Department of Computer Science

Year 2 - Term 2

SOFT20181: Internet Application Programming

Documentation

**SOFT20181**

**Internet Application Programming**

**Supporting Documentation**

**T0322864**

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1 Introduction

This is the report for Internet Application Programming Assignment project to create a commercial website with fully working functions.

The most important criteria for this project:

- Overall look of the finished E-commerce System (10%):

- Product pages generated from a relevant database (20%):

- Customer registration and authentication (10%):

- Shopping basket functionality (15%):

- Admin functionality (15%):

- Report (10%):

- Demonstration (10%):

1.1 Success Criteria

Upon completion of this work, all the main criteria were met:

Overall look of the finished E-commerce System - I believe that I was able to show a good understanding of the design, completely drafted the design using figma and compiled the html and css code.

Product pages generated from a relevant database, one of the most important criteria for this work, was also met. All available pages on the site are fully powered by Razor Pages, and all products are displayed from the database with the ability to search by name.

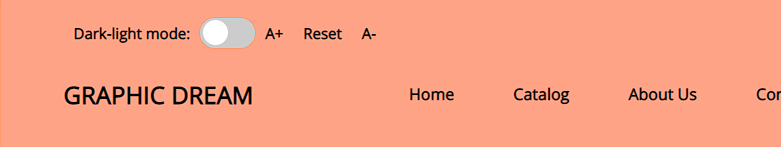
Customer registration and authentication - the site has the ability to register and then log in, all user data is collected in the database.

Shopping basket functionality - the site has a basket of goods that works for users, it is also stored in the database, but the basket is not assigned to users.

Admin functionality - site administration is also designed, it is possible to add, remove or edit products.

2 Design

The website has a responsive design that works across devices. Responsiveness was done with CSS using @media tags.

The site has the ability to change the font of the navigation menu, which is also saved in local storage.  


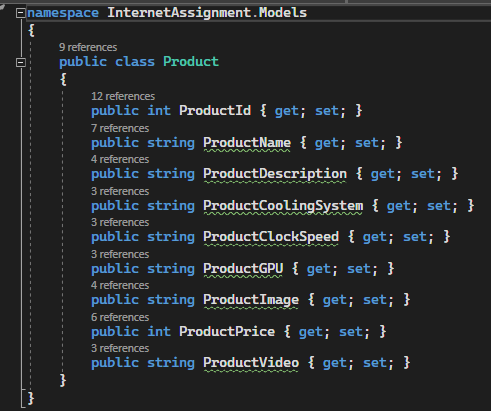
Also, the site has the ability to completely change the theme, using JS and replacing css files with different styles. It also uses local storage to save the theme.  


3 Implementation

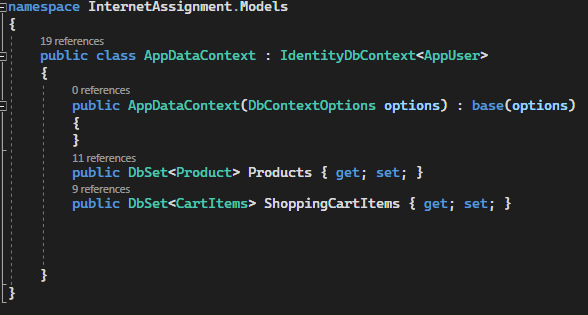
3.1 Section 1: Product Page:

The functionality of the site has a Razor product page that contains html code. The model for this page, which contains the functions responsible for what the page itself should do.

Before starting to create a database, the Product class was added, which contains a lot of data that is used on the site:

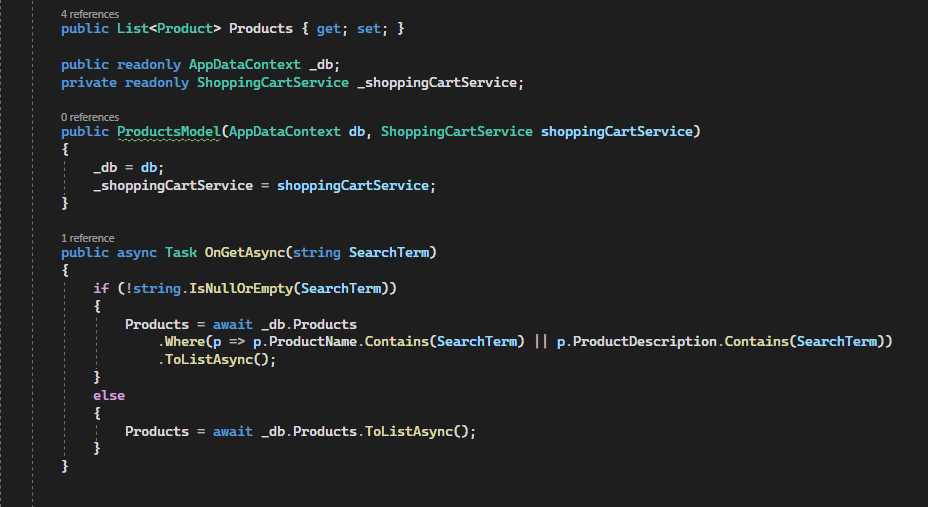


To create the database, the AppDataContext.cs class was also added to initialize the first migrations to the database. You can see this class in the following screenshot:



