

Based on the given scenario, we can proceed with the following steps to model and implement the data warehouse:

1. Analysis of the Scenario Description:

- There are two product categories: alcoholic and non-alcoholic.
- Sales analysis is required for various time periods: day, week, month, quarter, and year.
- Branches are assigned to different geographical regions.

2. Modeling of the Data Warehouse as mE/R Schema: We will create an mE/R schema based on the requirements. Here is a description of the entities and their relationships:

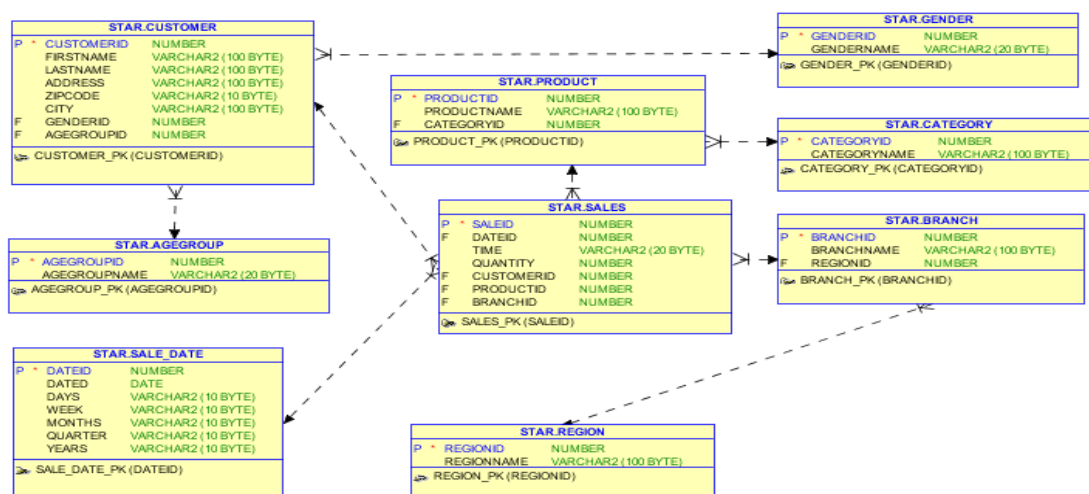
Entities:

- Product: ProductID (primary key), Product Name
- Category: CategoryID (primary key), Category Name
- Branch: BranchID (primary key), Branch Name
- Region: RegionID (primary key), Region Name
- Customer: CustomerID (primary key), First Name, Last Name, Address, ZIP Code, City
- Gender: GenderID (primary key), Gender Name
- Age Group: AgeGroupID (primary key), Age Group Name
- Sale: SaleID (primary key), DateID, Time, Quantity, CustomerID, ProductID
- Date: DateID (primary key), Date, Day, Week, Month, Quarter, Year

Relationship:

- Product belongs to Category
- Branch belongs to Region
- Customer has Gender and belongs to Age Group
- Sale is associated with a Product, Customer, Branch, and Date

3. Transformation of the E/R Schema into a Relational Star Schema: Based on the E/R schema, we can transform it into a relational Star schema. The Star schema consists of a central fact table surrounded by dimension tables.



4. Implementation of the Star Schema in Oracle Database: Now, we need to create the physical schema in the Oracle database based on the Star schema.

Here is an example of the SQL DDL statements to create the tables in the Oracle database:

```
-----  
-- DDL for Table AGEGROUP  
-----
```

```
CREATE TABLE STAR.AGEGROUP  
(   AGEGROUPID NUMBER,  
    AGEGROUPNAME VARCHAR2(20 BYTE)  
);
```

```
-----  
-- DDL for Table BRANCH  
-----
```

```
CREATE TABLE STAR.BRANCH  
(   BRANCHID NUMBER,  
    BRANCHNAME VARCHAR2(100 BYTE),  
    REGIONID NUMBER  
);
```

```
-----  
-- DDL for Table CATEGORY  
-----
```

```
CREATE TABLE STAR.CATEGORY  
(   CATEGORYID NUMBER,  
    CATEGORYNAME VARCHAR2(100 BYTE)  
);
```

```
-----  
-- DDL for Table CUSTOMER  
-----
```

```
CREATE TABLE STAR.CUSTOMER  
(   CUSTOMERID NUMBER,  
    FIRSTNAME VARCHAR2(100 BYTE),  
    LASTNAME VARCHAR2(100 BYTE),  
    ADDRESS VARCHAR2(100 BYTE),  
    ZIPCODE VARCHAR2(10 BYTE),  
    CITY VARCHAR2(100 BYTE),  
    GENDERID NUMBER,  
    AGEGROUPID NUMBER  
);
```

```
-----  
-- DDL for Table GENDER  
-----
```

```
CREATE TABLE STAR.GENDER
(
    GENDERID NUMBER,
    GENDERNAME VARCHAR2(20 BYTE)
);
```

