

Invoice System Project Documentation

Overview

The system is comprised of three webpages each handling a separate different table. Each page is capable of creating new table entries, updating existing entries, and deleting entries.

- **Invoice Management:** Create, view, update, and delete invoices.
 - **Invoice Item Management:** Manage invoice items that reference a master Items table.
 - **Customer Management:** Add, update, and delete customer records.
 - **UI:** User interface using a Master Page with Bootstrap.
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Prerequisites

- **Development Environment:** Visual Studio 2019 or later.
 - **Framework:** .NET Framework 4.7.2 (or later recommended).
 - **Database:** SQL Server Express or full SQL Server.
 - **Tools:** SQL Server Management Studio (SSMS) for database scripts.
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Database Schema

Tables

- **Customers:**
 - CustomerID (INT, PK, IDENTITY)
 - Name (NVARCHAR(100))
 - Address (NVARCHAR(255))
 - ContactInfo (NVARCHAR(100))
- **Invoices:**
 - InvoiceID (INT, PK, IDENTITY)
 - CustomerID (INT, FK to Customers)
 - InvoiceDate (DATETIME)
 - TotalAmount (DECIMAL(18,2))
- **Items:**

- ItemID (INT, PK, IDENTITY)
- Name (NVARCHAR(255))
- UnitPrice (DECIMAL(18,2))
- **Invoiceltems:**
 - InvoiceltemID (INT, PK, IDENTITY)
 - InvoiceID (INT, FK to Invoices)
 - ItemID (INT, FK to Items)
 - Quantity (INT)

Note: Cascade deletes are enabled on child records.

Stored Procedures

Below are the names of stored procedures:

Invoice Stored Procedures

- spGetAllInvoices
- spGetInvoiceById
- spAddInvoice
- spUpdateInvoice
- spDeleteInvoice

Invoiceltems Stored Procedures

- spGetInvoiceltems
- spAddInvoiceltem
- spUpdateInvoiceltem
- spDeleteInvoiceltem

Customer Stored Procedures

- spGetAllCustomers
- spGetCustomerById
- spAddCustomer
- spUpdateCustomer

- spDeleteCustomer

Items Stored Procedures

- spGetAllItems
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UI and Code-Behind

- **Default.aspx:**
 - Lists all invoices in a GridView using an SQLDataSource.
 - Allows for the editing of invoices using the GridView's editing functionality
 - Allows deletion of Invoices
 - A calendar field is used for changing InvoiceDates, accessible when editing the gridview
 - **Customers.aspx:** Enables managing customers with add, update, and delete functionality similar to the InvoiceItems screen.
 - **InvoiceItems.aspx:** Provides an interface to add, update, and delete invoice items for a selected invoice.
 - The items field of the InvoiceItem table is altered using a dropdown similar to the CustomerID field on the default page
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Troubleshooting & Future Enhancements

- **Troubleshooting:**
 - Ensure the database and stored procedures exist before running the application.
 - Check connection string settings ensuring connection string in Web.config file is correct.
 - Verify the cascade delete settings or manually delete child records if foreign key conflicts occur.
- **Future Enhancements:**
 - A search feature allowing for filtering by customer or item name and ID
 - Improve error handling and logging.
 - Integrate ASP.NET Identity for user and role management.
 - Enhance UI and add client-side validation.

- Separate layers for security using some kind of entity management framework, creating a business layer and data layer.
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Motivations

Use of `SQLDataSources` over data layers

The first iteration of this project used layers to separate database interactions and web page interactions for security. For this iteration I decided against it, opting instead to rely directly on GridViews for editing tables. This was mostly done because using layers in such a way without also importing some kind of entity framework leads to massive headaches and overcomplicates many tasks so I opted to go for the simpler route this time around.

Lack of authentication

There's a bug I've been experiencing in particular with asp.net web forms where I am unable to configure an application to use Microsoft Identity halting my ability to work and test projects made with the service. All sources I have seen point to it being either a problem with my install of visual studio or a bug with Microsoft's authentication.