# BROKER

**Purpose:**  Allows storage and retrieval of Broker information

**How BROKER is used:**  Users will SELECT, INSERT, UPDATE and DELETE broker information.

**When BROKER is used:** Data is inserted when a new stock broker added.

|  |  |  |  |
| --- | --- | --- | --- |
| **BROKER**  PRIMARY KEY (broker\_id) | | | |
| **broker\_id** | NUMBER(6) | NOT NULL | ID for the broker |
| first\_name | VARCHAR2(25) | NOT NULL | First Name of the Broker |
| last\_name | VARCHAR2 (25) | NOT NULL | Last Name of the Broker |

# BROKER\_STOCK\_EX

**Purpose:** Records associations between brokers and stock exchanges.

**How BROKER\_STOCK\_EX is used:** Users will SELECT, INSERT, UPDATE, and DELETE broker information.

**When BROKER\_STOCK\_EX is used:** BROKER\_STOCK\_EX stores a link between a broker and a stock\_exchange if that broker may trade on the exchange.

|  |  |  |  |
| --- | --- | --- | --- |
| **BROKER**  PRIMARY KEY (stock\_ex\_id, broker\_id) | | | |
| **stock\_ex\_id** | NUMBER(6) | NOT NULL | ID for the Stock Exchange |
| **broker\_id** | NUMBER(6) | NOT NULL | ID for the broker |

# COMPANY

**Purpose:** Storage of both institutional shareholders as well as companies whose stocks are traded.

**How COMPANY is used:** The company table is a subtype of SHAREHOLDER. Users will SELECT, INSERT, UPDATE and DELETE Company

**When COMPANY is used**: Data is inserted for either companies whose stock is traded, or for institutional shareholders. If a company is publicly traded then the stock\_id, starting\_price, and currency\_id cannot be NULL.

|  |  |  |  |
| --- | --- | --- | --- |
| **COMPANY**  PRIMARY KEY (company\_id) | | | |
| **company\_id** | NUMBER(6,0) | NOT NULL | ID for the company |
| name | VARCHAR2 (20) | NOT NULL | Name for the company |
| place\_id | NUMBER (6,0) | NOT NULL | Location of the company |
| stock\_id | NUMBER (6,0) | NULL | ID for the stock of the company. NULL if the company is not traded. |
| starting\_price | NUMBER(10,4) | NULL | Initial price of stock when it is offered as part of the IPO. |
| currency\_id | NUMBER(6,0) | NULL | ID of the currency used for the starting price, and the currency used for the price\_total of any trades on the primary market. |

# CONVERSION

**Purpose:** Provides information to convert between currencies.

**How CONVERSION is used:** CONVERSION is actually a VIEW. Users will SELECT from the view but must perform INSERTs, UPDATEs and DELETEs on the CONVERTION\_RATE table.

**When CONVERSION is used:**  CONVERSION could be queried at any time.

|  |  |  |  |
| --- | --- | --- | --- |
| **CONVERSION**  PRIMARY KEY (from\_currency\_id, to\_currency\_id) | | | |
| **from\_currency\_id** | NUMBER(6) | NOT NULL | ID of the currency converted FROM |
| **to\_currency\_id** | NUMBER(6) | NOT NULL | ID of the currency converted TO |
| exchange\_rate | NUMBER(10,4) | NOT NULL | Exchange rate |

# CONVERSION\_RATE

**Purpose:** Stores currency exchange rates.

**How CONVERSION\_RATE is used:** The CONVERTION\_RATE table stores exchange rates but stores the exchange rate for only one direction. For example, the table stores the exchange rate from US Dollars to British Pounds but does not store the exchange rate from British Pounds to US Dollars.

**When CONVERSION\_RATE is used:**  The CONVERSION\_RATE table is queries by the CONVERSION view. Updates to the data are made directly to the CONVERSION\_RATE table and could be made at any time.

|  |  |  |  |
| --- | --- | --- | --- |
| **CONVERSION\_RATE**  PRIMARY KEY (from\_currency\_id, to\_currency\_id) | | | |
| **from\_currency\_id** | NUMBER(6) | NOT NULL | ID of the currency converted FROM |
| **to\_currency\_id** | NUMBER(6) | NOT NULL | ID of the currency converted TO |
| exchange\_rate | NUMBER(10,4) | NOT NULL | Exchange rate |

# CURRENCY

**Purpose:** Allows the storage and retrieval of currency information.

**How CURRENCY is used:**  Users will SELECT, INSERT, UPDATE and DELETE currency.

**When CURRENCY is used:** Data is inserted when a new currency must be added into the system.

The CURRENCY table is referenced by the CONVERTION\_RATE table, the STOCK\_EXCHANGE table and the COMPANY table.

|  |  |  |  |
| --- | --- | --- | --- |
| **CURRENCY**  PRIMARY KEY (currency\_id) | | | |
| **currency\_id** | NUMBER(6) | NOT NULL | ID for the Currency |
| name | VARCHAR2(5) | NOT NULL | Name of the currency |
| symbol | VARCHAR2 (50) | NOT NULL | Symbol that represents the currency |

# CURRENT\_SHAREHOLDER\_SHARES

**Purpose:** Allows retrieval of the current number of shares held by any specific shareholder.

**How CURRENT\_SHAREHOLDER\_SHARES is used:**  CURRENT\_SHAREHOLDER\_SHARES is actually a view. Users will SELECT from the view but, must perform INSERTs, UPDATEs and DELETEs on the TRADE table.

