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An Effective Online Food Order Application System using Asp .Net Core 3.1 Framework

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ABSTRACT

Online Food Order is a system in which its customers can order online for food items from anywhere. The system helps the users in displaying the list of items available in that restaurant. The system also displays the images of the recipes items along with the list of items. The accessibility to the system in the restaurant is given to the Administrator with the username and password. User can select items from a wide range of menu. Option given to customer to pay the bill separately for the items which he/she orders, with this option this application can be easily integrated with any existing hotel administration software. This system created utilizing Microsoft's ASP.NET Core innovation which is an open-source advancement stage and C#, which is a basic, current, object-oriented programming language alongside different front-end advances like HTML, CSS, JavaScript, Bootstrap and so forth Advances like Entity Core Framework is utilized to associate the application with the data set.

KEYWORDS: *Web development, ASP.NET, C#, Application*

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I. INTRODUCTION

Online food ordering has certainly changed the worldwide food market. On-request food conveyance applications can carry clients everything from soup to cheap food to Italian at their doorsteps with only a few of snaps.

Requesting food online has become a recent fad that offers a plenty of benefits to clients just as cafe proprietors. Beside that, food conveyance application improvement is likewise on the ascent. Applications like DoorDash, JustEat, Zomato, and Foodpanda are assuming control over the significant piece of the pie.

The fast development of the food conveyance market additionally opened new entryways of chances for another sort of cafe, for example, "apparition" and "cloud kitchens" which are new methodologies received by numerous food conveyance firms.

The infiltration of the Internet and cell phone has made it simple for business people to target shoppers. Expanding utilization of cell phones is one of the vital elements behind the development of the online food conveyance market.

At the point when any business is venturing into the advanced world, it expects appealing returns as far as income and client base. Independent of business size and type, everybody is making their versatile application to pull in more clients.

Many people leave advanced requests off chance that they face helpless client experience, and grown-ups need to get easy to understand applications. It implies proprietors need to refresh their current stage and permit clients to put orders through online media, menial helpers, brilliant gadgets, etc.

Microsoft's .NET innovation is a product structure which incorporates an enormous assortment of libraries otherwise called class library and offers help for various programming dialects, for example, C#, VB.NET, F# and so on The execution climate in .NET system is kept up by the CLR, known as Common Language Runtime. The CLR is liable for overseeing memory, dealing with special cases and dealing with security of the framework. .NET Framework is by and large shaped utilizing class library and the CLR.

.NET system is utilized solely for windows stage while to construct cross stage applications, we can utilize .NET core which is upheld by LINUX, MAC and WINDOWS.

The proposed project plans to utilize .NET Core to assemble the application essentially to make it versatile. C#, which is a programming language supporting items and classes, is utilized to compose the functionalities of the applications.

Following are the functionalities which can be carried out by a use in OFOSApp :

1. Login and Signup using JWT authentication
2. Order related activities (Place Order, Make Payment)
3. See Previous Orders
4. Sign out

