**COSC 3380**

**Name: Tyler Hu PS ID # \_\_\_\_\_\_\_\_\_**

**Project 1 ERD - WHAT:**

**(50 points)**

**Project 1 with Line Numbers**

**TEXTUAL ANALYSIS for**

**ERD Modeling**

**1. 15 points**

**2. 15 points**

**3. 5 points**

**4. 5 points**

**5. 10 points**

**PLEASE ENTER YOUR GRADE IN THIS BOX & ALSO on the CHECK SHEET:**

1. (15 points)

***# of Es: 8***

***Table of Es:***

|  |  |
| --- | --- |
| ***E #*** | ***E Name*** |
| **E1** | **Product** |
| **E2** | **ProductLine** |
| **E3** | **Customer** |
| **E4** | **Order** |
| **E5** | **OrderLine** |
| **E6** | **Territory** |
| **E7** | **Business** |
| **E8** | **SalesPerson** |

***# of Attributes: 27***

***Table of Attributes:***

|  |  |  |
| --- | --- | --- |
| ***Attribute #*** | ***E# & Name*** | ***Attribute Name*** |
| **A1** | **E1: Product** | **Prod\_ID** |
| **A2** | **E1: Product** | **ProdName** |
| **A3** | **E1: Product** | **ProdFinish** |
| **A4** | **E1: Product** | **ProdStdPrice** |
| **A5** | **E1: Product** | **ProdPhoto** |
| **A1** | **E2: ProductLine** | **ProdLine\_ID** |
| **A2** | **E2: ProductLine** | **ProdName** |
| **A1** | **E3: Customer** | **Cus\_ID** |
| **A2** | **E3: Customer** | **CusName** |
| **A3** | **E3: Customer** | **CusAddress** |
| **A4** | **E3: Customer** | **CusCity** |
| **A5** | **E3: Customer** | **CusState** |
| **A6** | **E3: Customer** | **CusPosCode** |
| **A7** | **E3: Customer** | **CusEmail** |
| **A8** | **E3: Customer** | **CusUsername** |
| **A9** | **E3: Customer** | **CusPassword** |
| **A1** | **E4: Order** | **Order\_ID** |
| **A2** | **E4: Order** | **OrderDate** |
| **A1** | **E5: OrderLine** | **OrderedQuantity** |
| **A1** | **E6: Territory** | **Territory\_ID** |
| **A2** | **E6: Territory** | **TerritoryName** |
| **A1** | **E8: SalesPerson** | **SalesP\_ID** |
| **A2** | **E8: SalesPerson** | **SalesPName** |
| **A3** | **E8: SalesPerson** | **SalesPTele** |
| **A4** | **E8: SalesPerson** | **SalesPEmail** |
| **A5** | **E8: SalesPerson** | **SalesPUsername** |
| **A6** | **E8: SalesPerson** | **SalesPPassword** |

2. (15 points)

***# of Rs : 7***

***Table of Rs***

|  |  |  |
| --- | --- | --- |
| ***R #*** | ***R Name*** | ***Connecting Es# & Name & Cardinality*** |
| **R1** | **Group** | **1 E2: ProductLine “Group” M E1: Products** |
| **R2** | **Submit** | **1 E3: Customer “Submit” M E4: Orders** |
| **R3** | **Request** | **1 E4: Order “Request” M E5: OrderLines** |
| **R4** | **Appear** | **1 E1: Product “Appear” M E5: OrderLines** |
| **R5** | **Do** | **1 E3: Customer “Do” M E7: Business** |
| **R6** | **Has** | **1 E6: Territory “Has” M E7: Business** |
| **R7** | **Served By** | **1 E6: Territory “Served By” M E8: SalesPersons** |

***# of Descriptive Attributes: 0***

***Table of Descriptive Attributes***

|  |  |  |
| --- | --- | --- |
| ***Attribute #*** | ***R# & Name*** | ***Attribute Name*** |
|  |  |  |

***Total # of Attributes (Attributes + Descriptive Attributes): 27***

**3.** (5 points)

***# of Vs: 5***

***Table of Vs: V # V Name***

|  |  |
| --- | --- |
| ***V #*** | ***V Name*** |
| **V1** | **Product Line Sales Comparison REPORT** |
| **V2** | **Total Value for Products REPORT** |
| **V3** | **Data for Customer REPORT** |
| **V4** | **Customer by States Shipment REPORT** |
| **V5** | **Past Purchase History REPORT** |