After the creation of these two classes, the first initialization of the database was made, in which a table was created with the same data as in the Product class.

Next, a function was created in the Products page model so that the page would fetch data from the database and be able to display it:



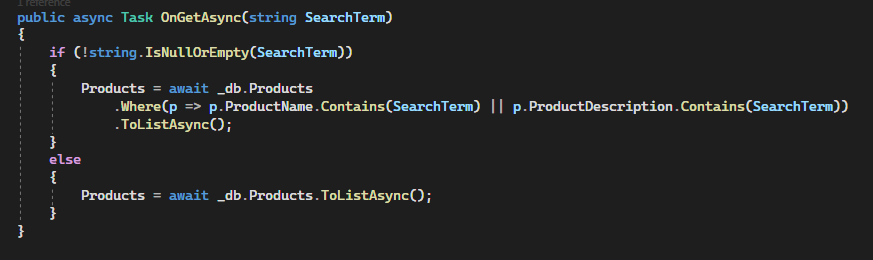
In order for each product to be shown from the database, the @foreach function was used, which allows you to show all products using just one block with html code.

3.1.2 Challenges Encountered

This section was easy enough to implement, so there were no obstacles in writing it.

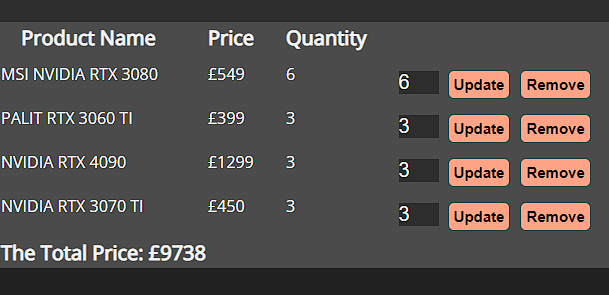
3.2 Section 2: Search & Shopping Basket:

To search by products, a function was written in the Products Model using the get method.



To create a shopping cart, a method was made for the products page, in which, when the button is clicked, a request is made to the database, where the ID of a certain product is taken with the entered quantity and stored in the database in the ShoppingCartItem table.

For the page that shows the cart, a function was made that shows the products in the cart and their quantity. A feature has also been made that allows you to change the quantity of each item in the cart and delete them. The final cost of goods is also calculated.



3.2.2 Challenges Encountered:

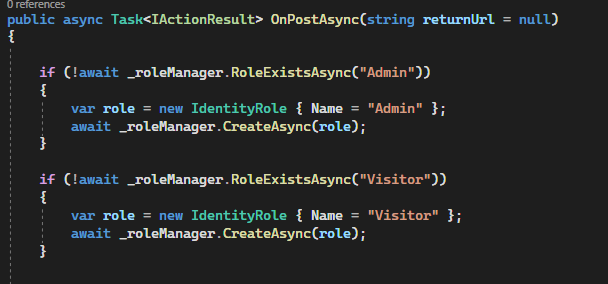
Creating a product search was a fairly easy feature for me. However, the creation of a shopping cart proved to be the most difficult function in the creation of the site.

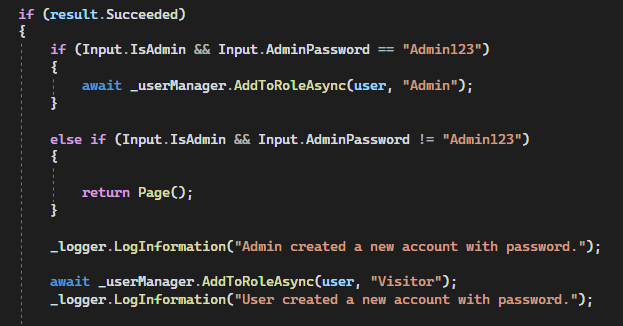
At first, it was difficult to decide which method to use to create the basket. After all, many controllers are used, many models and other functions.

As a result, I resorted to a simple option. After creating the cart, I tried to add the ability to have a separate cart for different users. To do this, I tried to add a foreign key from the AspNetUsers table to the cart table, which worked for me, however, the program kept throwing an error with the database with a foreign UserId key, so I had to give up the ability to have a cart for each user also due to lack of time.

