2.2.2.3    The implementation chosen by the test sponsor for a particular datatype definition shall be applied consistently
to all the instances of that datatype definition in the schema, except for identifier columns, whose datatype may
be selected to satisfy database scaling requirements.

2.2.3    NULLs

If a column definition includes an 'N' in the **NULLs** column this column is populated in every row of the table
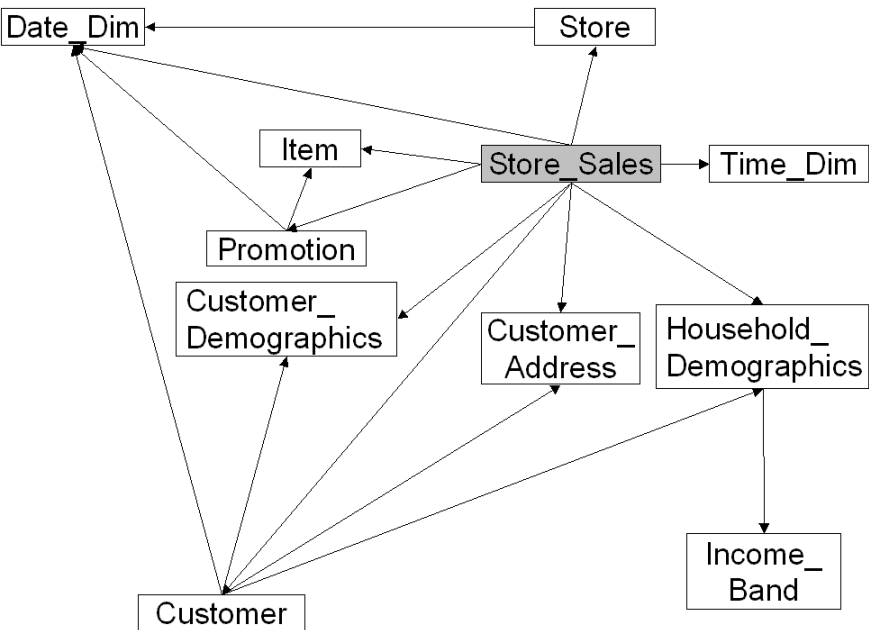for all scale factors. If the field is blank this column may contain NULLs.

2.2.4    Foreign Key

If the values in this column join with another column, the foreign columns name is listed in the **Foreign Key**
field of the column definition.

2.3    Fact Table Definitions

2.3.1    Store Sales (SS)

2.3.1.1    Store Sales ER-Diagram



2.3.1.2    Store Sales Column Definitions

Each row in this table represents a single lineitem for a sale made through the store channel and recorded in the
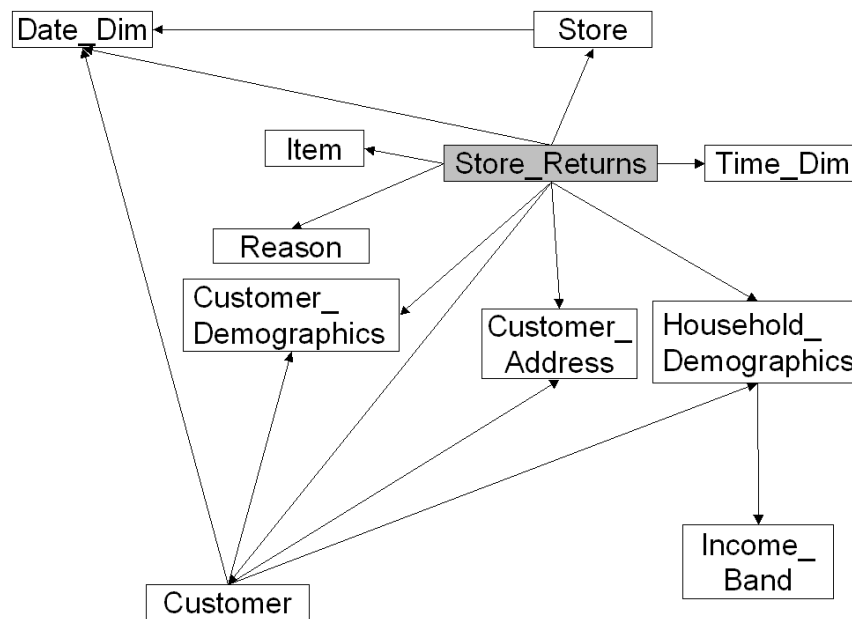store_sales fact table.