***Table of Attributes:***

|  |  |  |
| --- | --- | --- |
| ***V #*** | ***V Name*** | ***E# Attributes Input or Output*** |
| **V1** | **Product Line Sales Comparison REPORT** | **E1: Product – A1: Prod\_ID**  ***INPUT*** |
| **V1** | **Product Line Sales Comparison REPORT** | **E2: ProductLine – A1: ProdLine\_ID *INPUT*** |
| **V1** | **Product Line Sales Comparison REPORT** | **E4: Order – A1: Order\_ID**  ***INPUT*** |
| **V1** | **Product Line Sales Comparison REPORT** | **E5: OrderLine – A1: OrderedQuantity**  ***INPUT*** |
| **V1** | **Product Line Sales Comparison REPORT** | **E1: Product – A1: Prod\_ID**  ***OUTPUT*** |
| **V1** | **Product Line Sales Comparison REPORT** | **E1: Product – A2: ProdName**  ***OUTPUT*** |
| **V1** | **Product Line Sales Comparison REPORT** | **SUM of all E5:A1: OrderedQuantity = Each Product’s Total Sales**  ***OUTPUT*** |
| **V2** | **Total Value for Products REPORT** | **E1: Product – A1: Prod\_ID**  ***INPUT*** |
| **V2** | **Total Value for Products REPORT** | **E1: Product – A4: ProdStdPrice *INPUT*** |
| **V2** | **Total Value for Products REPORT** | **E4: Order – A1: Order\_ID**  ***INPUT*** |
| **V2** | **Total Value for Products REPORT** | **E5: OrderLine – A1: OrderedQuantity**  ***INPUT*** |
| **V2** | **Total Value for Products REPORT** | **E1: Product – A1: Prod\_ID**  ***OUTPUT*** |
| **V2** | **Total Value for Products REPORT** | **E1: Product – A2: ProdName**  ***OUTPUT*** |
| **V2** | **Total Value for Products REPORT** | **E1:A4: ProdStdPrice \* SUM of E5:A1: OrderedQuantity = Total Value of Orders for each product**  ***OUTPUT*** |
| **V3** | **Data for Customer REPORT** | **E1: Product – A1: Prod\_ID**  ***INPUT*** |
| **V3** | **Data for Customer REPORT** | **E6: Territory – A1: Territory\_ID**  ***INPUT*** |
| **V3** | **Data for Customer REPORT** | **E3: Customer – A1: Cus\_ID**  ***INPUT*** |
| **V3** | **Data for Customer REPORT** | **E3: Customer – A1: Cus\_ID**  ***OUTPUT*** |
| **V3** | **Data for Customer REPORT** | **E3: Customer – A2: CusName**  ***OUTPUT*** |
| **V3** | **Data for Customer REPORT** | **E1: Product – A1: Prod\_ID**  ***OUTPUT*** |
| **V3** | **Data for Customer REPORT** | **E1: Product – A2: ProdName**  ***OUTPUT*** |
| **V3** | **Data for Customer REPORT** | **E1: Product – A4: ProdStdPrice *OUTPUT*** |
| **V4** | **Customer by States Shipment REPORT** | **E3: Customer – A1: Cus\_ID**  ***INPUT*** |
| **V4** | **Customer by States Shipment REPORT** | **E3: Customer – A5: CusState**  ***INPUT*** |
| **V4** | **Customer by States Shipment REPORT** | **distinct E3: Customer – A5: CusState *OUTPUT*** |
| **V4** | **Customer by States Shipment REPORT** | **COUNT of all E3: Customer with distinct A1: Cus\_ID in each**  **E3: Customer – A5: CusState**  ***OUTPUT*** |
| **V5** | **Past Purchase History REPORT** | **E3: Customer – A1: Cus\_ID**  ***INPUT*** |
| **V5** | **Past Purchase History REPORT** | **E4: Order – A1: Order\_ID**  ***INPUT*** |
| **V5** | **Past Purchase History REPORT** | **E1: Product – A1: Prod\_ID**  ***INPUT*** |
| **V5** | **Past Purchase History REPORT** | **E5: OrderLine – A1: OrderedQuantity**  ***INPUT*** |
| **V5** | **Past Purchase History REPORT** | **E4: Order – A1: Order\_ID**  ***OUTPUT*** |
| **V5** | **Past Purchase History REPORT** | **E4: Order – A2: OrderDate**  ***OUTPUT*** |
| **V5** | **Past Purchase History REPORT** | **E1: Product – A2: ProdName**  ***OUTPUT*** |
| **V5** | **Past Purchase History REPORT** | **E1: Product – A4: ProdStdPrice**  ***OUTPUT*** |
| **V5** | **Past Purchase History REPORT** | **E5: OrderLine – A1: OrderedQuantity**  ***OUTPUT*** |
| **V5** | **Past Purchase History REPORT** | **E1:A4: ProdStdPrice \* E5:A1: OrderedQuantity = Total Value of Order for each product**  ***OUTPUT*** |

