Lakeside View Global Vision
CEGEP JOHN ABBOTT COLLEGE

CONTINUING EDUCATION
FORMATION CONTINUE

Certificate Program in Internet Programming & Development (A.E.C. LEA.BN)
Full-Time Day Training Program

(420-P14-AB) Database 1 Course Outline

A. General Information

Parameters		
Course Number	420-P14-AB	
Course Title (Long)	Database 1	
Course Title (Short)	DB1	
Course Weighting	2 hour lecture + 2 hours laboratory + 3 hours homework	
Schedule Date:	Start Date: 20-Jan-17	End Date: 6-Feb-17
Schedule Time:	8:30 am to 2:30 pm	
Classroom:	BH-213	
Number of Credits (Units)	2.33	
Number of Hours of Instruction	60	
Competencies Fully Met	DC59 – Effectively use SQL in a variety of database products to query the contents of a relational database	
Competencies Partially Met	Designing Relational Database	
Prerequisite course	N/A	

Assignment 01

Deadline for submission: January 27, 2017 (as per schedule)
Late submissions will not be accepted.

Student Name	Student ID

Case Study 1 – The following exercise allows you to conceptualize a database

Using the following text, describe the Problem you are trying to solve. Determine which information is necessary to create a database (you must follow the Steps in Designing a Database covered in this course). Outline the database deciding which information will be saved in each table.

Case Problem for this assignment

MovinOn Inc. is a Moving and Storage Company based in the northwestern United States. Having grown from a start-up venture consisting of one vehicle and one warehouse in Oregon, the company is burgeoning into other states and is outgrowing its paper-based recordkeeping system. The CEO of MovinOn Inc., David Bowers, hired an information system manager to design a database to manage employee, driver, customer, and order data. Your assistance is required to design the objects in the database so that the present inefficient system is replaced and the new system is reliable upon implementation. You will also assist in securing the database so that the company's data is not accidentally or maliciously deleted.

Creating the database design for MovinOn Inc.

MovinOn Inc. is a moving company that provides moving and storage services in Washington, Oregon, and Wyoming. MovinOn provides a truck, driver, and one or more moving assistants to move residential and commercial items from one location to another within the defined coverage area. In addition to moving services, the company provides temporary and long-term storage in its warehouses. MovinOn's customers are commercial and residential. Some of the storage warehouses are climatically controlled for customers who need to store items that are sensitive to extreme temperatures.

The business started in 1995 with a single truck and a single warehouse in Oregon. Due to a very satisfied clientele, the company has grown over the years a much larger business. Currently, MovinOn has one warehouse in each state it services and is working on a merger with another company that offers similar services in different service areas. When the merger is complete, MovinOn will acquire additional storage warehouses, trucks, and employees and will expand its operations into different states.

David Bowers is the CEO of MovinOn. In the past, David managed the business using a combination of spreadsheets and paper forms. However, with a merger in the company's future, David needs to expand his system to manage data better. David recently hired Robert Iko, an information systems specialist, to recommend and implement a new plan for managing the company's data.

Robert's first task is to understand the current system and its limitations by talking extensively with David about data management and user needs. David explains that the office in each state accepts reservations for moving and storage services by completing a form that includes the customer's name, address, phone number, and the job's details. Jobs that involve trucking items from one location to another or from an outside location to a storage unit in a warehouse are maintained in a filing cabinet that is organized by customer name. Leases for storage space are stored alphabetically in a separate filing cabinet for each warehouse. All of the forms are stored in the on-site offices at the warehouse from which they were purchased.

Unfortunately, David admits that forms are often lost or misplaced and sometimes contain inaccurate or missing data. In addition, when a customer requires the services of another warehouse, a MovinOn employee has to copy the customer's record and send it to the second warehouse so that it is on file at the second location. David wants the new system to be capable of sharing data between the three warehouses and any warehouses that the company acquires in the future so that it is easy for the company to share and maintain data.

