**Part 1**: Consider the following scenario:

Belinda is the owner of BV Designs, which specializes in designing and creating custom jewelry. In the beginning the majority of sales came from word of mouth from family and friends and from the placement of her jewelry in her brother’s restaurant. She now has a small web presence

[(http://bvdesigns.us/about.html) a](http://bvdesigns.us/about.html))nd does several festivals and shows per year. She sets up shop at Busch Gardens Williamsburg, VA during the holidays and has been invited to have a booth at an upcoming wine festival. BV Designs has had a few wholesale sales, but the percentage of overall sales is minute compared to retail sales. Because of increased activity, sales last year sky rocketed. For some pieces of jewelry, demand outpaced supply because BV Designs is still a one person operation.

As far as Belinda knows, each sale is a new sale because she has no way of keeping track of customer purchases or capturing any data pertaining to customers. Due to this, she has hired your company to design a data warehouse. This data warehouse has to be designed in a way that would allow Belinda to analyze her company’s data in regards to her customer, her jewelry, and time.

Specific analysis in the following areas is desired:

* Jewelry with respect to its category and type

|  |  |  |  |
| --- | --- | --- | --- |
| Category: Bracelet | | Category: Necklace | Category: Rosarie |
| Type: |  | Type: | Type: |
|              | Skinny cross  Large cross  Crown cross  Angel wings  Crystal cross  Infinity  Ichthus (Fish) | * Blue Jade set * Choco set * Forrest set * Green Jade set * Pastel set * Seaside set | * Semiprecious * Austrian Crystal * Glass Crystal * Swarovski Pearls |

* Jewelry with respect to materials o Semiprecious stones o Crystals o Pearls o Beads

* Customers with respect to purchase event (festival, special event booth, word of mouth, web, etc.), city and state.

At a minimum, Belinda is interested in learning about the quantity, income and discount of her sales.

Suppose we want to have the following tables (with one row of sample data in each table):

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Customer** |  |
| ID | Name | State | City |
| 10001 | Winnie Li | Washington | Bellevue |

|  |  |  |
| --- | --- | --- |
|  | **Jewel** | **ry** |
| JewelryID | Type | Material |
| 1 | Blue Jade set | Semiprecious stones |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | **Sale** |  |  |
| SaleID | CustomerID | JewelryID | TimeID | Income | Discount |
| 1 | 10001 | 1 | 201801310031001000000 | 2800 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Time** |  |  |
| TimeID | Year | Month | Event |
| 201801310031001000000 | 2018 | 2 | Valentines Day |

**Problem 1:**

Design either the star schema or the snowflake schema.



**Problem 2:**

Create the above tables using SQL. You only need to create an empty table. You do not need to add the sample row of data into the table. Show your SQL queries.

CREATE TABLE Category(

CategoryID int,

CategoryName varchar(255)

);

CREATE TABLE City(

CityID int,

StateID int,

CityName varchar(255)

);

CREATE TABLE Customer(

CustomerID int,

LastName varchar(255),

FirstName varchar(255)

);

CREATE TABLE Event(

EventID int,

TimeID int,

CityID int,

EventName varchar(255)

);

CREATE TABLE Jewelry(

JewelryID int,

TypeID int,

MaterialID int

);

CREATE TABLE Material(

MaterialID int,

MaterialName varchar(255)

);

CREATE TABLE Sales(

SalesID int,

CustomerID int,

EventID int

);

CREATE TABLE SalesDetail(

SalesDetailID int,

SalesID int,

Income int,

Discount int,

JewelryID int

);

CREATE TABLE State(

StateID int,

StateName varchar(255),

StateAbb varchar(2)

);

CREATE TABLE Time(

TimeID int,

Year int,

Month int

);

CREATE TABLE Type(

TypeID int,

CategoryID int,

TypeName varchar(255)

);

**Problem 3:**

Construct an SQL query that will find the quantity, the total income and discount for each city, type of jewelry, and the month.

SELECT [dbo].[City].[CityName] as City, [dbo].[Type].[TypeName] as Type, [dbo].[Time].[Month],

count(\*) as Quantity, sum([dbo].[SalesDetail].[Income]) as 'Total Income',

sum([dbo].[SalesDetail].[Discount]) as 'Total Discount'

FROM [dbo].[Sales]

JOIN [dbo].[SalesDetail] ON [dbo].[Sales].[SalesID] = [dbo].[SalesDetail].[SalesID]

JOIN [dbo].[Event] ON [dbo].[Sales].[EventID] = [dbo].[Event].[EventID]

JOIN [dbo].[Time] ON [dbo].[Event].[TimeID] = [dbo].[Time].[TimeID]

JOIN [dbo].[City] ON [dbo].[Event].[CityID] = [dbo].[City].[CityID]

JOIN [dbo].[Jewelry] ON [dbo].[SalesDetail].[JewelryID] = [dbo].[Jewelry].[JewelryID]

JOIN [dbo].[Type] ON [dbo].[Jewelry].[TypeID] = [dbo].[Type].[TypeID]

GROUP BY [dbo].[City].[CityName], [dbo].[Type].[TypeName], [dbo].[Time].[Month]

**Problem 4:**

Construct an SQL query that will find the average quantity, income and discount with respect to each event, jewelry materials and month.