**Table 2-1 Store_sales Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| ss_sold_date_sk | identifier | | | d_date_sk |
| ss_sold_time_sk | identifier | | | t_time_sk |
| ss_item_sk (1) | identifier | N | Y | i_item_sk |
| ss_customer_sk | identifier | | | c_customer_sk |
| ss_cdemo_sk | identifier | | | cd_demo_sk |
| ss_hdemo_sk | identifier | | | hd_demo_sk |
| ss_addr_sk | identifier | | | ca_address_sk |
| ss_store_sk | identifier | | | s_store_sk |
| ss_promo_sk | identifier | | | p_promo_sk |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| ss_ticket_number (2) | identifier | N | Y | |
| ss_quantity | integer | | | |
| ss_wholesale_cost | decimal(7,2) | | | |
| ss_list_price | decimal(7,2) | | | |
| ss_sales_price | decimal(7,2) | | | |
| ss_ext_discount_amt | decimal(7,2) | | | |
| ss_ext_sales_price | decimal(7,2) | | | |
| ss_ext_wholesale_cost | decimal(7,2) | | | |
| ss_ext_list_price | decimal(7,2) | | | |
| ss_ext_tax | decimal(7,2) | | | |
| ss_coupon_amt | decimal(7,2) | | | |
| ss_net_paid | decimal(7,2) | | | |
| ss_net_paid_inc_tax | decimal(7,2) | | | |
| ss_net_profit | decimal(7,2) | | | |

### 2.3.2 Store Returns (SR)

#### 2.3.2.1 Store Returns ER-Diagram



#### 2.3.2.2 Store Returns Column Definition

Each row in this table represents a single lineitem for the return of an item sold through the store channel and recorded in the store_returns fact table.
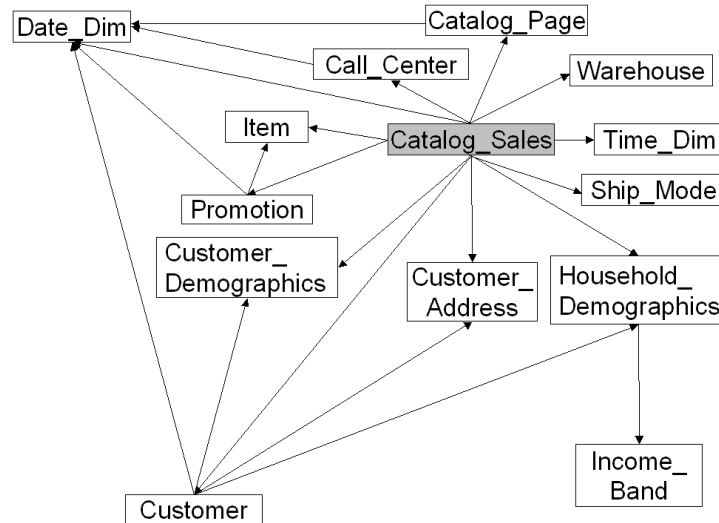
**Table 2-2 Store_returns Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| sr_returned_date_sk | identifier | | | d_date_sk |
| sr_return_time_sk | identifier | | | t_time_sk |
| sr_item_sk (1) | identifier | N | Y | i_item_sk,ss_item_sk |
| sr_customer_sk | identifier | | | c_customer_sk |
| sr_cdemo_sk | identifier | | | cd_demo_sk |
| sr_hdemo_sk | identifier | | | hd_demo_sk |
| sr_addr_sk | identifier | | | ca_address_sk |
| sr_store_sk | identifier | | | s_store_sk |
| sr_reason_sk | identifier | | | r_reason_sk |
| sr_ticket_number (2) | identifier | N | Y | ss_ticket_number |
| sr_return_quantity | integer | | | |
| sr_return_amt | decimal(7,2) | | | |
| sr_return_tax | decimal(7,2) | | | |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| sr_return_amt_inc_tax | decimal(7,2) | | | |
| sr_fee | decimal(7,2) | | | |
| sr_return_ship_cost | decimal(7,2) | | | |
| sr_refunded_cash | decimal(7,2) | | | |
| sr_reversed_charge | decimal(7,2) | | | |
| sr_store_credit | decimal(7,2) | | | |
| sr_net_loss | decimal(7,2) | | | |