-----  
-- DDL for Table PRODUCT  
-----

```
CREATE TABLE STAR.PRODUCT
(
    PRODUCTID NUMBER,
    PRODUCTNAME VARCHAR2(100 BYTE),
    CATEGORYID NUMBER
);
```

-----  
-- DDL for Table REGION  
-----

```
CREATE TABLE STAR.REGION
(
    REGIONID NUMBER,
    REGIONNAME VARCHAR2(100 BYTE)
);
```

-----  
-- DDL for Table SALE\_DATE  
-----

```
CREATE TABLE STAR.SALE_DATE
(
    DATEID NUMBER,
    DATED DATE,
    DAYS VARCHAR2(10 BYTE),
    WEEK VARCHAR2(10 BYTE),
    MONTHS VARCHAR2(10 BYTE),
    QUARTER VARCHAR2(10 BYTE),
    YEARS VARCHAR2(10 BYTE)
);
```

-----  
-- DDL for Table SALES  
-----

```
CREATE TABLE STAR.SALES
(
    SALEID NUMBER,
    DATEID NUMBER,
    TIME VARCHAR2(20 BYTE),
    QUANTITY NUMBER,
    CUSTOMERID NUMBER,
    PRODUCTID NUMBER,
    BRANCHID NUMBER
);
```

TABSPACE USERS ;

-----  
-- Constraints for Table AGEGROUP  
-----

ALTER TABLE STAR.AGEGROUP ADD PRIMARY KEY (AGEGROUPID);

-----  
-- Constraints for Table BRANCH  
-----

ALTER TABLE STAR.BRANCH ADD PRIMARY KEY (BRANCHID);

-----  
-- Constraints for Table CATEGORY  
-----

ALTER TABLE STAR.CATEGORY ADD PRIMARY KEY (CATEGORYID);

-----  
-- Constraints for Table CUSTOMER  
-----

ALTER TABLE STAR.CUSTOMER ADD PRIMARY KEY (CUSTOMERID);

-----  
-- Constraints for Table GENDER  
-----

ALTER TABLE STAR.GENDER ADD PRIMARY KEY (GENDERID);

-----  
-- Constraints for Table PRODUCT  
-----

ALTER TABLE STAR.PRODUCT ADD PRIMARY KEY (PRODUCTID);

-----  
-- Constraints for Table REGION  
-----

ALTER TABLE STAR.REGION ADD PRIMARY KEY (REGIONID);

-----  
-- Constraints for Table SALE\_DATE  
-----

ALTER TABLE STAR.SALE\_DATE ADD PRIMARY KEY (DATEID);

-----  
-- Constraints for Table SALES  
-----

ALTER TABLE STAR.SALES ADD PRIMARY KEY (SALEID);

-----  
-- Ref Constraints for Table BRANCH  
-----

ALTER TABLE STAR.BRANCH ADD FOREIGN KEY (REGIONID);

-----  
-- Ref Constraints for Table CUSTOMER  
-----

ALTER TABLE STAR.CUSTOMER ADD FOREIGN KEY (GENDERID)  
REFERENCES STAR.GENDER (GENDERID) ENABLE;  
ALTER TABLE STAR.CUSTOMER ADD FOREIGN KEY (AGEGROUPID)  
REFERENCES STAR.AGEGROUP (AGEGROUPID) ENABLE;

-----  
-- Ref Constraints for Table PRODUCT  
-----

ALTER TABLE STAR.PRODUCT ADD FOREIGN KEY (CATEGORYID)  
REFERENCES STAR.CATEGORY (CATEGORYID) ENABLE;

-----  
-- Ref Constraints for Table SALES  
-----

ALTER TABLE STAR.SALES ADD FOREIGN KEY (DATEID)  
REFERENCES STAR.SALE\_DATE (DATEID) ENABLE;  
ALTER TABLE STAR.SALES ADD FOREIGN KEY (CUSTOMERID)  
REFERENCES STAR.CUSTOMER (CUSTOMERID) ENABLE;  
ALTER TABLE STAR.SALES ADD FOREIGN KEY (PRODUCTID)  
REFERENCES STAR.PRODUCT (PRODUCTID) ENABLE;  
ALTER TABLE STAR.SALES ADD CONSTRAINT SALES\_BRANCH\_FK1 FOREIGN KEY  
(BRANCHID)  
REFERENCES STAR.BRANCH (BRANCHID) ENABLE;

