Final Project

Course Number: 420-DA3-AS

Course Title: Multi-tier Applications Development

Session: Autumn 2022

Group Number: 7392

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1. Project Description

Hi-Tech Distribution Inc. is supplying computer science books to nearly all the colleges and universities in Quebec. A Windows Forms

app called Hi-Tech Order Management System is designed and implemented using Microsoft Visual Studio 2022 , C# and SQL Server 2019.

Hi-Tech’s business rules include the following:

1. Each book record should contain the fields: ISBN, Title, UnitPrice, YearPublished and QOH (quantity on hand). Each book must be categorized.
2. More than one author can write each book and each author may participate in writing more than one book. Each book can be published by only one publisher.
3. Each author record should contain the following pieces of information such as authorID (for identification in case authors have the same name), first name, last name and email).
4. Hi-Tech has received computer science books from different publishers (suppliers): Premier Press, Wrox, Murach, Prentice Hall and more.
5. Hi-Tech’s customers are Colleges and Universities in Quebec. A customer’s information should include name, street, city, postal code, phone number, fax number and credit limit.
6. Order clerks can take customers ‘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 customer.
7. At present, Hi-Tech has two order clerks who are responsible for taking the customers’ orders.
8. Project Design

- Database Design

Diagram

Description automatically generated

- Design of Application Domain Classes

Graphical user interface, application

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Class Diagram

- Design of GUI Classes

Login GUI

Graphical user interface, application

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Employee and User GUI

Graphical user interface

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Customer GUI

Graphical user interface, application

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Book GUI

Graphical user interface, application, Word

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(Choose “Create a new Book” in Book Option or “Create a new Author” in Author Option to open form below)

Graphical user interface, application, PowerPoint

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(Choose “Create a new Publisher” in Publisher Option or “Create a new Category” in Category Option to open form below)

Graphical user interface, application

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Order GUI

Graphical user interface, application

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- Design of Data Access Classes

Graphical user interface, application

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1. Project Implementation

Please refer to the code

1. Project Testing

* Test Login Form
* User can login correctly, different user can login different form according to user privilege.
* Verify the user and password.
* In the other Forms can return to Login Form.
* Test Employee and User Form
* Can create/update/delete/list employees.
* Verify the format when create employee. Verify employee Id exist or not.
* Can search employee according to given conditions.
* When create new employee can create related user as well.
* Can create/update/delete/list users.
* Verify the format when create users.
* Verify user Id exist or not.
* Can search user according to given conditions.
* Can clear all the list views.
* Can back to Login Form and exit the application.
* Test Customer Form
* Can create/update/delete/list customers.
* Verify the format when create customers.
* Verify customers Id exist or not.
* Can search customers according to given conditions.
* Can clear all the list views.
* Can back to Login Form and exit the application.
* Test Order and Order line Form
  + Can create/update/delete/list orders.
  + Verify the format when create employee.
  + Verify orders Id exist or not. Can create/update/cancel/list order lines.
  + Verify the format when create order lines. Verify order lines exist or not.
  + Can blind order line under an Order.
  + Can clear all the list views.
  + Can back to Login Form and exit the application.
* Test AuthorBook Form
* Can create/update/delete/list the Edition of the book.
* Verify the format of all input when create/update/delete/list the Edition of the book.
* Verify the ISBN, Author Id and the combination of Author Id and ISBN exist or not.
* Can open the Book Form by choosing option to create Book or create Author: (test Book Form)
* Can create/update/delete/list Book Information, Author Information.
* Verify the format of all input when create/update/delete/list Book Information, Author Information.
* Verify the ISBN and Author Id exist or not
* Can open the CategoryPublisher Form by choosing option to create Publisher or create Category: (test CategoryPublisher Form)
  + Can create/update/delete/list Publisher Information and Category Information.
  + Verify the format of all input when create/update/delete/list Publisher Information and Category Information.
  + Verify the Publisher Id and Category Id exist or not
* Can clear all the list views
* Can back to Login Form and exit the application

1. Project Deployment (Optional)
2. Conclusion

In this project, we learned a lot. We have learned how to connect database in C# development environment, which combine our knowledge of C# programming and database we learned in last semester. We learned database programming with ADO.NET in connected mode, in disconnected mode. We learned how to use the entity framework and LINQ in C# developing. Besides, we also learned how to integrate GUI, business and data access classes to create a robust object-oriented solution to a given problem, which build us a foundation to next level learning.