## 2.3.3 Catalog Sales (CS)

### 2.3.3.1 Catalog Sales ER-Diagram



### 2.3.3.2 Catalog Sales Column Definition

Each row in this table represents a single lineitem for a sale made through the catalog channel and recorded in the catalog_sales fact table.
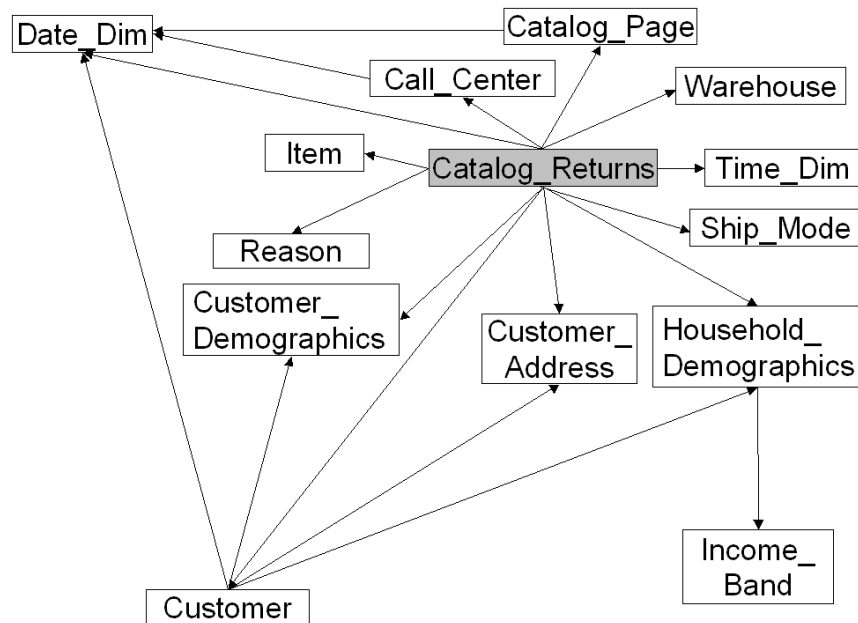
**Table 2-3 Catalog Sales Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| cs_sold_date_sk | identifier | | | d_date_sk |
| cs_sold_time_sk | identifier | | | t_time_sk |
| cs_ship_date_sk | identifier | | | d_date_sk |
| cs_bill_customer_sk | identifier | | | c_customer_sk |
| cs_bill_cdemo_sk | identifier | | | cd_demo_sk |
| cs_bill_hdemo_sk | identifier | | | hd_demo_sk |
| cs_bill_addr_sk | identifier | | | ca_address_sk |
| cs_ship_customer_sk | identifier | | | c_customer_sk |
| cs_ship_cdemo_sk | identifier | | | cd_demo_sk |
| cs_ship_hdemo_sk | identifier | | | hd_demo_sk |
| cs_ship_addr_sk | identifier | | | ca_address_sk |
| cs_call_center_sk | identifier | | | cc_call_center_sk |
| cs_catalog_page_sk | identifier | | | cp_catalog_page_sk |
| cs_ship_mode_sk | identifier | | | sm_ship_mode_sk |
| cs_warehouse_sk | identifier | | | w_warehouse_sk |
| cs_item_sk (1) | identifier | N | Y | i_item_sk |
| cs_promo_sk | identifier | | | p_promo_sk |
| cs_order_number (2) | identifier | N | Y | |
| cs_quantity | integer | | | |
| cs_wholesale_cost | decimal(7,2) | | | |
| cs_list_price | decimal(7,2) | | | |
| cs_sales_price | decimal(7,2) | | | |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| cs_ext_discount_amt | decimal(7,2) | | | |
| cs_ext_sales_price | decimal(7,2) | | | |
| cs_ext_wholesale_cost | decimal(7,2) | | | |
| cs_ext_list_price | decimal(7,2) | | | |
| cs_ext_tax | decimal(7,2) | | | |
| cs_coupon_amt | decimal(7,2) | | | |
| cs_ext_ship_cost | decimal(7,2) | | | |
| cs_net_paid | decimal(7,2) | | | |
| cs_net_paid_inc_tax | decimal(7,2) | | | |
| cs_net_paid_inc_ship | decimal(7,2) | | | |
| cs_net_paid_inc_ship_tax | decimal(7,2) | | | |
| cs_net_profit | decimal(7,2) | | | |

### 2.3.4 Catalog Returns (CR)

#### 2.3.4.1 Catalog Returns ER-Diagram



#### 2.3.4.2 Catalog Returns Column Definition

Each row in this table represents a single lineitem for the return of an item sold through the catalog channel and recorded in the catalog_returns table.

**Table 2-4 Catalog_returns Column Definition**

| Colum | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| cr_returned_date_sk | identifier | | | d_date_sk |
| cr_returned_time_sk | identifier | | | t_time_sk |
| cr_item_sk (1) | identifier | N | Y | i_item_sk,cs_item_sk |
| cr_refunded_customer_sk | identifier | | | c_customer_sk |
| cr_refunded_cdemo_sk | identifier | | | cd_demo_sk |
| cr_refunded_hdemo_sk | identifier | | | hd_demo_sk |
| cr_refunded_addr_sk | identifier | | | ca_address_sk |
| cr_returning_customer_sk | identifier | | | c_customer_sk |
| cr_returning_cdemo_sk | identifier | | | cd_demo_sk |
| cr_returning_hdemo_sk | identifier | | | hd_demo_sk |
| cr_returning_addr_sk | identifier | | | ca_address_sk |
| cr_call_center_sk | identifier | | | cc_call_center_sk |
| cr_catalog_page_sk | identifier | | | cp_catalog_page_sk |

| Colum | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| cr_ship_mode_sk | identifier | | | sm_ship_mode_sk |
| cr_warehouse_sk | identifier | | | w_warehouse_sk |
| cr_reason_sk | identifier | | | r_reason_sk |
| cr_order_number (2) | identifier | N | Y | cs_order_number |
| cr_return_quantity | integer | | | |
| cr_return_amount | decimal(7,2) | | | |
| cr_return_tax | decimal(7,2) | | | |
| cr_return_amt_inc_tax | decimal(7,2) | | | |
| cr_fee | decimal(7,2) | | | |
| cr_return_ship_cost | decimal(7,2) | | | |
| cr_refunded_cash | decimal(7,2) | | | |
| cr_reversed_charge | decimal(7,2) | | | |
| cr_store_credit | decimal(7,2) | | | |
| cr_net_loss | decimal(7,2) | | | |