II. LITERATURE SURVEY

Safa Abd elmonem,Murtada Mohamed, MohamedAbd Elrahman ALagab proposes of designing a bus tracking and fuel monitoring system using ASP.NET MVC. Author talks about developing a bus tracking and monitoring the fuel and speed system to provide a facility for the management requirements by the administrator. The proposed system based on Arduino, GSM/GPS and map suit ASP.MVC which provide the actuated arrival time in addition to graphically showing the bus location on Google map. The design also enables the owner of the buses to monitor the bus instantaneously because the system administrator can easily maintain database information of buses and its fuel tank at any time of the service[1]. Xiangjun Yu, Qiongjie Zhou systematically propose the design principle and overall structure of the supply chain management system, puts forward the operation process of the supply chain management system, puts forward the solution of the supply chain management system based on asp.net, realizes the management functions of the supply chain management system, such as suppliers, manufacturers, sellers, third-party logistics companies, end customers, etc., which provides the enterprise managers with intelligence Management decision tools[2].The main objective of A. Yaganteeswarudu, Vishnu Vardhan Yis to develop a site where farmers can directly interact with government to seek help for their problems. The application is designed with ASP.NET MVC. Here in the website before starting the crop the farmers should enter the details of the land, the crops to be grown and expected cost for that crop. If any damage occurs, then farmer should upload the corresponding videos or images in the site so that he will get the loss of amount immediately[3].JIA Xuebin conducts a research on the design and implementation of computer network virtual laboratory using ASP.NET technology. In this paper, we conduct research on the design and implementation of computer network virtual laboratory based on ASP.NET[4].Liu Yuanchun, Cheng Honghao proposes an application developed specifically for the photographer community using ASP.NET MVC[5].Fawaz A. Masoud, Dana H. Halabi and Deema H. Halabi discusses about research and development of a coach management system using ASP.NET technology. The author uses 3-layered architecture to develop the system and uses ADO.NET for database connection[6]. Zisheng LI1,2, Xiaoping XIAO3talks about the problem faced by students before joining Under graduation courses. There is no proper guidance available on what to choose. To overcome this problem, author proposes a system that bridge the gap between parents, children and universities[7].Adil Umer, Jussi Mattila, HilkkaLiedes, JuhaKoikkalainen, Jyrki Lötjönen, Ari Katila, JanekFrantzén, Virginia Newcombe, Olli Tenovuo, David Menon, Mark van Gils describes the technical architecture and functionality of a web-based Decision Support System (DSS). The Decision Support System is developed by using a three-layered architecture and using programming technologies such as C#, ASP.NET MVC, HTML5, JavaScript, and Entity Framework etc. For less experience clinicians this tool may prove to be beneficial[8].According to Huyam AL-Amro and Eyas El-Qawasmeh decreasing security weaknesses in any site/ application requires two things. The principal thing is, a cognizant designer who knows to the obligation which ought to be joined by imparting security into the application from the start of programming and the site/application proprietor job in examining his site/ application for weaknesses prior to making the site public[9]. XueLv, Bensheng Yang talks about the security issues in the web applications and proposes a system to overcome them. Crisis plans are overseen and dealt with for the framework through Web; in this way, it is available for sharing assets, adding module for emergency plan, normalizing the board and requested procedures; thusly, examination and measurements could be accessible for crisis plans; grouping and related getting sorted out are finished for data security crisis plan; the administration is accessible for emergency designs; the crisis plan utilizing becomes more instructive and is upheld with charts[10].Alan Shaw proposes a model. With this model, understudies are not just ready to incorporate a scope of ranges of abilities, yet they are likewise ready to do this in a convincing path since they are building a person to person communication application that they can test on their companions[11]. Bai XueBingproposes of developing a library system using the asp.net framework and other nugget packages for security[12].Khampheth Bounnady and Khampaseuth Phanthavong, Somsanouk Pathoumvanh and Keokanlaya Sihalath compares the processing speed of php and asp.net and comes at the conclusion that ASP.NET is the one of good decision to decide for association that utilization Window OS, since highlight of preparing speed is quick. From our analysis we can end as ASP.NET is best for website page to show data, it is had quick speed of page load than PHP 1.81 times, it is best for web application need high preparing speed furthermore, it is Read/compose document ASP.NET better than PHP 3.37 occasions. ASP.NET had a flimsy spot is information type changing, from explore different avenues regarding entirety enormous number by change number to string and string to number PHP quicker than ASP.NET 6.8 occasions. For web application that oversee of data set PHP is best than ASP.NET 1.45 occasions. Loading file in PHP is quicker ASP.NET 1.17 occasions[13].

III. PROPOSED SYSTEM

Using ASP.NET Core, an Online Food Ordering System can be developed explaining all the concepts of ASP .NET Core Functionalities. Because of its cross-platform nature and open-source capabilities, ASP.NET Core is very much efficient to be used for developing any kind of applications.

