Note – The final exam is Thursday April 16th. The project will be due during your presentation. Presentation times will be on April 13th, April 20th, and April 21st.

For this project, you are to use Microsoft Access software. You will be developing forms which allow you to manipulate data within your tables. There will also be a number of reports which you must create for retrieving the information.

Basic requirements are listed below and must be implemented but you are not limited to this functionality. You may add your own forms or reports as you think of things that may provide a more user friendly environment; some suggestions can be found below.

**Work Control System**

Your small company needs you to create a database to keep track of all of the costs associated with maintaining its facilities. Your company currently has 7 different shops that takes care of the facilities (administration, carpenters, locksmiths, millwrights, electricians, welders and custodians). It also maintains a small warehouse that will store some items for emergency purposes and everyday use (such as toilet paper, light bulbs, batteries, etc…). If the tradesperson can’t find the item in the warehouse they will need to drive to a local store to pick it up and generate an external charge.

There are three types of costs that can be incurred:

1. **Labour Charges** - each day a tradesperson submits a timecard. Costs will only be incurred when the shop supervisor approves the timecard. Each tradesperson is assigned a regular hourly rate. If the time type is overtime (between Monday and Friday), the rate of pay is 1.5 times the regular hourly rate. If the time type is weekend, the rate of pay is 2 times the regular hourly rate.

2. **Warehouse Material Release** – items may be purchased from the warehouse. The parts are stored in bins. C3-4 would represent the bin located in aisle C, shelf 3, fourth from the left. A bin may only store one type of part.

3. **External Charges** – a tradesperson can submit receipts of parts bought at any local store.

Work Requests collect all of the charges for a particular job. Work Requests are divided into phases. A phase is a particular element of the work to be done. A phase will be for one shop only, but a shop may appear on more than one phase on the work requests.
For example:

Work Request 45233 – renovate photocopy room.
Phase 1 – locksmiths – install new lock on door
Phase 2 – electricians – hook up electrical outlets
Phase 3 – carpenters – put up drywall
Phase 4 – carpenters – lay carpet
Phase 5 – custodians – clean up materials and room for use

New phases can be added in at anytime. A work request may never be deleted but a phase can be deleted if no costs have been incurred for that phase. The customer is billed when the work request status is changed from ACTIVE to COMPLETE.

The following information must be represented within the database:

• Employee is identified by a unique login (usually first initial, last name). Other attributes that must be stored is their first name, last name, home phone number, hourly rate and shop they work in. An employee belongs to only one shop.
• The shop is identified by a two letter shop id (eg – EL for electricians). The text description of the shop, the shop supervisor, and the shop phone number must be stored.
• A unique work request number identifies a work request. A text description of the work to be done (eg – renovate photocopy room), the entry date, the entry clerk’s login (an administrative employee), and the work request status must be stored.
• A phase is associated with a particular work request and has a unique number in relation to that work request. Associated with a phase is a text description, the shop, an entry date and the entry clerk that entered it.
• A unique card time number identifies time cards. Associated with each time card is the shop, the shop person, the work date and for each phase worked on – hours and time type. Only one time card per day per shop person is permitted.
• A supervisor must approve each time card. The database must keep track of when the supervisor approved the time card.
• A warehouse can release parts to a tradesperson (identified by a unique release number). A warehouse release must keep track of the bin(s) that contains the part(s) that is being released, the quantity being released, the date, and the tradesperson that is receiving the part(s).
• For each bin, the following information must be kept – the bin number, the part number, a part description, a minimum level, a reorder qty, and the quantity of parts in the bin. Minimum level is the level at which the storekeeper will order more inventory (ie – the reorder quantity). Assume that the part will only appear in one bin in the warehouse.
• Every time a part has been released, there should be a trigger to update the quantity of parts remaining in the bin. Assume that a release is created after the parts are brought to the counter, so you don’t need to check if the inventory quantity goes below zero.
• For an external charge, the following information must be kept – the unique external charge number, the tradesperson, a text description of what was bought, the receipt number, and the dollar value.

Requirements

Your project must provide the following basic functionality:

• Forms to add/delete/modify information from all tables.
• A report, grouped by work request that will show the total cost for all approved time cards, the total materials cost and total external charge costs.
• Sum up the value of inventory of each warehouse by listing out each inventory part, qty on hand, selling cost and total value.
• Write a report that will print out all of the information of labour that has yet to be approved.
• Given an inventory release number, write a report that will simulate a receipt for that release.
• Write a reorder report that identifies the parts that purchase orders need to be created for (ie below minimum level).

The following are suggested features that could be implemented to improve the look and functionality of the project. Be warned that you should concentrate on making the rest of your project work first.

• For your reports, any parameters passed are printed in the header of the reports.
• A start-up menu for your application, from which the user may select the forms that they wish to use.
• Populated drop down lists for existing entities when entering relationship data (eg – when you are adding in timecards, you can have a drop-down list for the shop). Another example – you can have drop-down lists for the time types.

Documentation:

You must hand in printed copies of the following:

1. The database schema.
2. An ER diagram containing the entities, relationships and constraints.
3. A brief description of what each form and report is used for.
4. Report on division of labour within your group.

Be sure to spend adequate time on preparing this report, as this is one of the main things that the marker will look at when marking your project.
**Demonstration:**

The projects will be demonstrated to the instructor/marker during a particular time slot. A schedule will be posted during the last week of class on the course web page and groups should request a time slot through email to jdbell@brocku.ca; presentation times will be allocated on a first-come, first-serve basis.

At least one group member (preferably all), must be at the demonstration. The group member(s) must be able to walk through the functionality of the application. Please bring a copy of your report to the demonstration for the instructor/marker to have as a reference.

At the demonstration, the instructor/marker will participate in the walk through of your application by viewing the data, providing appropriate input and asking questions. The instructor/marker may write additional queries at this time to test your application.

**Submission Requirements:**

1. all project files are saved in your group account under the Z: drive.
2. submit the printed documentation specified above in an envelope.
3. a group cover sheet must be stapled to the front of the envelope. This cover sheet is available from http://www.cosc.brocku.ca/forms/teamcover, and must be completely filled out with information from all group members.