3.3 Section 3: Login/Register & User Account:

To create the possibility of registration and login on the site, the Identity library was added, which generates code with ready-made pages for registration. (www.youtube.com, n.d.)

I created my AppUser class and changed the database context file to make another migration and create tables to store users. After that, I configured the roles for the buyer and administrator:  




3.3.2 Challenges Encountered

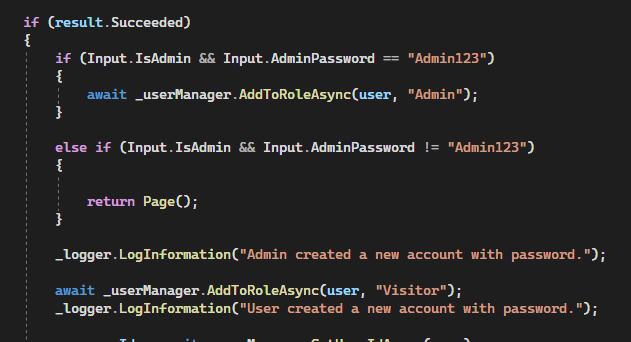
Creating a registration and login did not cause me any serious difficulties. Therefore, the only difficult part was setting up registration and login for your site.

3.4 Section 4: Admin Page & Role

3.4.1 Features Developed & Implementation Processes:

When you log in to the website as an Administrator, you need to go to the products page, where links to functions such as: Adding products, changing existing products, and deleting existing products appear.

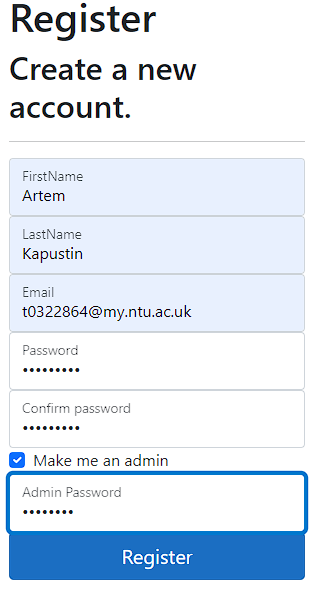
To register as an administrator, you need to click the “Make Me An Admin” button, after which you need to enter a special password for administrators. this password : "Admin123". After that, the new user will be assigned the administrator role, and the next time you log in, the role will remain.



Also for general customers, links to pages for removing, modifying and adding products are hidden. Using the function:

@if(User.IsInRole("Admin")) {}

Also, if the user tries to access the product removal page or other admin pages, access will be restricted using the function: [Authorize(Roles = "Admin")]



3.4.2 Challenges Encountered  
The most difficult step in creating the administrator role turned out to be creating and finding an idea on how to assign the role of Admin to a user who should be an admin. However, this was implemented, right in the registration form using an additional password.

3.5 Section 5: About Us Page

3.5.1 Features Developed & Implementation Processes

About Us and Contact Us pages simply consist of html code and text tags, which tells about the owners, the work of the company. The tag is also used to display a map with the location of the company's office.

3.5.2 Challenges Encountered

There were no difficulties in creating these pages.

4. Summary and Conclusion

Summing up all the work done, I can say that this project was quite difficult, since it was the first experience in the backend, and also the first experience of using ASP.NET Core.

I learned how to completely transfer the Front End project to Razor Pages,

I also learned how to create a working database and get the data I need from it to display on the site.

I was able to learn how to create working authentication and authorization methods using the Identity library,

I learned how to create a simple basket and collect quantities of all products.

Also a huge part of my knowledge is modeling the administration function of a website.

References:

www.youtube.com. (n.d.). MVC Login and Registration with Identity - Identity Customization - .NET Core 6 - Part 1. [online] Available at: https://www.youtube.com/watch?v=I-ZzFLruiuo&t=645s [Accessed 31 Mar. 2023].

www.youtube.com. (n.d.). C# Razor Pages - Complete Tutorial. [online] Available at: https://www.youtube.com/watch?v=pmWFzzU\_NB4&t=11s [Accessed 31 Mar. 2023].

www.youtube.com. (n.d.). ASP.NET User Roles - Create and Assign Roles for AUTHORIZATION! [online] Available at: https://www.youtube.com/watch?v=Y6DCP-yH-9Q&t=149s [Accessed 31 Mar. 2023].

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**To be registered as an ADMIN:  
Fill the whole form AND  
“Click Make me an Admin” and type in the password “Admin123”**

**To be registered as an Customer:  
Just Fill the whole form, but don’t click “Make me an Admin”**