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NWU Britehouse Project 2019

Project Brief

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14 July 2019 | Document Version 1

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1. Project Brief

This project requires the development of a MVC webapp which provides visualisations and insights into the superstore dataset that will be provided. Access to the system needs to be securely managed by user registration and login. Documentation around the operations of the system is required as well.

1.1. Architecture

The recommended approach would be to use ASP.NET Core MVC. Regardless of which technology stack is used, Britehouse would like the students to use a design pattern (preferably repository pattern) to complete this task.

Reading material:

https://www.infragistics.com/community/blogs/b/dhananjay_kumar/posts/how-to-implement-the-repository-pattern-in-asp-net-mvc-application

https://hxz.es/Design%20Patterns%20For%20Dummies.pdf

1.2. Data

A dataset will be provided which consists of three subsets of data, namely: Orders, returns and regional managers.

The orders subset contains data pertaining to purchase orders made from across the world. The dataset records orders for a large number of products ordered along with attributes such as quantity sold, price, discount, etc.

The returns subset contains an order ID which links to an order made, along with the region it was returned to.

The regional managers subset contains the name of the regional manager, along with the region they manage.

The data will be exposed to the students in JSON format from an API. The data may either be passed directly into the webapp or first stored to a database and then passed through to the system.

Reading material:

https://docs.microsoft.com/en-us/ef/core/

https://www.c-sharpcorner.com/article/simple-crud-operations-in-cosmos-db/

https://github.com/Azure/azure-cosmos-dotnet-v2/blob/530c8d9cf7c99df7300246da05206c57ce654233/samples/code-samples/DatabaseManagement/Program.cs

https://dotnet-helpers.com/mvc/mvc-passing-json-data-from-controller-to-the-view/

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1.3. Analysis and Visualisation

Various libraries and tools exist that allow for data visualization. There is a lot of analysis that can be done on the provided dataset, some of which includes:

- Location insights, based on:
  - Country
  - Region
  - State
  - City
  - Postal Code
  - Market
- Product purchases over time
- Correlation of returns with products
- Determining how often products are purchased in one region and returned in another
- Determining trends of returns over time
- Determining relationships between product purchases and location
- Determining relationship between location and category and subcategory
- Determining trends between order priority and shipping/ order date
- Determining trends between order priority and location
- Determining trends between order priority and product
- Determining relationship of economic state with Sales, profit, discount, shipping cost, quantity
- Determining roughly where products where shipped from based on shipping cost and location info

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2. Marking Considerations

Extra marks to be awarded for:

- Interactive visualisations
- Obtaining data from the API and feeding it straight into the system with the adequate access restrictions applied
- Use of a NoSQL Database as data source
- Registration with Multifactor Authentication MFA
- Row level access for users to specific data (ie Regions, countries, markets, etc.)

Marks will be subtracted for:

- Not moving data logic out of the controller
- Hardcoded values
- Exposed sensitive information within the code
- Insecure registrations and logins
- The insufficient use of a design pattern
- The insufficient use of MVC

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