**When CURRENCT\_SHAREHOLDER\_SHARES is used:** CURRENT\_SHAREHOLDER\_SHARES could be queried at any time.

|  |  |  |  |
| --- | --- | --- | --- |
| **CURRENT\_SHAREHOLER\_SHARES**  PRIMARY KEY (none) | | | |
| shareholder\_id | NUMBER | NULL | ID for the Shareholder |
| type | VARCHAR2(25) | NOT NULL | The type of shareholder. Could be “DIRECT\_HOLDER”, or “COMPANY” |
| stock\_id | NUMBER | NULL | ID for stock being held |
| shares | NUMBER | NULL | Number of shares held by the shareholder |

# CURRENT\_STOCK\_STATS

**Purpose**: Allows retrieval of statistics about all current stocks.

**How CURRENT\_STOCK\_STATS is used**: CURRENT\_STOCK\_STATS is actually a view. Users will SELECT from this view, but must perform INSERTs, UPDATES, and DELETES on the SHARES\_AUTHORIZED and TRADE tables.

**When CURRENT\_STOCK\_STATS is used**: CURRENT\_STOCK\_STATS could be queried at any time.

|  |  |  |  |
| --- | --- | --- | --- |
| **CURRENT\_STOCK\_STATS**  PRIMARY KEY (none) | | | |
| stock\_id | NUMBER(6) | NULL | ID for the stock |
| current\_authorized | NUMBER(12,4) | NOT NULL | Current authorized shares |
| total\_outstanding | NUMBER | NULL | Total shares outstanding |

# DIRECT\_HOLDER

**Purpose**: Allows storage and retrieval of direct holder information.

**How DIRECT\_HOLDER is used**: The DIRECT\_HOLDER table is a subtype of SHAREHOLDER. User will SELECT, INSERT, UPDATE and DELETE direct holder.

**When DIRECT\_HOLDER is used**: Data is inserted whenever a shareholder is added to the system.

|  |  |  |  |
| --- | --- | --- | --- |
| **DIRECT\_HOLDER**  PRIMARY KEY (direct\_holder\_id) | | | |
| **direct\_holder\_id** | NUMBER(6,0) | NOT NULL | ID for the direct holder |
| first\_name | VARCHAR2(25) | NOT NULL | First Name for the direct holder |
| last\_name | VARCHAR2(25) | NOT NULL | Last Name for the direct Holder |

# PLACE

**Purpose:**  Allows storage and retrieval of place information.

**How PLACE is used:**  Users will SELECT, INSERT, UPDATE and DELETE place table.

**When PLACE is used:**  PLACE could be queried at any time.

|  |  |  |  |
| --- | --- | --- | --- |
| **PLACE**  PRIMARY KEY (place\_id) | | | |
| **place\_id** | NUMBER(6) | NOT NULL | ID for Place |
| city | VARCHAR2(50) | NOT NULL | Name of city |
| country | VARCHAR2(50) | NOT NULL | Name of country |

# SHAREHOLDER

**Purpose**: The SHAREHOLDER table is the supertype for the COMPANY and DIRECT\_HOLDER subtypes.

**How SHAREHOLDER is used:** Users will SELECT, INSERT, UPDATE and DELETE shareholder

**When SHAREHOLDER is used:** Data is inserted whenever a new shareholder is identified. If the TYPE is “COMPANY” then there must a corresponding entry in the COMPANY table. If the TYPE is “DIRECT\_HOLDER” then there must be a corresponding entry in the DIRECT\_HOLDER table.

|  |  |  |  |
| --- | --- | --- | --- |
| **SHAREHOLDER**  PRIMARY KEY (shareholder\_id) | | | |
| **shareholder\_id** | NUMBER(6,0) | NOT NULL | ID for the shareholder |
| type | VARCHAR2(25) | NOT NULL | Identify if shareholder is company or direct holder |

# SHARES\_AUTHORIZED

**Purpose:** Allows storage and retrieval of authorized shares

**How SHARES\_AUTHORIZED is used:** User will SELECT, INSERT, UPDATE and DELETE shares authorized

**When SHARES\_AUTHORIZED is used**: When a company issues stock, it must declare the total number of shares authorized.

If a company changes the number of shares authorized then any existing SHARES\_AUTHORIZED record must be expired, and a new record must be entered. The TIME\_START indicates when the record comes into effect, and the TIME\_END indicate when the record is no longer in effect. A TIME\_END of NULL indicates that the record has not expired.