ASP .Net Core is the highly secure and easy to use framework for developers made by the Microsoft.

ASP .Net Core comes with the following modules for the developers:

1. ASP .Net Core Web API:

ASP .Net Core web API provides the very powerful and secure framework for developing APIs. It comes with built in Swagger UI interface for testing the APIs. Packages provided in the Nugget Package manager comes very handy while working with databases and authentication.

2. ASP .Net Core MVC:

ASP .Net Core MVC module provides the framework for developing applications in Models, Views and Controllers pattern. Models are the classes that contain the properties similar to database. ASP .Net Core provides the attributes that can be applied to the properties of model classes for validations. Views are the frontend pages that are shown to the user. End user interacts with the system using views. Views made using ASP .Net Core contains the razor templating syntax. Razor Syntax is developed by the Microsoft which allows developers to use C# inside the html code.

ASP .Net Core comes with scaffolding commands. Scaffolding commands allows developers to use database first approach. Using this approach database modelling is done based on the database made by developer.

STRUCTURE AND WORKING OF THE SYSTEM

The Online Food Ordering System is developed using ASP .Net Core MVC and ASP .Net Core Web API framework. Testing at the API level is done using Swagger UI. Using the Figure 2.1 diagram we can get better understanding of the system.

In the given flowchart we can see that the Admin and Customer are given the option to sign in the system. System checks whether given credentials are found in the database, unique Jason web token is generated. This token is generated by the system to authenticate and track the user in the system.

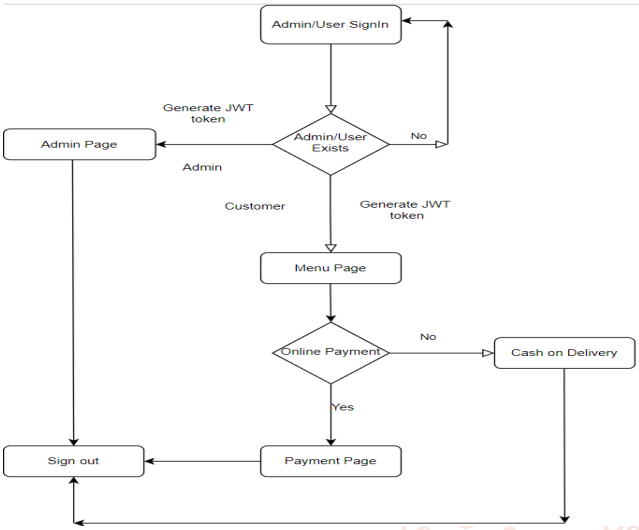

Fig 3.1: Proposed system flowchart

Once the token is generated and authenticated, Admin is logged in and has the options to add, delete, update, menu items, see orders and change the status of order and menu items. When any customer is logged in his/her account. He/she is greeted with the menu page. Customer has the option to place order, and make online payment.

All the data is retrieved using web API created. All requests are made from MVC module.

The proposed system highlight the following modules:

1. Login and Signup using JWT authentication
2. Order related activities (Place Order, Make Payment)
3. See Previous Orders
4. Sign out

By looking at the architecture diagram of the proposed system we can get better understanding of the modules of the system.

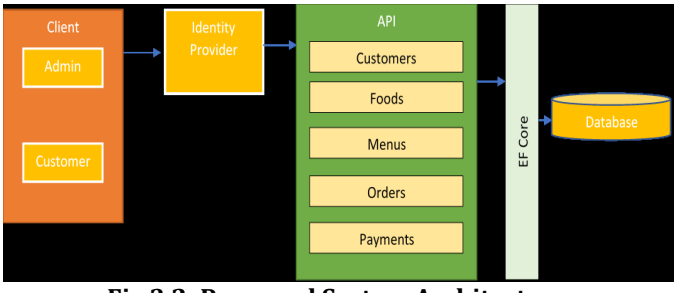

Fig 3.2: Proposed System Architecture

Figure 3.2 shows that broadly proposed system has two parts:

Client Part: Client Part consists of the two modules Admin and Customer. Admin module further follows the MVC pattern. It has all the access to the system where admin can create, delete the Menu items and order details. Customer module has the options to view the menu orders, place orders and make online payment.

