

DBS201 Assignment 1
Due date – Week 13 during lab period
15% of final mark

Your group of four to five people is to develop a conceptual database design for the following description and then to create the database using DB2 on the IBMi.

Required for submission:

1. Submit a **printed 3NF solution** for EACH user view in this assignment
2. You are to show each step in your solution: UNF, 1NF, 2NF, 3NF .
3. You are to clearly mark Primary and Foreign Keys as shown in the sample below:

Relation1[column1 (PK), column2, column3, column4 (FK)]

4. Show the **FINAL ENTITY SET** after performing **MERGE** operation on your five 3NF solutions
5. Produce an ERD that models your finished design.
6. Create the database and produce system reports using the DSPFD command to show all the constraints in place for all tables. Include the sample data provided in your tables and produce sample reports of all tables and views you have created.
7. Collection names include your group number and class. DR201GC01 – DR201D07 where C01 to D07 indicates group number and class. Collections must be secured from public access.
8. You must hand in the Submissions Form (below) with your assignment (one per group).
9. Each day being late will result in 10% mark penalty, also if your group is below the minimum group size of 4 this will result in 10% mark penalty per group member less than four.

Student Assignment Submission Form

I/we declare that the attached assignment is my/our own work in accordance with the Seneca Academic Policy. No part of this assignment has been copied manually or electronically from any other source (including web sites) **or distributed to other students**

Name(s)

Signature

1 _____

2 _____

3 _____

4 _____

5 _____

Description of Operations

Oakville Yards is a landscaping company that has been in business for over a decade.

Oakville Yards' business is to offer several services to customers. Services include "Lawn Cutting", "Garden Planting", fall "Leaf Clearing", and winter "Snow Shoveling". Each customer may require one or more of these services at a time; and the customer may require the same service repeated several times each year.

Teams of employees deliver the services offered by Oakville Yards. Each team can carry out all types of service, and more than one team can carry out each service. All of Oakville Yards maintenance employees are organized into a team. Each employee can belong to only one team. We will also store each employee's OHIP (health card) number in case an employee is injured on the job.

Finally, Oakville Yards also sells lawn and garden products to customers. A customer can purchase one or more products; and we have several of each product in stock to allow sales of the same product to any number of different customers. To help Oakville Yards organize its products, each product is given a single classification. For example, Oakville Yards sells the classification of "Garden Tools" which include products such as: "Garden Rakes", "Shovels", "Picks", "Axes", "Pitch Forks", and "Hand Shears". Oakville Yards also sells a classification of "Shrubs" which include products: "Cedar", "Golden Cedar", "Mulleberry", and "Juniper".

Oakville Yards: User View 1

Below are shown 2 sample invoices for the services our business sells. (An invoice is the same as a receipt). We write a customer invoice once all services are completed for a customer visit. This invoice will itemize many details including the services provided, the time it took to complete those services, the charge for those services, the total of all service charges.

Sample1

Invoice Statement

INVOICE #: 1355

INVOICE DATE: 5-Jun-17

CUSTOMER: 56 - John Adams

WORK TEAM: 2

ADDRESS: 234 King St.

EQUIP. USED: 20 hp John Deer tractor/ mower
10" tree pruning shears
2 hp Johnson grass trimmer

Oakville
M2S 4S3

SERVICES:

| SERVICE CODE | DESCRIPTION | HOURLY CHARGE | WORK DURATION (hours) | TOTAL CHARGE |
|---------------------|-------------------------|----------------------|------------------------------|---------------------|
| <i>LC</i> | <i>Lawn Cutting</i> | <i>\$25.00</i> | <i>0.75</i> | <i>\$18.75</i> |
| <i>LW</i> | <i>Lawn Weeding</i> | <i>\$35.00</i> | <i>1.15</i> | <i>\$40.25</i> |
| <i>LF</i> | <i>Lawn Fertilizing</i> | <i>\$15.00</i> | <i>0.25</i> | <i>\$3.75</i> |
| <i>TG</i> | <i>Tree Pruning</i> | <i>\$45.00</i> | <i>0.50</i> | <i>\$22.50</i> |
| | | | | |
| | | | | |

SUBTOTAL: \$85.25

GST (7%): \$5.97

PST (8%): \$6.82

TOTAL DUE: \$98.04

Sample2Invoice Statement

INVOICE #: 1412

INVOICE DATE: 19-Jun-17

CUSTOMER: 34 - Ashley Riley

WORK TEAM: 3

ADDRESS: 156 Avindale Cresc

EQUIP. USED: 20 hp John Deer tractor/ mower
 2 hp Johnson grass trimmer
 Haggmann garden-tiller

Oakville
 M4T 4R7

SERVICES:

| SERVICE CODE | DESCRIPTION | HOURLY CHARGE | WORK DURATION (hours) | TOTAL CHARGE |
|--------------|--------------------|---------------|-----------------------|--------------|
| LC | Lawn Cutting | \$25.00 | 0.75 | \$18.75 |
| GW | Garden Weeding | \$25.00 | 1.15 | \$28.75 |
| GP | Garden Planting | \$30.00 | 0.25 | \$7.50 |
| GF | Garden Fertilizing | \$10.00 | 0.50 | \$5.00 |
| | | | | |
| | | | | |

SUBTOTAL: \$60.00

GST (7%): \$4.20

PST (8%): \$4.80

TOTAL DUE: \$69.00

Oakville Yards: User View 2

Below is a listing of Oakville Yards teams of lawn care specialists that do the services for our customers. The Operations Manager uses this report to schedule which teams will be sent to which customers on any given work day. Team members work together when visiting a customer site.