***4.*** (5 points)

***# of Ts: 1***

***Table of Ts:***

|  |  |
| --- | --- |
| ***T #*** | ***T Name*** |
| **T1** | **StandardPriceUpdate** |

***Table of Attributes:***

|  |  |  |
| --- | --- | --- |
| ***T #*** | ***T Name*** | ***E# Attributes Input or Output*** |
| **T1** | **StandardPriceUpdate** | **E1: Product – A1: Prod\_ID**  ***INPUT*** |
| **T1** | **StandardPriceUpdate** | **E1: Product – A4: ProdStdPrice**  ***INPUT*** |
| **T1** | **StandardPriceUpdate** | **E1: Product – A1: Prod\_ID**  ***OUTPUT*** |
| **T1** | **StandardPriceUpdate** | **E1: Product – A2: ProdName**  ***OUTPUT*** |
| **T1** | **StandardPriceUpdate** | **E1: Product – A4: ProdStdPrice**  ***OUTPUT*** |

***5.*** (10 points)

TA and ERD

The DBMS allows users to share the data and query, access, and update the stored data. These are some of the **COSC3380** data models:

Customers are a person or an organization that buys or may potentially buy products from **COSC3380**.

An order is the purchase of one or more products by a customer.

A product is an item that **COSC3380** makes and sells.

An order line is details about each product sold on a particular customer order (such as quantity and price).

Each customer can place any number of orders. Conversely, each order is placed by exactly one customer. Each order contains any number of order lines. Conversely, each order line is contained in exactly one order.

Each product has any number of order lines. Conversely, each order line is for exactly one product.

From a study of the business processes at **COSC3380**, the following data needs to be stored in the database:

**E1: Product**

• **COSC3380** sells a number of different furniture products. These products are grouped into several product lines. The identifier for a product is Product ID, whereas the identifier for a product line is Product Line ID. **COSC3380** identified the following additional attributes for product: Product Nam, Product Finish, Product Standard Price, and photo. Another attribute for product line is Product Line Name. A product line may group any number of products but must group at least one product. Each product must belong to exactly one product line.

**(1 E3: Customer “Submit” M E4: Orders)**

**E2: ProductLine – A2: ProdLineName**

**E1: Product – A5: ProdPhoto**

**E1: Product – A4: ProdStdPrice**

**E1: Product – A3: ProdFinish**

**E1: Product – A2: ProdName**

**(1 E2: ProductLine “Group” M E1: Products)**

**E2: ProductLine – A1: ProdLine\_ID**

**E1: Product – A1: Prod\_ID**

**R1: Group**

**E2: ProductLine**

**E4: Order – A1: Order\_ID**

**E4: Order**

**E3: Customer**

• Customers submit orders for products. The identifier for an order is Order ID, and another attribute is Order Date. A customer may submit any number of orders but need not submit any orders. Each order is submitted by exactly one customer. The identifier for a customer is Customer ID. Other attributes include Customer Name, Customer Address, Customer City, Customer State, Customer Postal Code, Customer Email, Customer Username, and Customer Password (to store the login information).