Each warehouse has its own manager, office staff, and moving assistants. Drivers are contract employees and can work for any warehouse. David wants the new system to manage employee data, including personal information, salary information, and work performance.

In addition to managing personnel data, David also wants to use the new system to manage information about drivers, including their personal information and driving records. The system also needs to store information about the trucks and vans that MovinOn owns and operates.

Finally, the system must maintain data about customers who utilize moving and storage services. Some customers might require storage in more than one location. When there is a request for services, the request is recorded on a form. Any request constitutes a "job" in the lingo of the company – a job must include all the pertinent data, including information about the customer, the originating location, the destination location, and the estimated mileage and weight of the load.

Robert gathered a collection of documents during the discovery phase that will help you design the database. You need to be certain that every data item in the existing documents is also represented in the tables in your design. Remember that you will first begin the discovery and planning phases of creating a database for the MovinOn. You will use the documents that Robert provides to develop a database design. After completing the database design, Robert will review it and provide feedback that you will use to create the database.

Complete the following:

1. Robert gave you the form shown in Figure 1, which collects data about employees. In addition to storing the data shown in Figure 1, Robert also needs to identify the warehouse in which the employee works. On paper, design an employee table and any other necessary tables based on this form. The table design for all tables that you create should include field names, data types, field properties (as necessary), and field description. Remember that each table must have a primary key field.

2. The database must manage data about drivers, who are hired on a contract basis. Design a table that stores information about drivers. The table should include the same information stored for employees, except for an indication about the warehouse in which the driver works, in addition to storing the following additional information:

    - Drivers are not paid an hourly rate or salary; they are paid based on the number of miles driven for any job. The payments for a job is determined by multiplying the rate per mile by the number of miles for the job.

    - MovinOn rates drivers based on their safety records, successful on-time deliveries, and other factors. The company's rating system uses the values A, B, C, D, and F to rate drivers, with A being the highest rating and F being the lowest rating. (You do not need to worry about how MovinOn assigns ratings to drivers, you only need to store the driver's rating.)

Figure 1: Employee Information Form

mOvinOn Inc.

Employee Information Form

Name: David Bowers

Address: 10124 Metropolitan Drive

City: Seattle State: WA ZIP: 98117

Phone: (206) 246-5132 Cell Phone: (206) 575-4321

SSN: 154-00-3785 Date of Birth: 9/12/1958

(The following information to be filled out by MovinOn human resources manager)

Hire Date: 1/22/1998 Termination Date: _____

Position: General Manager

Annual Salary: $72,000 or Hourly Rate: _____

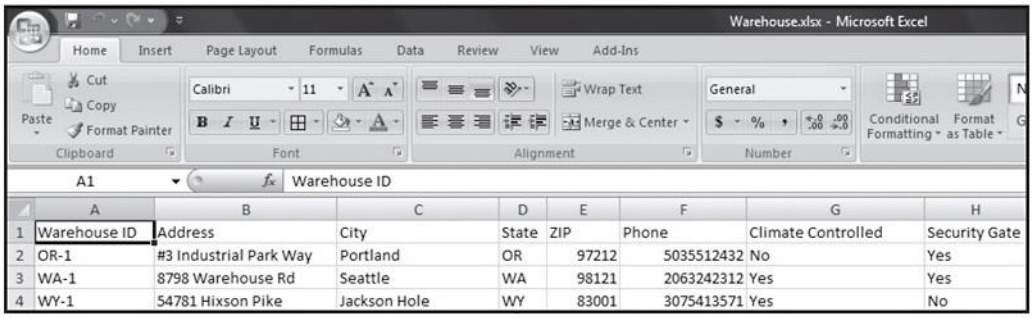
Date of last personnel review: _____

Notes about this employee:

3. Design a table that stores data about the trucks and vans owned by MovinOn. Each vehicle has a unique identification number appearing on the vehicle in the format TRK-001 for trucks or VAN-009 for vans. David wants to store the vehicle's license plate number, number of axles, and color.

