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	VARCHAR2	15 BYTE	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	VARCHAR2	20 BYTE	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	VARCHAR2	15 BYTE	NOT NULL	ID of the reporting manager of the employee
TRADER_STATUS	VARCHAR2	20 BYTE	NOT NULL	Status(Active or Inactive)

2. BANK Table contains details of BANK

Field name	Data type	Size	Constraint	Description
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
CREDIT_RATING	VARCHAR2	4 BYTE	NOT NULL	Credit rating of the bank e.g. AAA,BB-
BOOK_VALUE	FLOAT	15	NOT NULL	Sum of value of all the positions in banks own book
BANK_LEGAL_ENTITY	VARCHAR2	10 BYTE	NOT NULL	A permit for bank do issue contracts legally

3. BRANCH Table contains details of branch

Field name	Data type	Size	Constraint	Description
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
BRANCH_NAME	VARCHAR2	20 BYTE	NOT NULL	Name of the bank branch e.g. RBS Gurgaon
ZIP_CODE	NUMBER	10	NOT NULL	Postal code of the area
LOCALITY	VARCHAR2	20 BYTE		Town or local area of the city
CITY	VARCHAR2	20 BYTE	NOT NULL	City name
COUNTRY	VARCHAR2	20 BYTE	NOT NULL	Country name

BUILDING_NO	VARCHAR2	10 BYTE		Building number
STREET	VARCHAR2	20 BYTE		Street name
BANKID	VARCHAR2	20 BYTE	FOREIGN KEY	Unique ID of the bank

4. ROLE Table contains details of bank employee ROLES

Field name	Data type	Size	Constraint	Description
ROLE_ID	VARCHAR2	20 BYTE	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

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. CUTOMER_DATA Table contains details of customer

Field name	Data type	Size	Constraint	Description
FIRST_NAME	VARCHAR2	20 BYTE	NOT NULL	First name of Customer
LAST_NAME	VARCHAR2	20 BYTE		Last name of Customer
ADDRESS	VARCHAR2	20 BYTE	NOT NULL	Address of Customer
CITY	VARCHAR2	20 BYTE	NOT NULL	City of Customer
COUNTRY	VARCHAR2	20 BYTE	NOT NULL	Country of Customer
ZIP	VARCHAR2	5 BYTE	NOT NULL	Postal Area of Customer
STATE	VARCHAR2	20 BYTE	NOT NULL	State of Customer
PHONE	NUMBER	10	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
TRADERID	VARCHAR2	15 BYTE	NOT NULL	Unique ID of Employee

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-$
RATE_USD	FLOAT	10	NOT NULL	Exchange rate w.r.t. 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 the new deal booked by the trader

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 date of the Trade
END_DATE	DATE		NOT NULL	End Date of the 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
SETTLE_DATE	DATE		NOT NULL	Date by which the trade has to be

				settled
MARKET_ID	VARCHAR2	20 BYTE	PRIMARY KEY	Primary Key of the table
CURRENCY_CODE	VARCHAR2	3 BYTE	FOREIGN KEY	Currency code
STUB_CODE	VARCHAR2	20 BYTE	FOREIGN KEY	Stub code
VALUE	NUMBER	10	NOT NULL	Value of interest rate
CURVE_CODE	VARCHAR2	20 BYTE	FOREIGN KEY	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
BID	NUMBER	6,4	NOT NULL	Par-Spread
ASK	NUMBER	6,4	NOT NULL	Par+Spread

15. CURVE Table contains details of various curves.

Field name	Data type	Size	Constraint	Description
CURVE_ID	VARCHAR2	20 BYTE	PRIMARY KEY	ID of the curve

CURVE	VARCHAR2	20 BYTE	NOT NULL	Type of curve- LIBOR, MIBOR, etc

16. STUB Table contains details of the duration for which the interest rate is needed

Field name	Data type	Size	Constraint	Description
STUB_CODE	VARCHAR2	20 BYTE	PRIMARY KEY	ID of STUB
STUB_VALUE	NUMBER		NOT NULL	Duration for which the interest has to be calculated(3 months, 6 months , etc)

17. 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