Team - Employee Reports

| <u>TEAM</u> | <u>DESCRIPTION</u> | | | | | |
|-----------------|---------------------|----------------|-------------|-------------------|-------------------|--------------------------------------------------|
| 1 | General Contracting | | | | | |
| <u>POSITION</u> | <u>NAME</u> | <u>EMP ID:</u> | <u>OHIP</u> | <u>HOME PHONE</u> | <u>START DATE</u> | <u>SKILLS</u> |
| Supervisor | Wendy Ames | 120 | 219032002 | 905-338-1234 | 1-Jan-98 | Electrical , Plumbing , General Contractor |
| Lawn Care | Terry Wilson | 122 | 34111991 | 905-338-1234 | 30-Jun-99 | Irrigation , Lawn Maintenance |

| <u>TEAM</u> | <u>DESCRIPTION</u> | | | | | |
|-----------------|----------------------|----------------|-------------|-------------------|-------------------|-----------------------------------------------------|
| 2 | Pruning and Planting | | | | | |
| <u>POSITION</u> | <u>NAME</u> | <u>EMP ID:</u> | <u>OHIP</u> | <u>HOME PHONE</u> | <u>START DATE</u> | <u>SKILLS</u> |
| Lawn Care | Mary Wells | 121 | 325443001 | 416-458-4562 | 30-Jun-98 | Pruning , Irrigation , Fertilizing |
| Supervisor | Peter Wong | 123 | 54222991 | 416-932-4533 | 30-Jun-00 | "A" License , Electrical , General Contractor |

| <u>TEAM</u> | <u>DESCRIPTION</u> | | | | | |
|-----------------|---------------------|----------------|-------------|-------------------|-------------------|------------------------------------------|
| 3 | General Maintenance | | | | | |
| <u>POSITION</u> | <u>NAME</u> | <u>EMP ID:</u> | <u>OHIP</u> | <u>HOME PHONE</u> | <u>START DATE</u> | <u>SKILLS</u> |
| Lawn Care | Carrie Fisher | 124 | 43524532 | 905-345-5366 | 23-Aug-98 | Pruning , Lawn Maintenance |
| Supervisor | Brad Phillips | 126 | 32543555 | 416-435-6599 | 3-Mar-01 | Irrigation , Plumbing , Electrical |

Oakville Yards: User View 3

Oakville Yards also sells products to its customers. Below is shown a sample product sales report list. This type of report is required by the Purchasing Manager to evaluate which products are selling well and which ones are not selling well. When placing new purchases to replace items already sold, the Purchasing Manager will analyse this report first. The list shows a sample of products purchased over a 3-day period.

Product Sales Report - 3 day Sample

| PROD. CLASS: | PROD. ID: | PRODUCT: | CHARGE | QTY: | INVOICE ID: | INVOICE DATE: | SALES ASSISTANT: | CUST. NO.: |
|--------------|-----------|-------------------------------|---------|------|-------------|---------------|--------------------|------------|
| GT | 10 | 6 foot garden rake | \$12.00 | 1 | 1356 | 5-Jul-02 | 155 - Gordon Brown | 56 |
| GT | 40 | Flat-nosed Shovel | \$8.00 | 1 | 1356 | 5-Jul-02 | 155 - Gordon Brown | 56 |
| FT | 140 | General grade lawn fertilizer | \$10.00 | 3 | 1356 | 5-Jul-02 | 155 - Gordon Brown | 56 |
| SB | 100 | Golden cedar sapling | \$35.00 | 5 | 1367 | 6-Jul-02 | 158 - Susan Gill | 7 |
| SB | 110 | Mulberry sapling | \$15.00 | 2 | 1367 | 6-Jul-02 | 158 - Susan Gill | 7 |
| GT | 50 | Garden pitch-fork | \$7.00 | 1 | 1367 | 6-Jul-02 | 158 - Susan Gill | 7 |
| FT | 140 | General grade lawn fertilizer | \$10.00 | 2 | 1367 | 6-Jul-02 | 158 - Susan Gill | 7 |
| SP | 170 | 120 foot watering hose | \$25.00 | 3 | 1401 | 6-Jul-02 | 155 - Gordon Brown | 34 |
| SP | 190 | Rotating sprinkler jet | \$19.00 | 3 | 1401 | 6-Jul-02 | 155 - Gordon Brown | 34 |
| GT | 50 | Garden pitch-fork | \$7.00 | 1 | 1405 | 7-Jul-02 | 158 - Susan Gill | 56 |

Oakville Yards: User View 4

Below is shown a sample product listing and pricing schedule. This report is used by the Sales Staff to determine pricing to be charged for the products that we sell. The "charge" of product sold is determined by adding the markup percentage to the cost.

