.NET Fundamentals, Capstone Project

Capstone project for .NET Fundamentals.

Overview

The capstone project for C# basic is a project that combines the basic C# skills with SQL to create a simple Application that interacts with a MySQL database.

The goal of the project is to create a store. The theme of the store can be something that you decide for yourself. Do keep in mind that it has to be something that is doable, so don't overcomplicate things for yourself.

Requirements

The store application will be a command line application that allows the managing of the product catalog, a way to display the catalog, and a way for customers to buy products. We do not have to concern ourselves with authorization or security schemes. All the products and orders need to persist, so even if the application is closed, the data will be saved and loaded when the application is opened again. The application needs to provide functionality based on the following user stories:

- As a user, I want to interact with the store through a command line interface.
- As an administrator, I want to add a product to my product catalog.
- As an administrator, I want to edit a product in my product catalog.
- As an administrator, I want to delete a product in my product catalog.
- As a user, I want to see the entire product catalog.
- As a customer, I want to be able to add a product from the catalog to my shopping cart.
- As a customer, I want to be able to remove a product from my shopping cart.
- As a customer, I want to see all the items currently in my shopping cart.
- As a customer, I want to be able to place an order containing all the items in my shopping cart.
- As a customer, I want my shopping cart to be empty when my order is successfully placed.
- As an administrator, I want to see all incoming orders.
- As an administrator, I want to complete an incoming order.
- As an administrator, I want to reject an incoming order.
- As a customer, I want to see the status of my order.

Project Planning

A part of completing a project is project planning. During the planning phase of a project, you will define the order of activities that need to be executed to complete the project. For this project, we will provide a basic overview of what a project planning might look like for real world projects.

Designing the Database

Usually, the first step when it comes to implementing a project is designing the database. To create an application that can communicate with the database, we need to define the database schema before we can start creating the application. We do this by modeling the database in an ERD. The following steps can be taken to effectively model your database schema.

Identifying Core Entities

Identifying the Core Entities for a database schema is crucial for success. These entities will form the cornerstone of the database schema. For example, the core entities of a user forum could be something like the following: User, Category, Post, Comment.

Defining the Attributes of the Core Entities

After we have defined the core entities, we need to define the attributes of the entities that make the entities what they are. For example, our User entity could contain values like first_name, last_name, user_name, age.

Referencing

After defining the core attributes, start creating references between the core entities through the use of foreign keys. Note the multiplicity of the references and plan your database schema accordingly.

Functional Attributes

After we defined our core entities and created references between them, we need to think about the functional attributes we need to add to entities to allow us to implement the functionality that is requested. For example, a requirement of the user forum could be that a user can be banned and locked out of their account. This requires us to define an attribute in the user entity that tracks the status of the user account.

After we conclude these steps, we should have a basic database schema that we can use to start creating our application.

Output: ERD

Defining & Writing Queries

Next, we need to write queries that allow us to interact with the database. We need to keep writing queries until we cover all the functionalities that are requested. These are the queries that we will use in our application to interact with the database, so validating the functionality of the queries here could save us a lot of headaches in the future.

Output: SQL Queries

Designing our application

After we have a functional database, we need to think about how we are going to set up our application. Here we think about the different systems and their functionalities that we need to integrate in our application.

Output: Class diagram

Writing the Application

After we have designed the systems of our application, we can start implementing them in our codebase. Create a new .NET project of the appropriate typing and start developing.

Output: Codebase

Testing the Application

After we have implemented all our code, we need to test the application. During development we have tested our functionality already, but it is always good practice to test the application when everything is included.

DONE!

After we have completed all these steps, we have a functioning application with all the functionalities requested by the customer!

This is a basic outline of a project planning process. It is now your job to create a full project plan based on these basic steps.

Deliverables

- Create Project Planning
- Deliver the ERD of the database.
- Deliver Class Diagrams of core systems.
- Deliver a functioning codebase of the project.

Packages

https://www.nuget.org/packages/MySqlConnector/2.3.7