**E3: Customer – A3: CusAddress**

**E3: Customer – A2: CusName**

**E3: Customer – A1: Cus\_ID**

**E4: Order – A2: OrderDate**

**R2: Submit**

**E3: Customer – A7: CusEmail**

**E3: Customer – A6: CusPosCode**

**E3: Customer – A5: CusState**

**E3: Customer – A4: CusCity**

**E3: Customer – A9: CusPassword**

**E3: Customer – A8: CusUsername**

**(1 E4: Order “Request” M E5: OrderLines)**

• A given customer order must request at least one product and only one product per order line item. Any product sold by **COSC3380** may not appear on any order line item or may appear on one or more order line items. An attribute associated with each order line item is Ordered Quantity.

**E5: OrderLine – A1: OrderedQuantity**

**(1 E1: Product “Appear” M E5: OrderLines)**

**R3: Request**

**R4: Appear**

**E5: OrderLine**

**(1 E3: Customer “Do” M E7: Business)**

**E6: Territory**

• **COSC3380** has established sales territories for its customers. Each customer may do business in any number of these sales territories or may not do business in any territory. A sales territory has one to many customers. The identifier for a sales territory is Territory ID and an attribute is Territory Name.

**E6: Territory – A2: TerritoryName**

**E6: Territory – A1: Territory\_ID**

**E7: Business**

**(1 E6: Territory “Has” M E7: Business)**

**R6: Has**

**R5: Do**

**E8: SalesPerson – A1: SalesP\_ID**

**E8: SalesPerson**

• **COSC3380** has several Sales Persons. The identifier for a Sales Person is Sales Person ID. Other attributes include Sales Person Name, Sales Person Telephone, Sales Person Email, Sales Person Username, and Sales Person Password (to store the login information).

**E8: SalesPerson – A6: SalesPPassword**

**E8: SalesPerson – A5: SalesPUsername**

**E8: SalesPerson – A4: SalesPEmail**

**E8: SalesPerson – A3: SalesPTele**

**E8: SalesPerson – A2: SalesPName**

A Sales Person serves exactly one sales territory. Each sales territory is served by one or more Sales Persons.

**R7: Served By**

**(1 E6: Territory “Served By” M E8: SalesPersons)**

**COSC3380** **Product Manager** Support:

This is a list of attributes a **Product Manager** wants access to:

Customer Customer Identifier

Customer Name

Customer Zip Code

Product Product Identifier

Product Name

Product Finish

Product Price

Product Line Name

Product Line Product Line Name

Order Order Number

Order Placement Date

Customer Identifier

Ordered Product (Order Line) Order Number

Product Identifier

Order Quantity

These are the reports that a **Product Manager** will need so far:

* **Product Line Sales Comparison Report** (a list of each of the products in the **COSC3380** product line showing each product’s total sales to date.)

**V1: View Items [Product Line Sales Comparison REPORT] –**

**Inputs: 1. E1: Product – A1: Prod\_ID**

**2. E2: ProductLine – A1: ProdLine\_ID**

**3. E4: Order – A1: Order\_ID**

**4. E5: OrderLine – A1: OrderedQuantity**

**Outputs: 1. E1: Product – A1: Prod\_ID**

**2. E1: Product – A2: ProdName**

**3. SUM of all E5:A1: OrderedQuantity = Each Product’s Total Sales**

* **Total Value for Products Report** (what is the total value of orders placed for each furniture product).

**V2: View Items [Total Value for Products REPORT] –**

**Inputs: 1. E1: Product – A1: Prod\_ID**

**2. E1: Product – A4: ProdStdPrice**

**3. E4: Order – A1: Order\_ID**

**4. E5: OrderLine – A1: OrderedQuantity**

**Outputs: 1. E1: Product – A1: Prod\_ID**

**2. E1: Product – A2: ProdName**

**3. E1:A4: ProdStdPrice \* SUM of E5:A1: OrderedQuantity = Total Value of**

**Orders for each product**

**COSC3380** **Sales** Support

These are the reports that **Sales People** at **COSC3380** will need so far:

* **Data for Customer Report** (for each customer in his territory produce the list of products and their prices).

**V3: View Items [Data for Customer REPORT] –**

**Inputs: 1. E1: Product – A1: Prod\_ID**

**2. E6: Territory – A1: Territory\_ID**

**3. E3: Customer – A1: Cus\_ID**

**Outputs: 1. E3: Customer – A1: Cus\_ID**

**2. E3: Customer – A2: CusName**

**3. E1: Product – A1: Prod\_ID**

**4. E1: Product – A2: ProdName**

**5. E1: Product – A4: ProdStdPrice**

**COSC3380** **Inventory Manager** Support

These are the reports that **Inventory Manager** at **COSC3380** will need so far:

* **Customer by States Shipment Report** (Count the number of customers with addresses in each state to which we ship).

