

# C# Web Development Basics – Regular Exam

## Musaca

**MUSACA** (**M**ulti-**U**ser **S**elling and **A**ccounting **C**ashier **A**pplication) is a web platform application for cashiers at selling points. You know how a cashier at a supermarket checks in your products and then tells you how much your cost is, well this one is the same, but kind of like a web app. Anyway, you've been employed by the **SB** (**S**lavic **B**abushka) group to implement the **MUSACA** platform for a client of theirs, which is a really big hypermarket company.

However, there are specific requirements that must be followed.

## 1. Technological Requirements

- Use the **SIS.WebServer**
- Use the **SIS.Framework** or the **Niki.Framework**
- Use **Entity Framework Core**

The **Technological Requirements** are **ABSOLUTE**. If you **do not follow** them, you will **NOT** be scored for other Requirements.

Now that you know the **Technological Requirements**, let us see what are the **Business Requirements**.

## 2. Database Requirements

The **Database** of the **MUSACA** application needs to support **3 entities**:

### User

- Has an **Id** – a **GUID String** or an **Integer**.
- Has an **Username**
- Has a **Password**
- Has an **Email**
- Has an **Role** – can be one of the following values ("**User**", "**Admin**")

### Product

- Has an **Id** – a **GUID String** or an **Integer**.
- Has a **Name** – a string.
- Has a **Price** – a decimal.
- Has a **Barcode** – a 12-digit long integer.
- Has a **Picture** – a string.

### Order

- Has an **Id** – a **GUID String** or an **Integer**.
- Has a **Status** – can be one of the following values ("**Active**", "**Completed**").
- Has a **Product** – an **Product** object.
- Has a **Quantity** – an integer.
- Has a **Cashier** – a **User** object.

## Receipt

- Has an **Id** – a **GUID String**.
- Has a **Issued On** – a **DateTime** object.
- Has a **Orders** – a collection of **Order** objects.
- Has a **Cashier** – a **User** object.

Implement the entities with the **correct datatypes**.

## 3. Template Requirements

### Guest Templates

These are the **templates** and **functionalities**, accessible by **Guests** (**logged out users**).

#### Index Template (route = “/Home/Index”) (logged out user)

The screenshot shows the Index Template for logged out users. It features a green header bar with 'MUSACA' on the left and 'Home Login Register' on the right. The main content area is a large green rectangle with the text 'Welcome to MUSACA Sales and Accounting.' followed by a horizontal line. Below the line, there are two links: 'Login if you have an account.' and 'Register if you don't.' The footer is a green bar with the copyright notice: '© Copyright Sanity Web Design Studios 2018. All rights reserved.'

#### Login Template (route = “/Users/Login”) (logged out user)

The screenshot shows the Login Template for logged out users. It features a green header bar with 'MUSACA' on the left and 'Home Login Register' on the right. The main content area is white with a green 'Login' heading. Below the heading, there are two input fields: 'Username' and 'Password'. A green 'Login' button is positioned below the password field. The footer is a green bar with the copyright notice: '© Copyright Sanity Web Design Studios 2018. All rights reserved.'

## Register Template (route = "/Users/Register") (logged out user)

MUSACA

Home Login Register

Register

Username

Username...

Password

Password...

Confirm Password

Confirm Password...

Email

Email...

Register

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## User Templates

These are the **templates** and **functionalities**, accessible by **Users** (**logged in** users with **Role - User**).

## LoggedIn Index Template (route="/Home/Index") (logged in user)

MUSACA Products

Pesho Logout

Product

Barcode...

Quantity...

Order

Product Name	Quantity	Price
"MishMash" in "burkan"	x4	\$20.00
Salam	x2	\$3.00
Beer Nuts	x3	\$1.25
Coca Cola 2l.	x2	\$2.50

Cashout

Total: \$94.75

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## Products All Template (route="/Products/All") (logged in user)

MUSACA Products		Pesho Logout	
	Name: "MishMash" in "burkan" Price: \$20 Barcode: 456733234311		Name: Coca Cola 2L Price: \$2.50 Barcode: 333111444555
	Name: Chushkopek Price: \$22.99 Barcode: 338554622333		Name: Beer Nuts Price: \$1.25 Barcode: 948530422331

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## Profile Template (route="/Users/Profile") (logged in user)

MUSACAProducts

PeshoLogout

Greetings, Pesho!

Id	Total	Issued On	Cashier	Actions
fb536f4-7463-41d2-8650-4d1c87de722b	\$15.06	26/09/2019	Pesho	<div>Details</div>
7c62da68-3875-44ba-815d-99518039b946	\$13.82	15/11/2018	Pesho	<div>Details</div>

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## Receipt Details Template (route="/Receipts/Details?id={id}") (logged in user)

MUSACAProducts

PeshoLogout

Receipt Details

"MishMash" in "burkan"	x4	\$20.00
Salam	x2	\$3.00
Beer Nuts	x3	\$1.25
Coca Cola 2l.	x2	\$2.50
Total		\$94.75
Issued On	10/12/2018	
Cashier	Pesho	
Receipt	fbb536f4-7463-41d2-8650-4d1c87de722b	

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## Admin Templates

These are the **templates** and **functionalities**, accessible by **Admins** (logged in users with **Role - Admin**).

## Admin Index Template (route="/Home/Index") (logged in admin)

MUSACAProductsCreate ProductAll Receipts

PeshoLogout

Product

Barcode...

Quantity...

Order

Product Name	Quantity	Price
"MishMash" in "burkan"	x4	\$20.00
Salam	x2	\$3.00
Beer Nuts	x3	\$1.25
Coca Cola 2l.	x2	\$2.50

Cashout

Total: \$94.75

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## Admin Product Create Template (route="/Products/Create") (logged in admin)

MUSACAProductsCreate ProductAll Receipts

PeshoLogout

Create Product

Name

Name...