## 2.3.5 Web Sales (WS)

### 2.3.5.1 Web Sales ER-Diagram
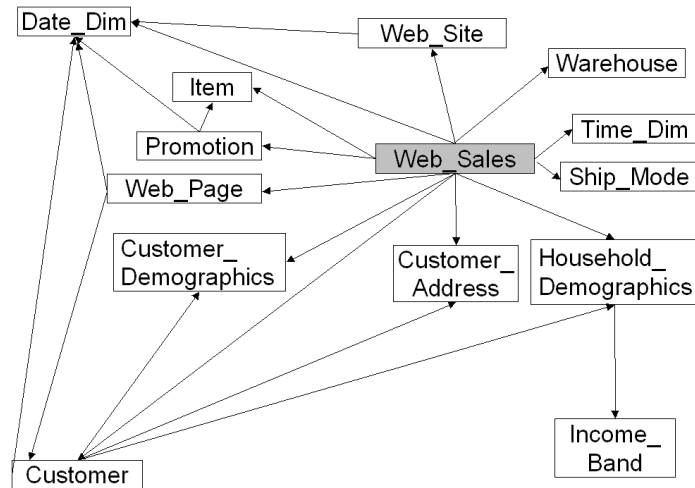


### 2.3.5.2 Web Sales Column Definition

Each row in this table represents a single lineitem for a sale made through the web channel and recorded in the web_sales fact table.
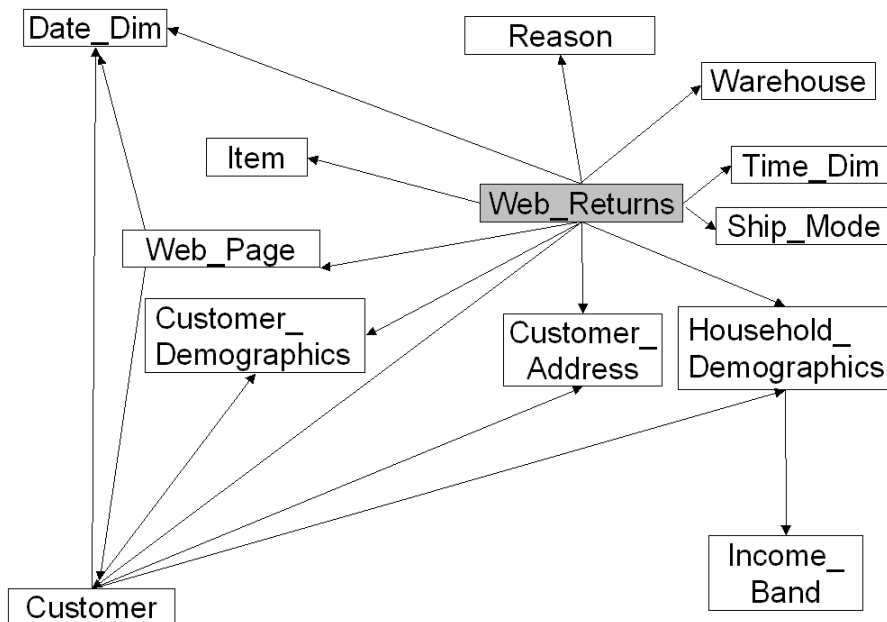
**Table 2-5 Web_sales Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| ws_sold_date_sk | identifier | | | d_date_sk |
| ws_sold_time_sk | identifier | | | t_time_sk |
| ws_ship_date_sk | identifier | | | d_date_sk |
| ws_item_sk (1) | identifier | N | Y | i_item_sk |
| ws_bill_customer_sk | identifier | | | c_customer_sk |
| ws_bill_cdemo_sk | identifier | | | cd_demo_sk |
| ws_bill_hdemo_sk | identifier | | | hd_demo_sk |
| ws_bill_addr_sk | identifier | | | ca_address_sk |
| ws_ship_customer_sk | identifier | | | c_customer_sk |
| ws_ship_cdemo_sk | identifier | | | cd_demo_sk |
| ws_ship_hdemo_sk | identifier | | | hd_demo_sk |
| ws_ship_addr_sk | identifier | | | ca_address_sk |
| ws_web_page_sk | identifier | | | wp_web_page_sk |
| ws_web_site_sk | identifier | | | web_site_sk |
| ws_ship_mode_sk | identifier | | | sm_ship_mode_sk |
| ws_warehouse_sk | identifier | | | w_warehouse_sk |
| ws_promo_sk | identifier | | | p_promo_sk |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|--------|----------|-------|-------------|-------------|
| ws_order_number (2) | identifier | N | Y | |
| ws_quantity | integer | | | |
| ws_wholesale_cost | decimal(7,2) | | | |
| ws_list_price | decimal(7,2) | | | |
| ws_sales_price | decimal(7,2) | | | |
| ws_ext_discount_amt | decimal(7,2) | | | |
| ws_ext_sales_price | decimal(7,2) | | | |
| ws_ext_wholesale_cost | decimal(7,2) | | | |
| ws_ext_list_price | decimal(7,2) | | | |
| ws_ext_tax | decimal(7,2) | | | |
| ws_coupon_amt | decimal(7,2) | | | |
| ws_ext_ship_cost | decimal(7,2) | | | |
| ws_net_paid | decimal(7,2) | | | |
| ws_net_paid_inc_tax | decimal(7,2) | | | |
| ws_net_paid_inc_ship | decimal(7,2) | | | |
| ws_net_paid_inc_ship_tax | decimal(7,2) | | | |
| ws_net_profit | decimal(7,2) | | | |

### 2.3.6  Web Returns (WR)

### 2.3.6.1  Web Returns ER-Diagram



### 2.3.6.2  Web Returns Column Definition

Each row in this table represents a single lineitem for the return of an item sold through the web sales channel and recorded in the web_returns table.