Next part in system architecture is the Identity Provider which authenticates the admin and the customer with help of JWT. JSON Web Token (JWT) is an open norm (RFC 7519) that characterizes a minimized and independent route for safely communicating data between parties as a JSON object. This data can be confirmed and trusted on the grounds that it is carefully marked. JWTs can be marked utilizing a mystery (with the HMAC calculation) or a public/private key pair utilizing RSA or ECDSA.

Despite the fact that JWTs can be encoded to likewise give mystery between parties, we will zero in on marked tokens. Marked tokens can confirm the respectability of the cases contained inside it, while encoded tokens conceal those cases from different gatherings. At the point when tokens are marked utilizing public/private key matches, the mark likewise affirms that solitary the gathering holding the private key is the one that marked it.

API part consists of the all the API endpoints created using ASP .Net Core web API framework. API module has been created using Repository and services architecture. Repositories have the interfaces which have been implemented in the controllers.

Request form the client part is made to the endpoints defined in the API. In proposed system there are basically four endpoints for handling request and providing response.

Customer endpoint takes all the requests hit to this end pint and provides the data related to customers in the form of JSON response to the client. Order endpoint is to handles the orders requests. Payment endpoint verifies the card authenticity and if finds verified then it makes the payment.

Entity framework is the part of the system for handling the database operations. It is specially designed and developed for working with any kind of database like relational databases SQL Server, MySQL and NOSQL databases Mongo db.ASP .Net Core framework comes with the packages available for using Entity Framework.

IV. RESULTS AND DISCUSSIONS

Some of the snapshots of the proposed system are as follows:

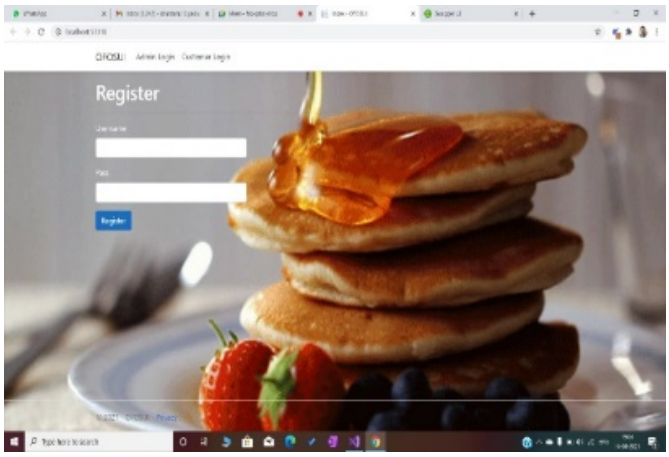

Fig 5.1 :Registration of the Customer for food ordering

When customer visits the system. He/ She greeted with the page to Register if customer is not registered in the system.