Picture

Picture...

Price

Price...

Barcode

Barcode...

Create

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## Admin All Receipts Template (route="/Receipts/All") (logged in admin)

MUSACAProductsCreate ProductAll Receipts

PeshoLogout

All Receipts

Id	Total	Issued On	Cashier	Actions
fb536f4-7463-41d2-8650-4d1c87de722b	\$15.06	26/09/2019	Pesho	<a href="#">Details</a>
2z33bb33-4532-94zc-115x-93348039c777	\$56.79	11/12/2018	Ivo	<a href="#">Details</a>
7c62da68-3875-44ba-815d-99518039b946	\$13.82	15/11/2018	Pesho	<a href="#">Details</a>

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Some of the templates have been given to you in the application skeleton, but the others will be for you to implement, so make sure you implement them correctly. You can use the given ones as helpers.

**NOTE:** The templates should look **EXACTLY** as shown above.

**NOTE:** The templates do **NOT** require additional CSS. Only **bootstrap** and the given **style.css** are enough.

**NOTE:** In the given **style.css** you'll see some helpful classes "**bg-musaca**", "**text-musaca**", "**border-musaca**". "**border-musaca**" will help you with the **border** of the **Label** of the **Form** on the **Index Pages**.

## 4. Functional Requirements

The functionality of the MUSACA application is quite simple. The Users are the Cashiers, and they are “checking out products” literally.

### Main functionality

When a **User** logs in, he sees several things on his **Index page**.

- A form for **ordering** a **Product** by **barcode** and **quantity**.
- A list of the active **Orders** for the current **User**.
  - With **product name**, **product price** (initial product price) and **quantity**
- A **[Cashout]** button which completes the **Orders** and generates a **Receipt**.

### Products

The **Products** are just **data entities**. They are **only created** and **persisted**. The **Orders** do not affect them in any way. The **Products** are like **templates**, so that the **User** knows what he is ordering.

### Orders

By entering a **barcode** of an existent **Product** and a **quantity**, in the **form** on the **top** of the **Index page**, a **User** creates an **Order**. Upon completing this functionality, the application should **redirect** back to the **Index page**, where the **User** (Cashier) can see his **Order**.

An **Order** is created with **status** – “**Active**” by **default**. **Active Orders** are visualized on the **Index page** as a list, with their **Product’s Name**, their **quantity** and their **Product’s price**. A **Total Price** is also visualized, below the list, which is a sum of every **Order’s total price** (**quantity \* product price**).

**NOTE:** Only **Orders** with **status** – “**Active**” are visualized on the **Index page**.

### Receipts

**Receipts** are naturally just data entities. They have no functionality around them – they just store data.

Clicking the **[Cashout]** button on the bottom of the **Index page** should create a **Receipt** with the **Orders** – currently visualized on the **Index page**, and the corresponding (currently logged-in) **User** (Cashier).

All the **Orders** of the corresponding **Receipt** should be **completed** (**status** set to “**Completed**”).

Upon completing this functionality, the application should **redirect** to the newly created **Receipt’s Details page**, where the **User** (Cashier) can see the generated **Receipt**.

### Users

All casual **Users** (**role** – “**User**”) can perform the functionalities specified above. **Check Products, Create Orders, Cashout** (Create **Receipts**), **Check personal Receipts, Check personal Receipt Details**.

Each **User** can check data about all the **Products**, by clicking on the **[Products]** button from the **navbar**. This should **redirect** him to the **Products All page**.

Each **User** can check data about all **HIS Receipts**, by clicking on the **[{Username}]** button from the **navbar**. This should redirect him to the **Profile page**. On that page, the **User** can check a list of only **HIS Receipts**, and he can view **details** about each one of them, by clicking on the **[Details]** button, which should **redirect** him to the corresponding **Receipt’s Details page**.

## Admins

All administrator **Users** (role – "Admin") can perform the functionalities of a casual **User**.

Each **Admin** can also create new **Products**, by clicking on the [Create Product] button from the **navbar**. This should redirect him to the **Product Create page**. **NOTE**: Creating a **Product**, should **redirect** to the **Products All**.

Each **Admin** can also check all the **Receipts** (including his own), by clicking on the [All Receipts] button from the **navbar**. This should redirect him to the **Receipts All page**. **NOTE**: If an **Admin** goes to his **Profile page**, he can see only **HIS Receipts** there.

**NOTE**: All decimal data is visualized up to the second digit after the decimal point.

## 5. Security Requirements

The **Security Requirements** are mainly access requirements. Configurations about which users can access specific functionalities and pages.

- **Guest** (not logged in) users can access **Index** page and functionality.
- **Guest** (not logged in) users can access **Login** page and functionality.
- **Guest** (not logged in) users can access **Register** page and functionality.
- **Users** (logged in) can access **User LoggedIn Index** page and functionality.
- **Users** (logged in) can access **Products** page and functionality.
- **Users** (logged in) can access **Order** functionality.
- **Users** (logged in) can access **User Profile** page and functionality.
- **Users** (logged in) can access **Receipt Details** page and functionality.
- **Users** (logged in) can access **Logout** functionality.
- **Admins** (logged in) can access **every functionality** a **normal** logged in **User** can.
- **Admins** (logged in) can access **Admin LoggedIn Index** page and functionality.
- **Admins** (logged in) can access the **Admin Product Create** page and functionality.
- **Admins** (logged in) can access the **Admin All Receipts** page and functionality.

## 6. Scoring

This section describes how the scoring of the Exam will be made.

**Database Requirements – 10 points.**

**Template Requirements – 25 points.**

**Functional Requirements – 55 points.**

**Security Requirements – 10 points.**