4. Design a table that stores data about warehouses using the data shown in Figure 2. The warehouse identification number is the two-letter state abbreviation in which the warehouse is located followed by a dash and then a number. For example, the warehouse in Wyoming is WY-1.

Figure 2: Data about warehouses



	A	B	C	D	E	F	G	H
1	Warehouse ID	Address	City	State	ZIP	Phone	Climate Controlled	Security Gate
2	OR-1	#3 Industrial Park Way	Portland	OR	97212	5035512432	No	Yes
3	WA-1	8798 Warehouse Rd	Seattle	WA	98121	2063242312	Yes	Yes
4	WY-1	54781 Hixson Pike	Jackson Hole	WY	83001	3075413571	Yes	No

5. Currently, information about storage units is stored in an Excel workbook; a portion of this data is shown in Figure 3. Use this information to help you design a table that manages data about the storage units.

Figure 3: Data about storage units

Warehouse Unit Data.xlsx

	A	B	C	D
1	Unit ID	Warehouse ID	Unit Size	Rent
2	1	OR-1	8 x 8	$ 25.00
3	1	WA-1	12 x 12	$ 35.00
4	1	WY-1	12 x 12	$ 45.00
5	2	OR-1	8 x 8	$ 30.00
6	2	WA-1	12 x 12	$ 35.00
7	2	WY-1	12 x 12	$ 45.00
8	3	OR-1	8 x 8	$ 25.00
9	3	WA-1	9 x 12	$ 30.00
10	3	WY-1	12 x 12	$ 45.00
11	4	OR-1	8 x 12	$ 30.00
12	4	WA-1	9 x 12	$ 30.00
13	4	WY-1	12 x 18	$ 70.00
14	5	OR-1	8 x 8	$ 25.00
15	5	WA-1	12 x 12	$ 85.00
16	5	WY-1	12 x 18	$ 70.00
17	6	OR-1	8 x 8	$ 30.00
18	6	WA-1	12 x 12	$ 85.00
19	6	WY-1	12 x 12	$ 45.00
20	7	OR-1	8 x 8	$ 25.00
21	7	WA-1	12 x 10	$ 80.00
22	7	WY-1	12 x 12	$ 85.00
23	8	OR-1	15 x 15	$ 95.00
24	8	WA-1	12 x 10	$ 80.00
25	8	WY-1	12 x 8	$ 35.00

Storage Units

6. You also need to manage data to indicate which customer rents which unit. David wants to store the date the lease started and ended on each unit in each warehouse. For current customers, the ending lease date will be null. Design a table that manages data about unit rentals.

7. You have learned that data pertaining to moving jobs is actually accumulated in two steps. When the customer requests a job, the administrative assistant from the warehouse that will perform the services fills out the form shown in Figure 4. This form is considered a "job order". Design a table that manages the job order data.

Figure 4: Job Order Information Form

8. David needs to store the following data about customers: company name (for commercial customers only), the job contact's name, and the address, city, state, zip code, phone

number, and balance. Design a customer table using this information.

9. The administrative assistant uses a scheduling program to manage and assign vehicles and drivers for moving jobs, and then this information is entered into the database. Upon completion of a job, the database must store the details about the job, including the customer, truck or van used, driver, actual mileage, and actual weight. This step is considered to be the "job detail". David wants to store job detail data separately from job order data. Design a table that manages the job detail information.

10. For each table you designed, use a piece of paper to sketch the table design so that you can enter five sample records into it. After creating five records, determine whether you need to make any adjustments in your table designs so that each table is in the third normal form. If you need to make any changes to your table designs, do so on your paper and add the necessary documentation to the existing table designs.

11. Review each table design to ensure you have created all the necessary fields. Be certain that you have designated a primary key field in each table and that your primary key field will contain unique values for each record.

12. Draw arrows to indicate the fields that will form the relationships in the database.

13. If your instructor asks you to turn in your database design, keep a copy for yourself as you will need it to develop your database in subsequent assignments.