SHARES\_AUTHORIZED records for a single STOCK\_ID must not overlap in time. Only one record for each STOCK\_ID can have a null TIME\_END.

|  |  |  |  |
| --- | --- | --- | --- |
| **SHARES\_AUTHORIZED**  PRIMARY KEY (stock\_id, time\_start) | | | |
| **stock\_id** | NUMBER(6,0) | NOT NULL | ID for the stock |
| **time\_start** | DATE | NOT NULL | Date of when stocks were first available |
| time\_end | DATE | NULL | Expiry date for the record. When a company changes its shares authorized, the existing record is expired and a new record is entered. |
| authorized | NUMBER (12,4) | NOT NULL | Number of shares authorized for trading |

# STOCK\_EXCHANGE

**Purpose:** Allows storage and retrieval of stock exchanges.

**How STOCK\_EXCHANGE is used:**  Users will SELECT, INSERT, UPDATE and DELETE stock\_exchange table.

**When STOCK\_EXCHANGE is used:**  STOCK\_EXCHANGE could be queried at any time.

|  |  |  |  |
| --- | --- | --- | --- |
| **STOCK\_EXCHANGE**  **PRIMARY KEY (stock\_ex\_id)** | | | |
| **stock\_ex\_id** | NUMBER(6) | NOT NULL | ID for the Stock Exchange |
| name | VARCHAR2(50) | NOT NULL | Name for the Stock Exchange |
| symbol | VARCHAR2(10) | NOT NULL | Symbol for the Stock Exchange |
| currency\_id | NUMBER(6) | NOT NULL | ID for the currency |
| place\_id | NUMBER(6) | NOT NULL | ID for the location of Stock Exchange |

# STOCK\_LISTING

**Purpose:**  Allows storage and retrieval of Stock/ Stock Exchange relationship; as well as its given stock symbol.

**How STOCK\_LISTING is used:**  It stores the stock symbol as well as the relationship between stock and stock exchange table.

**When STOCK\_LISTING is used:**  Data is inserted when a stock is listed on any given stock exchange. The stock is also assigned a unique symbol that will reference the specific stock.

|  |  |  |  |
| --- | --- | --- | --- |
| **STOCK\_LISTING**  PRIMARY KEY (stock\_ex\_id, stock\_id) | | | |
| **stock\_ex\_id** | NUMBER(6) | NOT NULL | ID for the Stock Exchange |
| **stock\_id** | NUMBER(6) | NOT NULL | ID for the Stock |
| stock\_symbol | VARCHAR(20) | NOT NULL | Symbol that is used by the stock on the particular stock exchange |

# STOCK\_PRICE

**Purpose:**  Allows storage and retrieval of stock price

**How STOCK\_PRICE is used:**  Users will SELECT, INSERT, UPDATE and DELETE stock price.

**When STOCK\_PRICE is used:**  The market price must be recorded in the STOCK\_PRICE table before a stock can be traded on a stock exchange. When the market price changes, the actual record must be expired and a new record must be inserted to record the new market price.

|  |  |  |  |
| --- | --- | --- | --- |
| **STOCK\_PRICE**  PRIMARY KEY (stock\_ex\_id, stock\_id, time\_start) | | | |
| **stock\_ex\_id** | NUMBER(6) | NOT NULL | ID for the Stock Exchange |
| **stock\_id** | NUMBER(6) | NOT NULL | ID for the Stock |
| **time\_start** | DATE | NOT NULL | Date and time when the price became the active price |
| time\_end | DATE | NULL | Date and time when the price stopped being active. NULL indicates that the price is the currently active price. Only one row can have a NULL time\_end for any (stock\_ex\_id, stock\_id) pair. |
| price | NUMBER(10,4) | NOT NULL | Price of an individual share of stock. |

# TRADE

**Purpose:**  Allows storage and retrieval of trade information for trades on both the primary market and the secondary markets. Trade records can also indicate adjustments that are made during stock splits and merges.

**How TRADE is used:**  Users will SELECT, INSERT, UPDATE and DELETE trade information.

|  |  |  |  |
| --- | --- | --- | --- |
| **TRADE**  PRIMARY KEY (trade\_id) | | | |
| **trade\_id** | NUMBER(9) | NOT NULL | ID for the Trade |
| stock\_id | NUMBER(6) | NOT NULL | ID for the Stock |
| transaction\_time | DATE | NOT NULL | Date and time when the trade occurred |
| shares | NUMBER(12,4) | NOT NULL | Number of Shares traded |
| stock\_ex\_id | NUMBER(6) | NULL | Id of the Stock Exchange. STOCK\_EX\_ID is null for trades on the primary market. |
| price\_total | NUMBER(20,2) | NULL | Total Price. When shares are acquired or removed due to a stock split or merge the price\_total is NULL. |
| buyer\_id | NUMBER(6) | NOT NULL | Shareholder\_ID of the buyer |
| seller\_id | NUMBER(6) | NOT NULL | Shareholder-ID of the seller |
| buy\_broker\_id | NUMBER(6) | NULL | ID of the broker buying the stock. For trades on the primary market and for adjustments due to stock splits and merges, the buy\_broker\_id is NULL. |
| sell\_broker\_id | NUMBER(6) | NULL | ID of the broker selling the stock. For trades on the primary market and for adjustments due to stock splits and merges, the sell\_broker\_id is NULL |