Assignment 2:
Database Design (E-R Diagrams)

Due Date: Wednesday, October 02 by 6:00 pm.
Late Policy: This assignment will be accepted up to one (1) day late.
Assignments submitted after Oct. 02 at 6:00 PM but before Oct. 03 at 6:00 AM will be deducted 10% of the total grade.
Assignments submitted after Oct. 03 at 6:00 AM but before Oct. 03 at 6:00 PM will be deducted 25% of the total grade.
Assignments submission will be closed at 6:00 PM on Oct. 03 and no assignments can be submitted to OWL after that time.

Project 1: Entity Relationship Diagram

Using the E-R drawing tool (Dia.exe), create the following E-R Diagram.
(You MUST use: **Dia.exe** – AND you **MUST** submit a .dia file (do **NOT** submit a jpeg or an image file)
You can NOT use any other tool to draw the diagram
– use of any other method or tool will **NOT** be accepted or graded.

This project requires you to create a database design. Your design will be documented in a set of Entity-Relationship diagrams using the representation as shown in the lecture materials. Draw a set of Entity-Relationship diagrams to model the following scenario.

You realize that in order to run your company you will need to start tracking some basic information that deals with your customers, your services and your invoices. You will need to track the relationships between them, specifically, an invoice is **created** when a service is sold and this invoice will **contain** a list of the services in each invoiced order. Also, a customer will give each service a **rating** based on how much they like each service they may or may not have purchased.

You need to track the following:

For the customer, your design must be able to store:

- the customer's Last Name.
- the customer's First Name.
- the customer's street address
- the customer's city
- the customer's province
- the customer's postal code
- the customer's phone number
- the customer's payment method (only options: check –or- credit card)

note:
- the customer's address (street, city, province and postal code) data can be blank.
- i.e. the customer's listing can exist even of these fields are left unfilled.

For the service you provide, your design must be able to store:

- the service's classification (i.e. consulting, delivering, processing, etc.)
- the service name (i.e. Photo Retouching, Matching, Purchasing Suggestions, etc.)
- the service retail cost to the consumer (price in dollars).
- the service method (Personal, Group or Both (i.e. could be Personal or Group))
- the service customer classification (New Customer, Repeat Customer, Service Customer)

For the service entity classification, simply think about whatever services you are providing. They will be able to broken down into classifications.

- For classification example: If your service was helping customer's select computer equipment for their business, you would have some services that were:
  consulting: a general rundown of what equipment they might need.
  delivering: providing an actual list of equipment.
  processing: doing the actual ordering of the equipment.

- For Service Name: Look at the list above and breakdown what type of consulting:
  Laptop consulting
  Printer (output) consulting
  Network equipment suggestions

(If you have a good idea of what your service is, just image actually providing that service. The breakdown should become obvious specific to your company. Do **NOT** overthink this. The purpose of this assignment is to provide practice creating E-R Diagrams. Remember, you do NOT fill in actual data, you only create the attributes. Use the attributes above (classification, service name, cost, etc.) for this entity.)

For the Invoice (when a customer orders a service), your design must be able to store:

- the invoice date
- the invoice total amount
- the invoice status (New, Waiting or Paid)

HINT: a field is missing in each of the above. Hopefully, it will be very obvious ….
Next, you need to store the following relationships:

When a customer orders a service, an invoice will be *created*. A single customer is associated to a single invoice. An invoice can only be made out to a single customer.

- A customer must have at least one invoice associated (otherwise why would they be in the system?). A customer can have more than one invoice if they have order a number of times from your company. An invoice must have a customer associated (otherwise, why was it created?). An invoice can only be associated with a single customer.

- When an invoice is created, it will *contain* at least one service. It can contain more than one service if the customer orders multiple items.

- An invoice must have at least one service associated with it. A service might not ever have been order, so it is not associated with any invoice.

- The customer can list their *favorite* services. These services do not necessarily have been purchased by the customer. You have simply asked them to build a list of their favorites. A

customer can have many favorite services and a service can be a favorite of many customers.

