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| Instructor |  | Due Date |  |

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| **Part** | 1 | 2 | 3 | 4 | **TOTAL** | **Score** |
| *Maximum Points* | 25 points | 25 points | 25 points | 25 points | **100**G101010 pointsG |  |

**Textbook Reading Assignment** Thoroughly read chapter(s) 1 - 3 in the textbook as well as the course lecture notes for Week(s) 1 - 3 .

**Part 1 Concepts, Topics, Glossary Terms - Database Systems**

Comment and expound, in detail, on each of the following questions. Use examples to support your comparisons and indicate when and / or where the individual concepts would apply.

**(1) ( Data, Information, Knowledge, Wisdom )**

Data, information, knowledge and wisdom often provide for an important distinction. Provide five examples of categories of data that may be collected from a college bookstore chain. Provide five examples of information that could be gathered from your data.

What if we reverse the roles of data and information? Can information lead to data? Can knowledge lead to information? How does wisdom come into play? Explain your answers!

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**(2) ( Structured Data versus Unstructured Data )**

When we examine data received into an enterprise we often separate the data into two categories - structured data and unstructured data.

For example, in a customer service application we can differentiate incoming data as being structured ( customer feedback and time to resolve customer inquiries ) or unstructured ( images and illustrations ) .

Provide some examples of transforming unstructured data into structured data.

Can structured data be transformed into unstructured data? Explain your answer!

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**(3) ( Structural Dependence versus Structural Independence )**

Another important distinction in the realm of database management is that between structural dependence and structural independence.

Structural dependence arises when a change in the structure of a file requires the modification of all programs that refer to that file. Conversely, structural independence occurs when changes to the file structure can be performed without affecting the application program's ability to access the data.

From a management perspective, comment on how managers should understand the distinction between these two structural categories. Provide examples to support your claims.

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**(4) ( Data Consistency versus Data Inconsistency )**

Examine Web sites that offer data for financial markets, stocks and bonds, etc., such as: [**https://finance.yahoo.com**](https://finance.yahoo.com)

What are some issues of data inconsistency that can occur when examining stock data for your favorite publicly traded companies?

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**(5) ( Database Design versus Database Structure )**

Consider designing an employee feedback application for a corporate firm that wishes to train their employees on a new system and then assess their knowledge of the subject. All employees will be required to take the employee feedback application training and afterwards take the application quiz.

Referring to the firm’s attempts to design their quiz application, comment on some issues that could occur between the back - end database development team and the front - end design team.

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**Part 2 DBMS Concepts - Database Systems**

**(1)** Although the database system yields considerable advantages over previous data management approaches, database systems do impose significant costs.What are the potential costs of implementing a database system?

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**(2)** List the five types of users identified in a database system and describe their individual interactions with database systems. Use the course textbook(s) to support your descriptions of the types of users.

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**Part 3 Data Modeling Concepts - Advanced Topics in Data Management**

**(1)** Consider these types of local businesses, and their individual system needs, that could be near or in your area of residence.

• Inez’s Imports: inventory management system

• Madison Marketing and Merchandise: sales ordering system

• Vermont Venues: concert ticket reservation system

Choose one of these business and comment on how that particular business would benefit by using a database system for their particular needs? What data tables do you think would be important for their database? What analytics can be performed with the database?

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**(2)** The general tasks that are required to form an RDBMS solution include:

• preliminary consultancy

• requirements analysis

• system specification

• database design

• programming procedures

• testing

• implementation

• training

• continual maintenance

Consider being given the task of designing and implementing a database system that would track business credit memos, which are issued by the seller of goods or services to the buyer, reducing the amount that the buyer owes to the seller due perhaps to a change of terms for a prior invoice. A sample credit memo follows.

Choose one of the above tasks and comment on what occurs during the achievement of the task as far as the contribution of the task to the completion of the database project.