**Table 2-6 Web_returns Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|--------|----------|-------|-------------|-------------|
| wr_returned_date_sk | identifier | | | d_date_sk |
| wr_returned_time_sk | identifier | | | t_time_sk |
| wr_item_sk (2) | identifier | N | Y | i_item_sk,ws_item_sk |
| wr_refunded_customer_sk | identifier | | | c_customer_sk |
| wr_refunded_cdemo_sk | identifier | | | cd_demo_sk |
| wr_refunded_hdemo_sk | identifier | | | hd_demo_sk |
| wr_refunded_addr_sk | identifier | | | ca_address_sk |
| wr_returning_customer_sk | identifier | | | c_customer_sk |
| wr_returning_cdemo_sk | identifier | | | cd_demo_sk |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| wr_returning_hdemo_sk | identifier | | | hd_demo_sk |
| wr_returning_addr_sk | identifier | | | ca_address_sk |
| wr_web_page_sk | identifier | | | wp_web_page_sk |
| wr_reason_sk | identifier | | | r_reason_sk |
| wr_order_number (1) | identifier | N | Y | ws_order_number |
| wr_return_quantity | integer | | | |
| wr_return_amt | decimal(7,2) | | | |
| wr_return_tax | decimal(7,2) | | | |
| wr_return_amt_inc_tax | decimal(7,2) | | | |
| wr_fee | decimal(7,2) | | | |
| wr_return_ship_cost | decimal(7,2) | | | |
| wr_refunded_cash | decimal(7,2) | | | |
| wr_reversed_charge | decimal(7,2) | | | |
| wr_account_credit | decimal(7,2) | | | |
| wr_net_loss | decimal(7,2) | | | |

## 2.3.7 Inventory (INV)

### 2.3.7.1 Inventory ER-Diagram
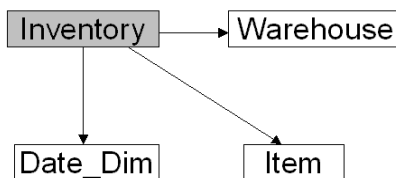


### 2.3.7.2 Inventory Column Definition

Each row in this table represents the quantity of a particular item on-hand at a given warehouse during a specific week.

Table 2-7 Inventory Column Definitions

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| inv_date_sk (1) | identifier | N | Y | d_date_sk |
| inv_item_sk (2) | identifier | N | Y | i_item_sk |
| inv_warehouse_sk (3) | identifier | N | Y | w_warehouse_sk |
| inv_quantity_on_hand | integer | | | |

## 2.4 Dimension Table Definitions

### 2.4.1 Store (S)

Each row in this dimension table represents details of a store.

**Table 2-8: Store Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| s_store_sk | identifier | N | Y | |
| s_store_id (B) | char(16) | N | | |
| s_rec_start_date | date | | | |
| s_rec_end_date | date | | | |
| s_closed_date_sk | identifier | | | d_date_sk |
| s_store_name | varchar(50) | | | |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| s_number_employees | integer | | | |
| s_floor_space | integer | | | |
| s_hours | char(20) | | | |
| S_manager | varchar(40) | | | |
| S_market_id | integer | | | |
| S_geography_class | varchar(100) | | | |
| S_market_desc | varchar(100) | | | |
| s_market_manager | varchar(40) | | | |
| s_division_id | integer | | | |
| s_division_name | varchar(50) | | | |
| s_company_id | integer | | | |
| s_company_name | varchar(50) | | | |
| s_street_number | varchar(10) | | | |
| s_street_name | varchar(60) | | | |
| s_street_type | char(15) | | | |
| s_suite_number | char(10) | | | |
| s_city | varchar(60) | | | |
| s_county | varchar(30) | | | |
| s_state | char(2) | | | |
| s_zip | char(10) | | | |
| s_country | varchar(20) | | | |
| s_gmt_offset | decimal(5,2) | | | |
| s_tax_percentage | decimal(5,2) | | | |

## 2.4.2 Call Center (CC)

Each row in this table represents details of a call center.