- A customer might not have any favorites listed and a service may not be a favorite of any customer.

- The most recent date the customer selected a favorite will also be saved in the database.

You cannot add any **extra object entities** beyond what is required to meet the specifications in this assignment. You will be deducted marks if you have extraneous or unnecessary entities and you will lose marks (obviously) if you do not have enough entities.

In other words: Your diagram must be correct and meet the specifications given.
No more and no less will be acceptable.
hint: there are five (5) entities in this diagram.

You will create your answer to this project using the graphic design tool Dia.exe.
You **MUST** follow all the standards and formats in the class notes

Arrow Size of your Lines **MUST** be exactly 0.70 (makes the lines easier to read).

The file must be named:
youraccountname_ER_diagram.dia
(where .dia indicates this is a dia created diagram)

Attach the file youraccountname_ER_diagram.dia to your submission.

You must identify yourself on the document. The TA will NOT grade the document if this is missing. Somewhere immediately visible in the actual design file (.dia) you must include:
- your **first** and **last** name
- your **Western ID** (see below for a description of your Western ID)
- your **student number**
- the **DATE** you completed the assignment

You **MUST** put your identification in the diagram or you will receive a zero (0) for the Project.
No exceptions for 'I did not see the instructions' or for 'I just forgot'…
hint: do NOT use a Table object for this – just use Text.

Project 2: Information Systems Questions about Your Company

Create an MS Word document and complete the following questions pertaining to the business you described in Assignment One (1).

Each answer must be comprehensive (more than one sentence). Each answer requires at least four sentences. The entire Project 2 should be at least approximately 500 words. It is expected that some thought and explanation is included in this section.

1.) What Costs (money out) can you identify based on a business run out of your basement with just yourself as the only employee?
- list some of the costs and the estimate of how much per month for each cost.

2.) What data (list a few actual things) do you think you will need to track in the beginning?
For example, you will track sales and invoices. What other things will you keep track of?
- this should be at least a couple of paragraphs in length –OR- presented in a list format (describing each item on the list in at least one line each.)

3.) Describe why you think your service will succeed (why did you select this).
- this should be at least a couple of paragraphs (minimum 250 words) in length.

The format of this document should be identical to format you used in Assignment One (1).
Place your name, followed by the company name at the top.
Fill in the required information after.
At the end of the document, include your name, Student number and Western ID (the first part of your Western email (i.e. if your email is – **ibrai2328@uwo.ca** your ID will be – **ibrai2328**)
Formatting is not important as long as the document is easy to follow:

This document must be a Word file saved and submitted as a .doc (or .docx) file
The name must be a combination of your Western Account Name and the name of your company.
The file name must be youraccountname_companyname_A2.doc (or .docx)
- example (from above) **ibrai2328_MaggicSoftware_A2.docx**

Submission Instructions:

You must **upload and submit**, via the Assignment Section in the CS1032 Web Site in OWL:
- **Both** [two (2)] files:

youraccountname_ER_Diagram.dia

youraccountname_*yourcompanyname*_A2.docx (or .doc for earlier versions)

NOTE: The E-R Diagram MUST be a DIA file (has the extension .dia).
DO NOT SUBMIT an image (.jpeg .bmp) file.
You will lose major marks if you submit anything other than a .dia file.

NOTE: *Beware* of the tilde (~)
- DIA will sometimes save a backup copy of your work and add the tilde (~) at the end of the file extension. (example: Assignment2.dia~)
- Do NOT submit this backup file. It can NOT be opened by the TAs.
- It is YOUR responsibility to ensure the correct files are submitted.

It is your responsibility to ensure the files have been submitted in OWL.
Please check and make sure you have received the confirming email and then check that the two (2) files (you must submit **two (2) files** for this assignment) have been uploaded correctly.

You must do both Projects in this assignment. This is Assignment Two, comprised of two (2) parts, Project 1, Project 2. Both projects are to be completed and submitted. There was confusion on Assignment One regarding what was required.

… and please remember: **Do NOT cheat.**