

Final Project

Evaluation Weight: 30 % (out of the total mark for the course)
Due Date November 28, 2017 (Demo and Submission)

Objective

This final project helps you to master the competency required for the course. The project focuses on designing, implementing and testing a Windows-based application in three-tier model using object-oriented approach.

Competency-Code To use object-oriented development approach – 016T

Competency Elements	Performance Criteria
1. To create an object model	1.4 Definition of the services for each of the classes. 1.5 Definition of pertinent attributes based on each class.
3. To program a class	3.2 Declaration and definition of the class, respecting the syntactical and semantic rules of the language. 3.3 Proper use of the capacities of the language in applying the principles of encapsulation, inheritance and polymorphism. 3.5 Detection and correction of the class's compilation errors.
4. To ensure that the class functions correctly	4.1 Development of the tests necessary to verify that all the class services function properly. 4.2 Creation of an appropriate test environment. 4.3 Appropriate debugging of the class
5. Generate the executable version of the program.	5.1 Use of generation mechanisms specific to the utility used.

Case Study

Company:

Hi-Tech Distribution Inc. (Virtual)

7122 18th Montreal, Quebec

H2A2M8

Tel: (514) 721-8662

Fax: (514) 777-8665

Hi-Tech Distribution Inc. is supplying products (computer science books and softwares) to nearly all the colleges and universities in Quebec. You are required to design and implement a windows-based application named **Hi-Tech Management System** using Visual Studio 2015/2012, C#.

Following is the *preliminary information list* you got from **Hi-Tech** after your first contact with the company:

1. Each book record should contain the fields: ISBN, Title, UnitPrice, YearPublished and QOH (quantity on hand). Each book must be categorized. Each software must be categorized as well.
2. Each author record should contain the following pieces of information, for example, authorID (for identification in case authors have the same name), first name, last name.
3. **Hi-Tech** receives products from different publishers (suppliers): Premier Press, Wrox, Murach, Prentice Hall and more.
4. **Hi-Tech's** clients: Colleges and Universities in Quebec.
Each college/university should contain the information such as name, street, city, postal code, phone number, fax number and credit limit (offered by **Hi-Tech** in the client's contract).
5. Order clerks can take clients 'orders (by Phone, Fax, or Email) and order payments will be made by direct withdrawal from the college/university's bank account as specified in the contract between **Hi-Tech** and the client. The order shipping date will be based on the client's required date (e.g. one day before the required date).
6. At present, **Hi-Tech** has two order clerks who are responsible for taking the clients' orders.

Users and Operations

Users	Operations
MIS Manager (Henry Brown)	<ul style="list-style-type: none">• Save/update/delete employee information• Search/list employee information• Save/update/delete user information• Search/List user information
Sales Manager (Thomas Moore)	<ul style="list-style-type: none">• Save/Update/Delete client information• Search/List client information
Inventory Controller (Peter Wang)	<ul style="list-style-type: none">• Save/update/delete product information• Search/List product information
Order Clerks <ul style="list-style-type: none">- Mary Brown- Jennifer Bouchard	<ul style="list-style-type: none">• Save/Update/Cancel clients' orders• Search/List clients' orders

Security

To access the system, each user is required to enter his/her valid username and password. The user can change the password when necessary.

Technical Points

For this project, you must apply all the following technical points:

1. Developing a Windows-based Application in C# in three-tier model
2. Applying Object-Oriented Concepts (Encapsulation, inheritance and polymorphism, class relationships)
3. Using Interfaces
4. Creating and Using the Class Library Project
5. Creating and Using Custom Windows Controls in GUI classes
6. Data Storage (Temporary : Using Collection Classes; Persistent : Using Files (Sequential / Binary/XML))

Project Documentation

The project documentation must follow the following format

- I. Project Description
- II. Project Development Process

Analysis: Summary of the application's requirements

Design: GUI, Application Domain (Business) and Data Access Classes

Implementation: Source Code Listings

Testing: Test results of the application in well-defined table format

Deploying the Application: Hardware and software requirements for the application

- III. Conclusion
Specify clearly what you have learned from this project.

Evaluation Scheme

Competency Element(s)	Evaluation Element	Evaluation Criteria and Mark Breakdown	Weight
1, 3 & 4	Data validation	<ul style="list-style-type: none">No invalid data will be entered into the system (<i>10 points</i>)	10 points
1, 3 & 4	Interface Design	<ul style="list-style-type: none">User-friendly (easy navigation, clear instructions, elegant errors messages)Using colors, font sizes and font styles with purpose (<i>5 points</i>)Meeting all the project requirements (<i>10 points</i>)	15 points
1, 3, 4 & 5	Source Code	<ul style="list-style-type: none">Useful comments (<i>5 points</i>)Consistent in naming convention (<i>5 points</i>)Proper use of all the object-oriented concepts covered in the course (<i>15 points</i>)Meeting all the project requirements (30 points)	55 points

	- Project Demo (Oral Presentation + Sample Run) - Documentation	<p><i>Oral Presentation (Using PowerPoint)</i> <i>(10 points)</i></p> <ul style="list-style-type: none"> ▪ Time Management (15 minutes) ▪ Confident in presenting the project ▪ Short and precise answers to the questions <p><i>Final Project Report (Using Microsoft Word)</i> <i>(10 points)</i></p> <ul style="list-style-type: none"> ▪ Well-defined format ▪ No spelling/grammar mistakes 	20 points
Total			100 points
Important Notes and Recommendations			
Penalty			
<ul style="list-style-type: none"> ❖ If the program gets errors (Syntax or Run-time) when running, 20 points will be deducted from the total points. ❖ Logical errors will result in 0 point for the code part related. ❖ Late submission and absent from the oral presentation automatically results in zero (0) for the final project. 			
Recommendations			
<ul style="list-style-type: none"> ❖ For any question concerning the final project, do not hesitate to contact me via MIO or come to see me in the teacher's room (3320E) during my office hours. ❖ You should have a good plan to carry out the final project. 			