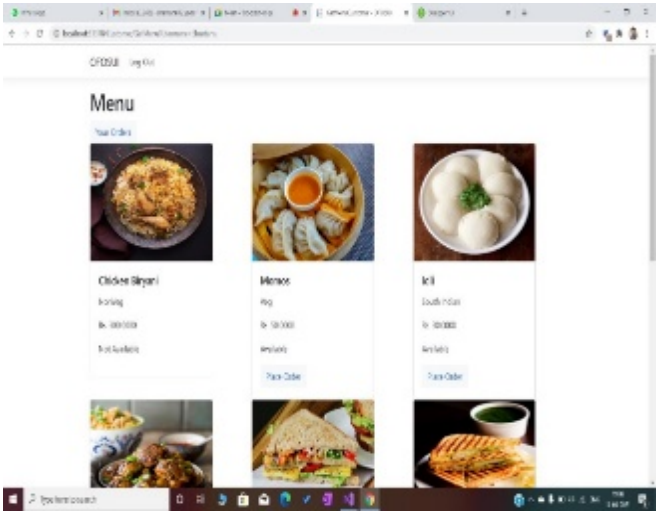

Fig 5.2 : The list of menu of food ordering system

When user gets logged in with correct credentials. Menu page is presented before the user to choose from the food items available for delivery. Customer can select item and add the add the quantity. Then user is moved to the payment page where he has the option to choose the payment options.

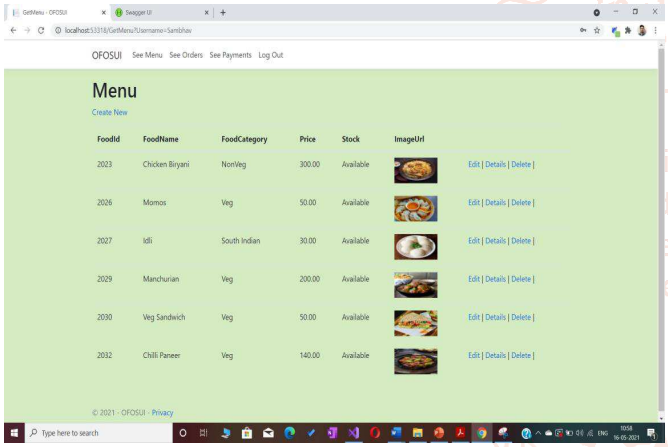

Fig 5.3 :Menu and order management of System

Figure 5.3 shows the admin page for the system where admin has the options to add, edit and delete the menu items. Admin can also see the orders placed by the users and can change the order status to dispatched or deliver from processing.

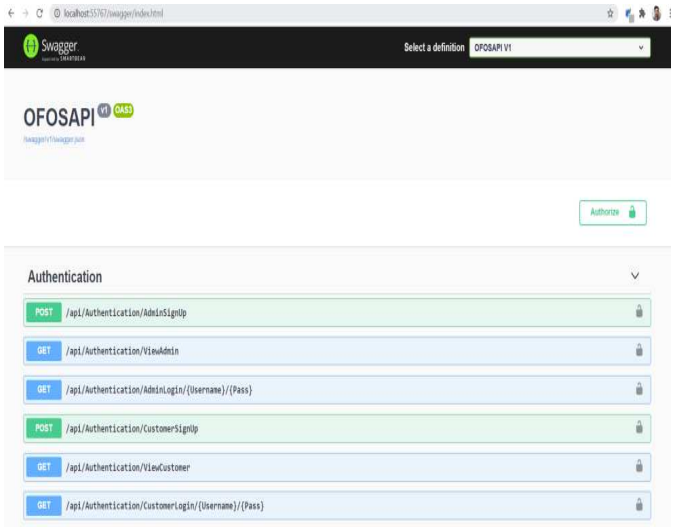

Fig 5.4 : Swagger User Interface

Swagger UI which is used for testing the API endpoints. It gives you the option for generating the JWT token and sending it with the http request for authentication at API level. It provides with the option of authenticating every end point. It gives the option to generate JSON web token and pass it with the every request that is made to authenticate the endpoint.

V. CONCLUSION AND FUTURE WORK

The proposed system is the simple and easy to use Online Food Ordering System. As it is developed using ASP .Net core framework. It is highly secure and robust. ASP .Net Core also allows developers to integrate their web applications to machine learning models. ML .Net is one the best libraries specially designed to work with the .Net Core frameworks.

The proposed system is suggested to integrate with the machine learning model in future. It may allow to construct an efficient and intelligent application systemin future.

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