**Table 2-9 Call_center Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| cc_call_center_sk | identifier | N | Y | |
| cc_call_center_id (B) | char(16) | N | | |
| cc_rec_start_date | date | | | |
| cc_rec_end_date | date | | | |
| cc_closed_date_sk | identifier | | | d_date_sk |
| cc_open_date_sk | identifier | | | d_date_sk |
| cc_name | varchar(50) | | | |
| cc_class | varchar(50) | | | |
| cc_employees | integer | | | |
| cc_sq_ft | integer | | | |
| cc_hours | char(20) | | | |
| cc_manager | varchar(40) | | | |
| cc_mkt_id | integer | | | |
| cc_mkt_class | char(50) | | | |
| cc_mkt_desc | varchar(100) | | | |
| cc_market_manager | varchar(40) | | | |
| cc_division | integer | | | |
| cc_division_name | varchar(50) | | | |
| cc_company | integer | | | |
| cc_company_name | char(50) | | | |
| cc_street_number | char(10) | | | |
| cc_street_name | varchar(60) | | | |
| cc_street_type | char(15) | | | |
| cc_suite_number | char(10) | | | |
| cc_city | varchar(60) | | | |
| cc_county | varchar(30) | | | |
| cc_state | char(2) | | | |
| cc_zip | char(10) | | | |
| cc_country | varchar(20) | | | |
| cc_gmt_offset | decimal(5,2) | | | |
| cc_tax_percentage | decimal(5,2) | | | |

## 2.4.3 Catalog_page (CP)

Each row in this table represents details of a catalog page.

**Table 2-10 Catalog Page Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **cp_catalog_page_sk** | identifier | N | Y | |
| cp_catalog_page_id (B) | char(16) | N | | |
| cp_start_date_sk | identifier | | | d_date_sk |
| cp_end_date_sk | identifier | | | d_date_sk |
| cp_department | varchar(50) | | | |
| cp_catalog_number | integer, | | | |
| cp_catalog_page_number | integer, | | | |
| cp_description | varchar(100) | | | |
| cp_type | varchar(100) | | | |

2.4.4        Web_site (WEB)

Each row in this table represents details of a web site.

**Table 2-11 Web_site Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **web_site_sk** | identifier | N | Y | |
| web_site_id (B) | char(16) | N | | |
| web_rec_start_date | date | | | |
| web_rec_end_date | date | | | |
| web_name | varchar(50) | | | |
| web_open_date_sk | identifier | | | d_date_sk |
| web_close_date_sk | identifier | | | d_date_sk |
| web_class | varchar(50) | | | |
| web_manager | varchar(40) | | | |
| web_mkt_id | integer | | | |
| web_mkt_class | varchar(50) | | | |
| web_mkt_desc | varchar(100) | | | |
| web_market_manager | varchar(40) | | | |
| web_company_id | integer | | | |
| web_company_name | char(50) | | | |
| web_street_number | char(10) | | | |
| web_street_name | varchar(60) | | | |
| web_street_type | char(15) | | | |
| web_suite_number | char(10) | | | |
| web_city | varchar(60) | | | |
| web_county | varchar(30) | | | |
| web_state | char(2) | | | |
| web_zip | char(10) | | | |
| web_country | varchar(20) | | | |
| web_gmt_offset | decimal(5,2) | | | |
| web_tax_percentage | decimal(5,2) | | | |

2.4.5        Web_page (WP)

Each row in this table represents details of a web page within a web site.

**Table 2-12 Web_page Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| wp_web_page_sk | identifier | N | Y | |
| wp_web_page_id (B) | char(16) | N | | |
| wp_rec_start_date | date | | | |
| wp_rec_end_date | date | | | |
| wp_creation_date_sk | identifier | | | d_date_sk |
| wp_access_date_sk | identifier | | | d_date_sk |
| wp_autogen_flag | char(1) | | | |
| wp_customer_sk | identifier | | | c_customer_sk |
| wp_url | varchar(100) | | | |
| wp_type | char(50) | | | |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| wp_char_count | integer | | | |
| wp_link_count | integer | | | |
| wp_image_count | integer | | | |
| wp_max_ad_count | integer | | | |

### 2.4.6 Warehouse (W)

Each row in this dimension table represents a warehouse where items are stocked.

**Table 2-13 Warehouse Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **w_warehouse_sk** | identifier | N | Y | |
| w_warehouse_id (B) | char(16) | N | | |
| w_warehouse_name | varchar(20) | | | |
| w_warehouse_sq_ft | integer | | | |
| w_street_number | char(10) | | | |
| w_street_name | varchar(60) | | | |
| w_street_type | char(15) | | | |
| w_suite_number | char(10) | | | |
| w_city | varchar(60) | | | |
| w_county | varchar(30) | | | |
| w_state | char(2) | | | |
| w_zip | char(10) | | | |
| w_country | varchar(20) | | | |
| w_gmt_offset | decimal(5,2) | | | |

### 2.4.7 Customer (C)

Each row in this dimension table represents a customer.

