CIS 355 Online
Data Warehousing and Dimensional Modeling

Assignment #1 – 20 Points

Upload to Blackboard; see course schedule and Blackboard for due date/time

Submission Format

Your choice: for example, a Microsoft Word document with your diagrams prepared in PowerPoint and then pasted into your Word document. Or you may use any other software as well. If you use anything other than Microsoft Word and/or PowerPoint, save your file as a PDF and upload your PDF.

Situation:

You work for a retail company that has stores and operations across the United States, but only in the United States. Currently your company has no data warehouses, data marts, operational data stores, or any other integrated stores of data used for reporting, BI, and analytics. Your company also has an Internet presence with a website from which customers can purchase products.

For purposes of this assignment, you are interested in the following seven applications:

1. **Employee Management and Human Resources (HR), U.S. Eastern Region** – this application manages all HR functions for employees in the company's Eastern Region, which includes the east coast of the U.S. westward to states such as Minnesota, Iowa, Missouri, and Arkansas. The functions managed by this application include hiring and termination; salary management; annual employee evaluations; promotions and demotions; and a current record of all job assignments.

2. **Employee Management and Human Resources (HR), U.S. Western Region** – this application is identical to the HR/Eastern Region application described above, except that it manages all employees in the Western Region which spans from states such as North Dakota, South Dakota, and other states down to Texas, and then west to Washington State, Oregon, and California.

3. **Customer Relationship Master System, U.S. Eastern Region** – this application contains a master list of all of the company's customers headquartered in the states included in the Eastern Region. For each customer we also a complete sales history, the names of their top officers and key employees, and other important information that gives us a complete picture of "everything we need to know" about that customer.

4. **Customer Relationship Master System, U.S. Western Region** – this application is identical to the one described above, except that it contains the aforementioned information about all of the company's customers headquartered in states that are included in the Western Region.

5. **In-Store Sales System, U.S. Eastern Region** – Each of the company's stores has a point-of-sale (POS) system that handles all product purchases, payments, returns, and refunds. All of the stores in the company's Eastern Region feed data daily from each POS system to a centralized In-Store Sales System for the Eastern Region, which summarizes all sales within the Eastern Region and also maintains a history of past sales as well.

6. **In-Store Sales System, U.S. Western Region** – This application is identical to the one described above, except that it consolidates and organizes sales data from all of our stores in the Western Region.

7. **Online Sales System, United States** – This application handles all Internet sales for all customers regardless of where they live in the United States. (For purposes of this assignment, assume that only U.S. residents can purchase products online.)

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Question #1 (10 Points)

Draw the high-level architecture from source systems through data marts for an enterprise data warehousing <u>environment</u> that follows the Corporate Information Factory (CIF) architecture approach. Make sure you clearly show your ETL and data delivery data flows from each source to each target. <u>You</u> will decide which data marts your environment will include.

After you draw your diagram, you will then:

- List and describe at least two (2) advantages of the CIF approach for enterprise-scale data warehousing for this company
- List and describe at least two (2) challenges/disadvantages of the CIF approach for enterprise-scale data warehousing for this company

Grading Rubric:

Grading Criteria	Points for Full Credit
Structurally correct CIF architecture diagram; i.e., conforms to correct CIF components and interfaces	6
Correctly listed <u>and described</u> advantage of CIF approach	2 points total (1 point each)
Correctly listed <u>and described</u> challenge/disadvantage of	2 points total (1 point

CIF approach	each)

Question #2 (10 points)

Now presume that your company's Chief Information Officer (CIO) is a strong believer in smaller-scale efforts rather than large, enterprise-intensive ones such as CIF or the Dimensional Data Warehouse Bus Architecture. The CIO directs you to define the architecture for a Federated Enterprise Data Warehouse comprised of multiple independent data marts.

Draw the high-level architecture from source systems through the data marts for a Federated EDW. Make sure you clearly show your ETL data flows from each source to each target. You will decide which data marts your environment will include. (Hint: for this question and also for Question #1, defining the data marts might be trickier than you think!)

After you draw your diagram, you will then:

- List and describe at least two (2) advantages of the Federated EDW approach for enterprise-scale data warehousing for this company
- List and describe at least two (2) challenges/disadvantages of the Federated EDW approach for enterprise-scale data warehousing for this company

Grading Rubric:

Grading Criteria	Points for Full Credit
Structurally correct Federated EDW architecture diagram; i.e., what you've drawn is a Federated EDW rather than CIF or data warehouse bus architecture, or some other non-Federated approach.	6
Correctly listed and described advantage of Federated EDW approach	2 points total (1 point each)
Correctly listed and described challenge/disadvantage of Federated EDW approach	2 points total (1 point each)