employee ROLES

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| ROLE\_ID | NUMBER | 20 | PRIMARY KEY | ID of role |
| ROLE | VARCHAR2 | 20 BYTE | NOT NULL | Role e.g.-Trader, Trading Manager, Admin |

**5. CASHFLOW** Table contains details of cash flow of trade

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| TRANSACTION\_ID | NUMBER | 10 | FOREIGN KEY | Relating the cash flow to a particular trade. |
| STUB\_NO | NUMBER | 2 | NOT NULL | Denoting the stub whose cash flow is being shown. |
| CASH\_FLOW | NUMBER | 20,2 | NOT NULL | Calculating the cash flow. |
| PAYMENT\_DATE | DATE | - | NOT NULL | Denoting the date of payment exchange at the end of stub |
| CURRENCY\_CODE | VARCHAR2 | 3 BYTES | NOT NULL | Currency of the particular trade |
| RATE\_VALUE | NUMBER | 10, 3 | NOT NULL | Stub variable rate |

**6. TRANSACTION** Table contains details of transactions in trade

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| TRANSACTION\_ID | NUMBER | 10 | PRIMARY KEY | Unique Transaction Id |
| CUSTOMER\_ID | VARCHAR2 | 20 BYTE | FOREIGN KEY | Foreign key from customer table |
| TRADER\_ID | VARCHAR2 | 15 BYTE | FOREIGN KEY | Foreign key from employee table |
| HOLIDAY\_ID | NUMBER | 5 | FOREIGN KEY | Foreign key from calendar table |
| BRANCH\_ID | VARCHAR2 | 15 BYTE | FOREIGN KEY | Foreign key from branch table |

**7. COUNTERPARTY TABLE** Table contains details of customer and their respective bank details

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| FIRST\_NAME | VARCHAR2 | 20 BYTE | NOT NULL | First name of Customer |
| LAST\_NAME | VARCHAR2 | 20 BYTE | NOT NULL | Last name of Customer |
| CUSTOMER\_ADDRESS | VARCHAR2 | 20 BYTE | NOT NULL | Address of Customer |
| CUSTOMER\_CITY | VARCHAR2 | 20 BYTE | NOT NULL | City of Customer |
| CUSTOMER\_COUNTRY | VARCHAR2 | 20 BYTE | NOT NULL | Country of Customer |
| CUSTOMER\_ZIP | VARCHAR2 | 5 BYTE | NOT NULL | Postal Area of Customer |
| CUSTOMER\_STATE | VARCHAR2 | 20 BYTE | NOT NULL | State of Customer |
| CUSTOMER\_PHONE | VARCHAR2 | 10 BYTE | NOT NULL | Phone number of Customer |
| EMAIL | VARCHAR2 | 20 BYTE | NOT NULL | Unique E-mail id of Customer |
| CUSTOMERID | VARCHAR2 | 15 BYTE | PRIMARY KEY | Unique Customer Id of Customer |
| BANK\_ID | VARCHAR2 | 20 BYTE | PRIMARY KEY | Unique ID of bank |
| NOSTRO\_ACCOUNT | NUMBER | 10 | NOT NULL | Account of a bank in foreign country’s bank |
| BANK\_NAME | VARCHAR2 | 20 BYTE | NOT NULL | Name of the bank |
| BANK\_LEGAL\_ENTITY | VARCHAR2 | 10 BYTE | NOT NULL | A permit for bank do issue contracts legally |
| CUSTOMER\_STATUS | NUMBER | 1 | NOT NULL | Status of Customer(Active/Inactive) |
| DESK\_CODE | VARCHAR2 | 15 BYTE | PRIMARY KEY | Unique ID of the bank branch like IFSC code in India |
| MICR\_CODE | NUMBER | 10 | NOT NULL | A 9 digit unique code easing the process of clearing cheques |
| BANK\_ZIP\_CODE | NUMBER | 10 | NOT NULL | Postal code of the area |
| BANK\_ADDRESS | VARCHAR2 | 20 BYTE |  | Town or local area of the city |
| BANK\_CITY | VARCHAR2 | 20 BYTE | NOT NULL | City name |
| BANK\_COUNTRY | VARCHAR2 | 20 BYTE | NOT NULL | Country name |

**8. DELTA** Table contains details of Delta calculated for each stub of each trade.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| TRADE\_ID | NUMBER | 10 | PRIMARY KEY, FOREIGN KEY | ID of Trade |
| TRADE\_DATE | DATE |  | PRIMARY KEY | Start date of Trade |
| TRADER\_ID | VARCHAR2 | 15 BYTE | FOREIGN KEY | ID of Trader |
| CURRENCY\_ID | VARCHAR2 | 3 BYTE | FOREIGN KEY | Currency of Trade |
| DELTA | NUMBER | (12,10) | NOT NULL | Risk Factor |

