**Fact-Dimension Model Document**

**Overview**

This document describes the design of a star schema for processing event data with relevant fact and dimension tables. The schema is designed to capture user interactions with products and facilitate analytics.

**1. Fact Table: fact\_events**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| event\_id | BIGINT (PK) | Unique identifier for the fact (auto-increment) |
| event\_time | DATETIME | The timestamp when the event occurred |
| event\_type\_id | INT (FK) | Foreign key to dim\_event\_type |
| product\_id | INT (FK) | Foreign key to dim\_product |
| category\_id | INT (FK) | Foreign key to dim\_category |
| user\_id | INT (FK) | Foreign key to dim\_user |
| price | DECIMAL(10,2) | Price of the product during the event |
| user\_session | VARCHAR(255) | The session in which the event took place |

**2. Dimension Tables**

**2.1 Dimension Table: dim\_event\_type**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| event\_type\_id | INT (PK) | Unique event type identifier |
| event\_type | VARCHAR(255) | Type of event (view, purchase, etc.) |

**2.2 Dimension Table: dim\_product**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| product\_id | INT (PK) | Unique product identifier |
| brand | VARCHAR(255) | Brand of the product |

**2.3 Dimension Table: dim\_category**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| category\_id | INT (PK) | Unique category identifier |
| category\_code | VARCHAR(255) | Descriptive code for category |

**2.4 Dimension Table: dim\_user**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| user\_id | INT (PK) | Unique user identifier |
| first\_transaction\_date | DATE | Date of the user's first transaction |

**ETL Process**

1. **Loading Data**:
   * Load data from the source into the fact\_events table.
   * Extract distinct users from fact\_events to populate the dim\_user table, calculating first\_transaction\_date.
2. **Populating Dimension Tables**:
   * Populate dim\_event\_type, dim\_product, and dim\_category with unique values from the events.
3. **Updating User Data**:
   * Regularly update the dim\_user table to reflect any new transactions and adjust first\_transaction\_date as necessary.