

## Introduction

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- This project is completed on a weekly basis based on the sequence of chapter content. The schedule provided is based on a 15-week term with a study week in week 8. The instructor may adjust the weekly schedule based on the number of weeks in the term.
- The requirements outlined in the projects below are the minimum requirements. Your instructor may require additional requirements.
- Weekly submissions may be randomly checked in class during the week specified.
- Weekly submissions are meant to keep the projects on schedule. A weekly submission will not be marked if previous submissions have not been completed.
- Grading:
  - Final grades for the projects are based on a marking scheme. A suggested marking scheme is provided at the end of this appendix and the instructor may use this marking scheme or a modified version.
  - Final project marks are evaluated independently from the weekly submissions and getting 100% on the weekly submissions does not impact the final project marks.

## Database Design Requirements

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- Each student is assigned a product by the instructor.
- A database is to be designed and implemented based on the Customer Sales Invoice and other information provided.
- Final database design project includes:
  - Database design technical Word document.
  - Converted PDF file.

## Week 4: Company Overview and Product

1. Create a Word document (.docx) called DB1\_99999, where 99999 is your student number. This document is a database proposal developed for the IT Director and contains the components for the database design.
2. Format the document as follows:
  - a. Front cover page including your name, student number, project name, term, and professor name.
  - b. Styles for titles, headings, and so on
  - c. A header that contains the project title
  - d. A footer that contains your name, student number, and page number
  - e. Table of contents automatically generated from the heading styles.
3. Include headings and content identified in these instructions for each milestone. For example, the following is included for week 3:
  - Company Name (heading 1)
  - Company Overview (heading 2)
  - Product (Heading 1)
  - Product Attributes (Heading 2)And so on for each week

## Company Name

- Must be a unique name that is not an existing company name.

## Company Overview/Description

- Include an overview/description of the company that is unique and not from an existing website.

## Product

- Identity the assigned product

## Product Attributes

- List at least 8-10 attributes (characteristics), such as model, brand, type, serial number, description, size, color, height, width, price, and so on. Example attributes can be found on many websites.
- Identify the primary key (unique identifier (UID)). This primary key (UID) can be called product id, product code, or something similar. You decide.

## Week 5: Customer Sales Invoice

### Customer Sales Invoice

- Modify the sample Customer Sales Invoice in the student files folder to reflect your company and the company's product. The invoice must be based on the assigned product only.
- In addition to product id, quantity, unit price, and extended price, include three attributes that identify the product purchased. Use the three attributes that best describes the product purchased. It is not necessary to include all product attributes on the invoice.
- Include at least five products purchased on the invoice.

## Week 5: Entity Relationship Diagrams

### ER Diagram including M:M Relationships

- Create an ER diagram, including many-to-many relationships, based on the customer sales invoice and the product attribute list. In addition, include the following requirements:
  - The company operates warehouses in different regions of the country.
  - Each warehouse stores products and each product may be stored at each warehouse. Not all products are stored at each warehouse. In addition, a warehouse could store a product, but be out of stock of that product. The company wants to maintain the inventory of each product at each warehouse.
- The entity-relationship diagram includes:
  - Entities
  - Attributes (mandatory or optional)
  - Unique Identifiers (primary key)
  - Unique keys
  - Relationship cardinality (and optionality)
  - Identifying and non-identifying relationships
  - Foreign Keys
  - Named Relationships
  - ERD language

### ER Diagram including M:M Relationships Resolved

- Create a second ER diagram with many-to-many relationships resolved.

## Week 6: Relational Model & Business Rules

### Relational Model

- Create a relational model in table format of the proposed database:
  - Tables
  - Key Types (PK, FK, UK)

- Column Optionality (mandatory or optional)
- Column Names
- Data Types
- Length/Decimal Positions

### Additional Business Rules

- List additional business rules including:
  - Table columns that are auto-generated (CUSTOMERS and ORDERS tables)
  - Columns that have a default value
  - Specific restrictions to column values. Include at least one each of the following:
    - Upper or lower limit (e.g., salary not greater than 175,000)
    - Range of values (e.g., salary between 60,000 and 150,000)
    - A list of valid values (e.g., job code must be 'T,' 'J,' 'M')
    - Boolean value (e.g., active status is 'T' or 'F', 1 or 0, 'Y' or 'N')

### Week 9: Submission

- Upon completion of Project 1 Database Design, submit:
  - Database design technical word document (.docx file)
  - Converted PDF file (.pdf file)

# Customer Sales Invoice

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The following is an example of product attributes and Customer Sales Invoice for a lawn mower company.

## Easy Mowing Ltd

**Company Overview:**

**2 or 3 paragraphs**

**Product: Lawn Mowers**

**Product Attributes:**

Attributes	Sample Data
Product ID	101
Brand	Lawn-Boy
Model	62-12345
Type	Gas
Cut width	20
Description	Cordless Mower
Engine brand	Briggs & Stratton
Engine size	150 cc
Color	Red
Drive type	Push
Wheel height adjusters	6-position
Start type	Electric
Front wheel size	7"
Rear wheel size	6"
Bag	Rear discharge
Serial number	53-735-1627
price	349.75

# Easy Mowing Ltd

12345 Main Street

Lakeview, ON N9F 6F4

555-555-1212

## Customer Sales Invoice

**Customer ID:** 1001

**Customer Name:** XYZ Company

**Customer Address:** 123 Main Street  
London, ON N7S 5K9

**Order ID:** 09101

**Order Date:** 02/10/2019

**Associate ID:** 501

**Associate Name:** Betty Smith

Product ID	Model	Brand	Description	Qty	Unit Price	Extended Price
LB171	62-12345	Lawn-Boy	Cordless Electric Lawn Mower	2	595.00	1190.00
BD518	59-98765	Black & Decker	Riding Lawn Mower	1	1449.00	1449.00
CM713	36-59278	Craftsman	Self-Propelled Gas Push Mower	2	625.00	1250.00
					Sub-total	3889.00
					Tax	505.57
					Invoice Total	4,394.57