**9. CALENDAR** Table contains details of holidays corresponding to the different trader countries

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| HOLIDAY\_ID | NUMBER | 5 | PRIMARY KEY | Unique ID for each Holiday |
| EVENT | VARCHAR2 | 50 BYTE |  | Reason for Holiday |
| CATEGORY | VARCHAR2 | 25 BYTE | NOT NULL | Category of holiday whether it is Government holiday or Market Holiday etc. |
| DATE\_HOLIDAY | DATE |  | NOT NULL | Date of the holiday |
| COUNTRY\_CODE | VARCHAR2 | 3 BYTE | FOREIGN KEY | Country code as in Currency e.g. USD for USA, INR for India |

**10. CURRENCY** Table contains details of currency corresponding to the different trader countries

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| CURRENCY\_CODE | VARCHAR2 | 3 BYTE | PRIMARY KEY | Currency code e.g. USD,INR |
| COUNTRY | VARCHAR2 | 20 BYTE | NOT NULL | Country name of currency e.g. INR- India |
| SYMBOL | BLOB |  |  | Symbol of the currency e.g. USD-$ |
| TRADABLE\_FLAG | NUMBER | 1 | NOT NULL | Status of currency as tradable or non-tradable |
| DESCRIPTION | VARCHAR2 | 50 BYTE |  | Extra information about currency |

**11. DEAL\_TABLE** Table contains details of currency corresponding to the different trader countries

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| TRANSACTION\_ID | NUMBER | 10 | PRIMARY KEY, FOREIGN KEY | Unique Transaction Id |
| MARKET\_ID | VARCHAR2 | 20 BYTE | FOREIGN KEY | Foreign key of Market\_data table |
| BUY\_SELL | NUMBER | 1 | NOT NULL | Whether the instrument is bought or sold |
| RATE | NUMBER | 6,4 | NOT NULL | Rate at which the instrument is bought or sold |
| TENURE | NUMBER | 2 | NOT NULL | Time Period of the Deal |
| START\_DATE | DATE |  | NOT NULL | Start of trade |
| END\_DATE | DATE |  | NOT NULL | End of trade |
| NOTIONAL\_AMOUNT | NUMBER | 10 | NOT NULL | Amount on Which Swap is done |

**12. MARKET\_DATA** Table contains the MARKET DATA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| MARKET\_ID | NUMBER | 20 | PRIMARY KEY | Primary Key of the table |
| CURRENCY\_CODE | VARCHAR2 | 3 BYTE | FOREIGN KEY | Currency code |
| STUB | VARCHAR2 | 20 BYTE | NOT NULL | Stub code |
| VALUE | NUMBER | (10,3) | NOT NULL | Value of interest rate |
| CURVE | VARCHAR2 | 20 BYTE | NOT NULL | Curve code |

**13. DF** Table contains discount factors of interest rates for various currencies and tenures.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| MARKET\_ID | VARCHAR2 | 20 BYTE | FOREIGN KEY | Contains Curve, Currency and Tenure details |
| DISCOUNT\_FACTOR | NUMBER | 7,5 | NOT NULL | Discount Factor till current date |

**14. PAR\_VALUE** Table contains details of par-values calculated on the basis of curve, currency, tenures and stub duration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| PAR\_VALUE | NUMBER | 6,4 | NOT NULL | Par Value |
| MARKET\_ID | VARCHAR2 | 20 BYTE | FOREIGN KEY | Contains Curve, Currency and Tenure details |
| STUB\_DURATION | DATE |  | NOT NULL | Stub Duration |
| SPREAD | NUMBER | 6,4 | NOT NULL | Spread |
| BID | NUMBER | 6,4 | NOT NULL | Par-Spread/2 |
| ASK | NUMBER | 6,4 | NOT NULL | Par+Spread/2 |

**15. PREDICTED** Table contains details of predicted LIBOR rates at various points in the future.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field name** | **Data type** | **Size** | **Constraint** | **Description** |
| ENTRY\_DATE | DATE |  | NOT NULL | Date at which prediction was made |
| MARKET\_ID | VARCHAR2 | 20 BYTE | FOREIGN KEY | Contains Curve, Currency and Tenure details |
| PREDICTED | NUMBER | 7,5 | NOT NULL | Predicted LIBOR |
| CHANGE\_PREDICTED | NUMBER | 7,5 | NOT NULL | Predicted\*0.01 |