**Table 2-14: Customer Table Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| c_customer_sk | identifier | N | Y | |
| c_customer_id (B) | char(16) | N | | |
| c_current_cdemo_sk | identifier | | | cd_demo_sk |
| c_current_hdemo_sk | identifier | | | hd_demo_sk |
| c_current_addr_sk | identifier | | | ca_addres_sk |
| c_first_shipto_date_sk | identifier | | | d_date_sk |
| c_first_sales_date_sk | identifier | | | d_date_sk |
| c_salutation | char(10) | | | |
| c_first_name | char(20) | | | |
| c_last_name | char(30) | | | |
| c_preferred_cust_flag | char(1) | | | |
| c_birth_day | integer | | | |
| c_birth_month | integer | | | |
| c_birth_year | integer | | | |
| c_birth_country | varchar(20) | | | |
| c_login | char(13) | | | |
| c_email_address | char(50) | | | |
| c_last_review_date_sk | identifier | | | d_date_sk |

### 2.4.8 Customer_address (CA)

Each row in this table represents a unique customer address (each customer can have more than one address)

**Table 2-15 Customer_address Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| ca_address_sk | identifier | N | Y | |
| ca_address_id (B) | char(16) | N | | |
| ca_street_number | char(10) | | | |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| ca_street_name | varchar(60) | | | |
| ca_street_type | char(15) | | | |
| ca_suite_number | char(10) | | | |
| ca_city | varchar(60) | | | |
| ca_county | varchar(30) | | | |
| ca_state | char(2) | | | |
| ca_zip | char(10) | | | |
| ca_country | varchar(20) | | | |
| ca_gmt_offset | decimal(5,2) | | | |
| ca_location_type | char(20) | | | |

### 2.4.9 Customer_demographics (CD)

The customer demographics table contains one row for each unique combination of customer demographic information.

**Table 2-16 Customer_demographics Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| cd_demo_sk | identifier | N | Y | |
| cd_gender | char(1) | | | |
| cd_marital_status | char(1) | | | |
| cd_education_status | char(20) | | | |
| cd_purchase_estimate | integer | | | |
| cd_credit_rating | char(10) | | | |
| cd_dep_count | integer | | | |
| cd_dep_employed_count | integer | | | |
| cd_dep_college_count | integer | | | |

### 2.4.10 Date_dim (D)

Each row in this table represents one calendar day. The surrogate key (d_date_sk) for a given row is derived from the julian date being described by the row.

**Table 2-17 Date_dim Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| d_date_sk | identifier | N | Y | |
| d_date_id (B) | char(16) | N | | |
| d_date | date | | | |
| d_month_seq | integer | | | |
| d_week_seq | integer | | | |
| d_quarter_seq | integer | | | |
| d_year | integer | | | |
| d_dow | integer | | | |
| d_moy | integer | | | |
| d_dom | integer | | | |
| d_qoy | integer | | | |
| d_fy_year | integer | | | |
| d_fy_quarter_seq | integer | | | |
| d_fy_week_seq | integer | | | |
| d_day_name | char(9) | | | |
| d_quarter_name | char(6) | | | |
| d_holiday | char(1) | | | |
| d_weekend | char(1) | | | |
| d_following_holiday | char(1) | | | |
| d_first_dom | integer | | | |
| d_last_dom | integer | | | |
| d_same_day_ly | integer | | | |
| d_same_day_lq | integer | | | |
| d_current_day | char(1) | | | |
| d_current_week | char(1) | | | |
| d_current_month | char(1) | | | |
| d_current_quarter | char(1) | | | |
| d_current_year | char(1) | | | |

### 2.4.11 Household_demographics (HD)

Each row of this table defines a household demographic profile.

**Table 2-18 Household_demographics Column Definition**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **hd_demo_sk** | identifier | N | Y | |
| hd_income_band_sk | identifier | | | ib_income_band_sk |
| hd_buy_potential | char(15) | | | |
| hd_dep_count | integer | | | |
| hd_vehicle_count | integer | | | |

### 2.4.12 Item (I)

Each row in this table represents a unique product formulation (e.g., size, color, manufactuer, etc.).

**Table 2-19 Item Column Definition**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **i_item_sk** | identifier | N | Y | |
| i_item_id (B) | char(16) | N | | |
| i_rec_start_date | date | | | |
| i_rec_end_date | date | | | |
| i_item_desc | varchar(200) | | | |
| i_current_price | decimal(7,2) | | | |
| i_wholesale_cost | decimal(7,2) | | | |
| i_brand_id | integer | | | |
| i_brand | char(50) | | | |
| i_class_id | integer | | | |
| i_class | char(50) | | | |
| i_category_id | integer | | | |
| i_category | char(50) | | | |
| i_manufact_id | integer | | | |
| i_manufact | char(50) | | | |
| i_size | char(20) | | | |
| i_formulation | char(20) | | | |
| i_color | char(20) | | | |
| i_units | char(10) | | | |
| i_container | char(10) | | | |
| i_manager_id | integer | | | |
| i_product_name | char(50) | | | |

### 2.4.13 Income_band (IB)

Each row in this table represents details of an income range.

**Table 2-20: Income_band Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **ib_income_band_sk** | identifier | N | Y | |
| ib_lower_bound | integer | | | |
| ib_upper_bound | integer | | | |

### 2.4.14 Promotion (P)

Each row in this table represents details of a specific product promotion (e.g., advertising, sales, PR).