**V4: View Items [Customer by States Shipment REPORT] –**

**Inputs: 1. E3: Customer – A1: Cus\_ID**

**2. E3: Customer – A5: CusState**

**Outputs: 1. distinct E3: Customer – A5: CusState**

**2. COUNT of all E3: Customer with distinct A1: Cus\_ID in each**

**E3: Customer – A5: CusState**

The **Inventory Manager** needs to know (the action of being informed) when an inventory item’s standard price is updated in the Product table (the event). After creating a new table, **PriceUpdates**, write a trigger **StandardPriceUpdate** that enters each product name when it is updated, the date that the change was made, the old price and the new standard price that was entered.

CREATE TABLE **PriceUpdates** (

Prod\_ID INTEGER,

ProdName VARCHAR(255),

ChangeDate DATE,

OldPrice REAL,

NewPrice REAL,

PRIMARY KEY (Prod\_ID));

**T1: StandardPriceUpdate – Event: E1: Product – A4: ProdStdPrice on UPDATE**

**Condition: AFTER UPDATE OF A4: ProdStdPrice ON E1: Product**

**Action: 1. Email to Employee – ‘InventoryManager’**

**2. INSERT INTO PriceUpdates**

**(Prod\_ID, ProdName, SYSDATE, :OLD.ProdStdPrice,**

**:NEW.ProdStdPrice)**

**COSC3380** **Customer** Support

These are the reports that **Customers** at **COSC3380** will need so far:

* **Past Purchase History Report** (list the customer’s purchase history displaying the order date, the quantity, the price, and the name of the product).

**V5: View Items [Past Purchase History REPORT] –**

**Inputs: 1. E3: Customer – A1: Cus\_ID**

**2. E4: Order – A1: Order\_ID**

**3. E1: Product – A1: Prod\_ID**

**4. E5: OrderLine – A1: OrderedQuantity**

**Outputs: 1. E4: Order – A1: Order\_ID**

**2. E4: Order – A2: OrderDate**

**3. E1: Product – A2: ProdName**

**4. E1: Product – A4: ProdStdPrice**

**5. E5: OrderLine – A1: OrderedQuantity**

**6. E1:A4: ProdStdPrice \* E5:A1: OrderedQuantity = Total Value of**

**Order for each product**

**Data about customers, products, employees, etc. will be given to you in Project 2.**

**ERD Model:**

(10 points)

**A4: CusCity**

**A3: CusAddress**

**A5: CusState**

**A2: CusName**

**A6: CusPosCode**

**A1: Cus\_ID**

**A1: Order\_ID**

**(1 E3: Customer “Do” M E7: Business)**

**(1 E3: Customer “Submit” M E4: Orders)**

**R5: Do**

**E4: Order**

**R2: Submit**

**E3: Customer**

**E7: Business**

**A9: CusPassword**

**A2: OrderDate**

**A7: CusEmail**

**R6: Has**

**A8: CusUsername**

**(1 E6: Territory “Has” M E7: Business)**

**(1 E4: Order “Request” M E5: OrderLines)**

**(1 E6: Territory “Served By” M E8: SalesPersons)**

**E6: Territory**

**R3: Request**

**R7: Served By**

**A1: SalesP\_ID**

**A1: Territory\_ID**

**E8: SalesPerson**

**A2: TerritoryName**

**A6: SalesPPassword**

**A2: SalesPName**

**A5: SalesPUsername**

**A3: SalesPTele**

**E5: OrderLine**

**A4: SalesPEmail**

**A1: ProdLine\_ID**

**A2: ProdName**

**R4: Appear**

**A1: OrderedQuantity**

**A1: Prod\_ID**

**E2: ProductLine**

**E1: Product**

**(1 E1: Product “Appear” M E5: OrderLines)**

**A2: ProdLineName**

**R1: Group**

**A5: ProdPhoto**

**A3: ProdFinish**

**(1 E2: ProductLine “Group” M E1: Products)**

**A4: ProdStdPrice**