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| **Credit Memo** | | ***Elston Environmental Services* ( EES )** | |
| **Job** | **[Job description]** | | **TO**  **Customer ID [ABC12345]**  **Date: [Enter date]**  **CREDIT NO. [100]**  **[Name]**  **[Company Name]**  **[Street Address]**  **[City, ST ZIP Code]**  **[Phone]** |

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| --- | --- | --- | --- | --- |
| **Quantity** | **Item #** | **Description** | **Unit Price** | **Line Total** |
|  |  |  |  |  |
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|  | | | **Subtotal** |  |
| **Sales Tax** |  |
| **Total** |  |

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**Part 4 Data Design Concepts - Database Systems**

**(1) ( File Structures )**

Consider the File Structure for the XYZ Company Project Management data given below. Then, respond to each of the following questions related to the structure.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ProjectCode | ProjectManager | MgrTelephone | MgrLocation | ProjBidPrice |
|  |  |  |  |  |
| 31-205A | Sami A. Allen | 773-555-1216 | 2900 S. Federal St. Chicago, IL 60616 | $46,000 |
| 37-403B | Cecily D. Worth | 773-555-1217 | 27 Beckley Rd. Battle Creek, MI 49015 | $1,342,000 |
| 33-906T | Daisy B. Burns | 773-555-8821 | 2543 W. Foster Ave. Chicago, IL 60625 | $847,320 |
| 29-107D | Alice M. Zane | 773-555-1219 | 7202 Harrison Ave. Rockford, IL 61112 | $1,449,000 |
| 21-929A | Dean P. Pence | 773-555-2222 | 6302 N. Northwest Hwy. Chicago, IL 60631 | $903,117 |
| 41-386C | Cecily D. Worth | 773-555-1217 | 27 Beckley Rd. Battle Creek, MI 49015 | $1,805,000 |
| 26-903C | Sami A. Allen | 773-555-1216 | 123 Lane St. Chicago, IL 60616 | $78,081 |
| 29-227A | Cecily D. Worth | 773-555-1217 | 27 Beckley Rd. Battle Creek, MI 49015 | $2,550,273 |

**(a)** If the XYZ Company wishes to display a listing of the Project Codes alphabetically by the right - most character, what problem(s), if any, would you encounter?

Would it make any sense to solve this problem by altering the file structure?

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**(b)** What problem would you encounter if you desire to produce a listing by state? How would you solve this problem by altering the file structure?

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**(c)** If you wanted to produce a listing of the file contents by last name, area code, city, state or zip code, how would you alter the file structure?

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**(d)** What data redundancies do you detect? How could those redundancies lead to anomalies?

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**(e)** The ProjBidPrice column, in the given table, appears to have a wide range   
 of values. An XYZ Company database clerk suggests splitting the Project Management data into two file structures, as this may make it easier to search for values in this column. What issues, if any, could be resolved by proceeding with the clerk’s suggestions? What issues, if any, could be resolved by proceeding with the clerk’s suggestions?

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**(2) ( Database File Structures: Data Redundancy )**

Consider the File Structure for the ABC Company Project Management data given below. Then, respond to each of the following questions related to the structure.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ProjectNum | ProjectName | EmpNum | EmpName | JobCode | Job\_Chg\_Hour | Proj\_Hours | Emp\_Phone |
|  |  |  |  |  |  |  |  |
| 1001 | Thunder | 121 | Daisy B. Burns | AB | 80.00 | 14.2 | 773-555-1216 |
| 1001 | Thunder | 217 | Alice M. Zane | CD | 65.00 | 15.7 | 773-555-1216 |
| 1002 | Chicago | 821 | Dean P. Pence | BD | 95.00 | 14.4 | 773-555-1231 |
| 1002 | Chicago | 219 | Cecily D. Worth | CD | 80.00 | 17.2 | 773-555-1217 |
| 1003 | Archimedes | 222 | Sami A. Allen | EH | 65.00 | 24.9 | 773-555-8821 |
| 1003 | Archimedes | 121 | Cecily D. Worth | AB | 95.00 | 37.8 | 773-555-1219 |
| 1003 | Archimedes | 516 | Denny T. Li | HW | 80.00 | 22.2 | 773-555-2222 |
| 1004 | Emerald | 355 | Danny T. Li | UG | 65.00 | 19.7 | 773-555-2222 |
| 1005 | Diamond | 217 | Alice M. Zane | CD | 80.00 | 19.5 | 773-555-1216 |
| 1005 | Diamond | 222 | Sami A. Allen | BD | 95.00 | 22.3 | 773-555-8821 |

**(a)** List and discuss two additional fields that could or should appear on the above table structure.

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**(b)** Identify and discuss the serious data redundancy problems exhibited by the file structure shown in the given data sheet.

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