**Table 2-21: Promotion Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| p_promo_sk | identifier | N | Y | |
| p_promo_id (B) | char(16) | N | | |
| p_start_date_sk | identifier | | | d_date_sk |
| p_end_date_sk | identifier | | | d_date_sk |
| p_item_sk | identifier | | | i_item_sk |

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| p_cost | decimal(15,2) | | | |
| p_response_target | integer | | | |
| p_promo_name | char(50) | | | |
| p_channel_dmail | char(1) | | | |
| p_channel_email | char(1) | | | |
| p_channel_catalog | char(1) | | | |
| p_channel_tv | char(1) | | | |
| p_channel_radio | char(1) | | | |
| p_channel_press | char(1) | | | |
| p_channel_event | char(1) | | | |
| p_channel_demo | char(1) | | | |
| p_channel_details | varchar(100) | | | |
| p_purpose | char(15) | | | |
| p_discount_active | char(1) | | | |

## 2.4.15    Reason (R)

Each row in this table represents a reason why an item was returned.

**Table 2-22: Reason Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **r_reason_sk** | identifier | N | Y | |
| r_reason_id (B) | char(16) | N | | |
| r_reason_desc | char(100) | | | |

## 2.4.16    Ship_mode (SM)

Each row in this table represents a shipping mode.

**Table 2-23: Ship_mode Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| sm_ship_mode_sk | identifier | N | Y | |
| sm_ship_mode_id (B) | char(16) | N | | |
| sm_type | char(30) | | | |
| sm_code | char(10) | | | |
| sm_carrier | char(20) | | | |
| sm_contract | char(20) | | | |

## 2.4.17    Time_dim (T)

Each row in this table represents one second.

**Table 2-24: Time_dim Column Definitions**

| Column | Datatype | NULLs | Primary Key | Foreign Key |
|---|---|---|---|---|
| **t_time_sk** | Identifier | N | Y | |
| t_time_id (B) | char(16) | N | | |
| t_time | Integer | | | |
| t_hour | Integer | | | |
| t_minute | Integer | | | |
| t_second | Integer | | | |
| t_am_pm | char(2) | | | |
| t_shift | char(20) | | | |
| t_sub_shift | char(20) | | | |
| t_meal_time | char(20) | | | |

### 2.4.18    dsdgen_version

This table is not employed during the benchmark. A flat file is generated by dsdgen (see Appendix F), and it can be helpful in assuring that the current data set was built with the correct version of the TPC-DS toolkit. It is included here for completeness.

**Table 2-25: dsdgen_version Column Definitions**

| Column | Datatype | NULLs | Foreign Key |
|---|---|---|---|
| dv_version | Varchar(16) | N | |
| dv_create_date | date | N | |
| dv_create_time | time | N | |
| dv_cmdline_args | Varchar(200) | N | |

## 2.5    Implementation Requirements

### 2.5.1    Definition of Terms

2.5.1.1    The tables defined in Clause 2.3 and Clause 2.4 are referred to as base tables. The flat file data generated by **dsdgen** corresponding to each base table and loaded into each base table is referred to as base table data.  A structure containing base table data is referred to as a base table data structure.

2.5.1.2    Other than the base table data structures, any database structure that contains a copy of, reference to, or data computed from base table data is defined as an auxiliary data structures (**ADS**). The data in the ADS is materialized from the base table data; references are a form of materialization.  There is an essential distinction between base table data contained in a base table data structure and data contained in auxiliary data structures. Because auxiliary data structures contain *copies of*, *references to, or data computed from* base table data, deleting data from an auxiliary data structure does not result in the loss of base table data in that it is still contained in the base table data structure.  In contrast, deleting data from a base table data structure (in the absence of copies in any auxiliary data structures) does result in the loss of base table data.

2.5.1.3    There are two types of auxiliary data structures: Implicit and explicit. An explicit auxiliary data structure (EADS) is created as a consequence of a directive (e.g. DDL, session options, global configuration parameters). These directives are called EADS Directives. Any ADS which is not an EADS is by definition an Implict ADS (IADS).

   **Comment:**    In contrast to an implicit **ADS**, an **EADS** would not have been created without the directive.

2.5.1.4    The assignment of groups of rows from a table or EADS to different files, disks, or areas is defined as horizontal partitioning.

2.5.1.5    The assignment of groups of columns of one or more rows to files, disks, or areas different from those storing the other columns of these rows is defined as vertical partitioning.

2.5.1.6    A Primary Key is one or more columns that uniquely identifies a row. None of the columns that are part of the Primary Key may be nullable. A table must have no more than one Primary Key. A primary key may be enforced, e.g. by a primary key constraint.

2.5.1.7    A Foreign Key  is a column or combination of columns used to establish a link between the data in two tables. A link is created between two tables by adding the column or columns that hold one table's Primary Key values to the other table. This column becomes a Foreign Key in the second table. A foreign key may be enforced, e.g. by a foreign key constraint.Referential Integrity is a data property whereby a Foreign Key in one table has a corresponding Primary key in a different table.

2.5.1.8    The definition of primary and foreign keys is optional.

2.5.1.9    Whenever this specification refers to a set of primary and foreign keys it refers to the set of primary and foreign keys defined in clauses 2.3 and 2.4.

### 2.5.2    Data Processing System & Tables