Product Report

| PRODUCT CLASS: | CLASSIFICATION | PRODUCT ID: | DESCRIPTION | COST | MARKUP | CHARGE |
|----------------|----------------|-------------|---------------------------------|---------|--------|---------|
| GT | Garden Tools | 10 | 6 foot garden rake | \$9.23 | 30% | \$12.00 |
| GT | Garden Tools | 20 | 7 foot leaf rake | \$7.69 | 30% | \$10.00 |
| GT | Garden Tools | 30 | Round mouth shovel | \$7.69 | 30% | \$10.00 |
| GT | Garden Tools | 40 | Flat-nosed Shovel | \$6.15 | 30% | \$8.00 |
| GT | Garden Tools | 50 | Garden pitch-fork | \$5.38 | 30% | \$7.00 |
| GT | Garden Tools | 60 | 8 inch hand shears | \$11.54 | 30% | \$15.00 |
| GT | Garden Tools | 70 | 12 inch trimming shears | \$14.62 | 30% | \$19.00 |
| GT | Garden Tools | 80 | 10 inch tamper | \$10.77 | 30% | \$14.00 |
| SB | Shrubs | 90 | Cedar sapling | \$20.00 | 50% | \$30.00 |
| SB | Shrubs | 100 | Golden cedar sapling | \$23.33 | 50% | \$35.00 |
| SB | Shrubs | 110 | Mulberry sapling | \$10.00 | 50% | \$15.00 |
| SB | Shrubs | 120 | Juniper sapling | \$16.67 | 50% | \$25.00 |
| FT | Fertilizers | 130 | Premium lawn fertilizer | \$12.00 | 25% | \$15.00 |
| FT | Fertilizers | 140 | General grade lawn fertilizer | \$8.00 | 25% | \$10.00 |
| FT | Fertilizers | 150 | Premium garden fertilizer | \$14.40 | 25% | \$18.00 |
| FT | Fertilizers | 160 | General grade garden fertilizer | \$9.60 | 25% | \$12.00 |
| SP | Sprinklers | 170 | 120 foot watering hose | \$17.86 | 40% | \$25.00 |
| SP | Sprinklers | 180 | 12 inch aluminum sprinkler | \$10.71 | 40% | \$15.00 |
| SP | Sprinklers | 190 | Rotating sprinkler jet | \$13.57 | 40% | \$19.00 |

Oakville Yards: User View 5

Oakville Yards maintains a list of supplier information and inventory information for the products being sold. All of our products are stored and displayed in one of the aisles of our main office showroom. (Inventory is the number of products Oakville Yards has available for sale). Below is a sample Inventory Report

Inventory Report

| PRODUCT ID: | DESCRIPTION | INVENTORY | aisle# | SUPPLIER |
|-------------|---------------------------------|-----------|--------|-----------------------|
| 10 | 6 foot garden rake | 5 | 1 | Sheffield-Gander inc. |
| 20 | 7 foot leaf rake | 5 | 1 | Sheffield-Gander inc. |
| 30 | Round mouth shovel | 4 | 1 | Husky Inc. |
| 40 | Flat-nosed Shovel | 2 | 1 | Husky Inc. |
| 50 | Garden pitch-fork | 6 | 1 | Husky Inc. |
| 60 | 8 inch hand shears | 9 | 2 | Sheffield-Gander inc. |
| 70 | 12 inch trimming shears | 10 | 2 | Sheffield-Gander inc. |
| 80 | 10 inch tamper | 3 | 2 | Husky Inc. |
| 90 | Cedar sapling | 34 | 5 | Northwood Farms inc. |
| 100 | Golden cedar sapling | 23 | 5 | Northwood Farms inc. |
| 110 | Mulberry sapling | 12 | 4 | Sherwood Nursery |
| 120 | Juniper sapling | 15 | 4 | Northwood Farms inc. |
| 130 | Premium lawn fertilizer | 4 | 6 | Sherwood Nursery |
| 140 | General grade lawn fertilizer | 12 | 6 | Sherwood Nursery |
| 150 | Premium garden fertilizer | 14 | 6 | Sherwood Nursery |
| 160 | General grade garden fertilizer | 12 | 6 | Sherwood Nursery |
| 170 | 120 foot watering hose | 9 | 3 | Diemar Garden Center |
| 180 | 12 inch aluminum sprinkler | 5 | 3 | Diemar Garden Center |
| 190 | Rotating sprinkler jet | 4 | 3 | Diemar Garden Center |