SELECT [dbo].[Event].[EventName] as 'Event', [dbo].[Material].[MaterialName] as Type, [dbo].[Time].[Month],

count(\*)/count([dbo].[Event].[EventID]) as 'Average Quantity',

AVG([dbo].[SalesDetail].[Income]) as 'Average Income',

AVG([dbo].[SalesDetail].[Discount]) as 'Average Discount'

FROM [dbo].[Sales]

JOIN [dbo].[SalesDetail] ON [dbo].[Sales].[SalesID] = [dbo].[SalesDetail].[SalesID]

JOIN [dbo].[Event] ON [dbo].[Sales].[EventID] = [dbo].[Event].[EventID]

JOIN [dbo].[Time] ON [dbo].[Event].[TimeID] = [dbo].[Time].[TimeID]

JOIN [dbo].[Jewelry] ON [dbo].[SalesDetail].[JewelryID] = [dbo].[Jewelry].[JewelryID]

JOIN [dbo].[Type] ON [dbo].[Jewelry].[TypeID] = [dbo].[Type].[TypeID]

JOIN [dbo].[Material] ON [dbo].[Jewelry].[MaterialID] = [dbo].[Material].[MaterialID]

GROUP BY [dbo].[Event].[EventName], [dbo].[Material].[MaterialName], [dbo].[Time].[Month]

**Problem 5:**

Construct an SQL query that will determine the five most sold (in quantities sold) jewelry pieces during the “Christmas town” event at Williamsburg, VA.

Note: Note clear if you wanted jewelry by Type or Category so I provided queries for both.

SELECT TOP 5 [dbo].[Type].[TypeName], count(\*) as 'Total Quantity'

FROM [dbo].[Sales]

JOIN [dbo].[SalesDetail] ON [dbo].[Sales].[SalesID] = [dbo].[SalesDetail].[SalesID]

JOIN [dbo].[Event] ON [dbo].[Sales].[EventID] = [dbo].[Event].[EventID]

JOIN [dbo].[City] ON [dbo].[Event].[CityID] = [dbo].[City].[CityID]

JOIN [dbo].[State] ON [dbo].[City].[StateID] = [dbo].[State].[StateID]

JOIN [dbo].[Jewelry] ON [dbo].[SalesDetail].[JewelryID] = [dbo].[Jewelry].[JewelryID]

JOIN [dbo].[Type] ON [dbo].[Jewelry].[TypeID] = [dbo].[Type].[TypeID]

WHERE [dbo].[Event].[EventName] = 'Christmas town' AND [dbo].[State].[StateAbb] = 'VA' AND [dbo].[City].[CityName] = 'Williamsburg'

GROUP BY [dbo].[Type].[TypeName]

ORDER BY COUNT(\*) DESC

SELECT TOP 5 [dbo].[Category].[CategoryName], count(\*) as 'Total Quantity'

FROM [dbo].[Sales]

JOIN [dbo].[SalesDetail] ON [dbo].[Sales].[SalesID] = [dbo].[SalesDetail].[SalesID]

JOIN [dbo].[Event] ON [dbo].[Sales].[EventID] = [dbo].[Event].[EventID]

JOIN [dbo].[City] ON [dbo].[Event].[CityID] = [dbo].[City].[CityID]

JOIN [dbo].[State] ON [dbo].[City].[StateID] = [dbo].[State].[StateID]

JOIN [dbo].[Jewelry] ON [dbo].[SalesDetail].[JewelryID] = [dbo].[Jewelry].[JewelryID]

JOIN [dbo].[Type] ON [dbo].[Jewelry].[TypeID] = [dbo].[Type].[TypeID]

JOIN [dbo].[Category] ON [dbo].[Type].[CategoryID] = [dbo].[Category].[CategoryID]

WHERE [dbo].[Event].[EventName] LIKE 'Christmas town' AND [dbo].[State].[StateAbb] = 'VA' AND [dbo].[City].[CityName] = 'Williamsburg'

GROUP BY [dbo].[Category].[CategoryName]

ORDER BY COUNT(\*) DESC

**Part 2**: Save your file as ***DA320\_Project5\_XXXXX.docx (or .pdf)*** where ***XXXXX*** is the first five letters of your last name, and submit it online.