**Shopping Cart Backend Test Cases:**

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| **TC** | **Test Scenario** |
| TC 1 | Get all products confirm status 200 ok is returned |
| TC 2 | Get all products confirm response body returns all products |
| TC 3 | Get all products confirm the following fields barCode, name, description, category, unitPrice are populated with the correct values |
| TC 4 | Create new cart confirm status code 201 created is returned |
| TC 5 | Create new cart confirm response body with new cartId |
| TC 6 | Get all carts confirm status 200 ok is returned |
| TC 7 | Get all carts confirm response body returns all created cartId's |
| TC 8 | Get all carts confirm response body returns unique cartId's |
| TC 9 | Add item to cart using empty request body confirm status code 415 unsupported media type is returned |
| TC 10 | Add item to cart using empty request body confirm response body returns 415 unsupported media type |
| TC 11 | Add item to cart using a valid cartId and barCode confirm status 201 created is returned |
| TC 12 | Add item to cart using invalid cartId confirm status code 404 not found is returned |
| TC 13 | Add item to cart using invalid barCode confirm status code 404 not found is returned |
| TC 14 | Add item to cart using invalid barCode confirm response body returns error message "barCode not found for [id:]" |
| TC 15 | Add item to cart using a quantity < 1 confirm status 400 bad request is returned |
| TC 16 | Add item to cart using a quantity < 1 confirm response body with error message "0 is an invalid value" is returned |
| TC 17 | Get cart by id using a valid cartId confirm status code 200 ok is returned |
| TC 18 | Get cart by id using a valid cartId confirm response body with added item/product is returned |
| TC 19 | Get cart by id using an invalid cartId confirm status code 404 not found is returned |
| TC 20 | Get cart by id using an invalid cartId confirm response body returns error message "Cart not found for [id:]" |
| TC 21 | Update existing cart with existing barCode by increasing quantity value +1 in request body confirm status code 200 ok is returned |
| TC 22 | Update existing cart with invalid barCode by increasing quantity value +1 confirm status code 404 not found is returned |
| TC 23 | Update invalid cart with existing barCode by increasing quantity value +1 confirm status code 404 not found is returned |
| TC 24 | Update invalid cart with existing barCode by increasing quantity value +1 confirm response body returns error message "cart not found for [id:]" |
| TC 25 | Delete item from cart using a valid cartId and barCode confirm status code 200 ok is returned |
| TC 26 | Delete item from cart using an invalid cartId confirm status code 404 not found is returned |
| TC 27 | Delete item from cart using an invalid cartId confirm response body returns error message "Cart not found for [id:]" |
| TC 28 | Delete item from cart using an invalid barCode confirm status code 404 not found is returned |
| TC 29 | Delete item from cart using an invalid barCode confirm response body returns error message "Item not found for [id:]" |

**Shopping Cart Frontend Test Cases:**

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| **TC** | **Test scenario** |
| TC 1 | Using shopping cart front end UI ensure user can add Products to the shopping cart |
| TC 1.1.1 | Ensure user is presented with add Product Name field when adding Products to the shopping cart |
| TC 1.1.2 | Enter valid Product name in add Product Name field |
| TC 1.1.3 | Enter invalid Product name in add Product Name field |
| TC 1.2.1 | Ensure user is presented with add Category field when adding Products to the shopping cart |
| TC 1.2.2 | Enter valid category name in add Category field |
| TC 1.2.3 | Enter invalid category name in add Category field |
| TC 1.3.1 | Ensure user is presented with add Barcode field when adding Products to the shopping cart |
| TC 1.3.2 | Enter valid barcode in add Barcode field |
| TC 1.3.3 | Enter invalid barcode in add Barcode field |
| TC 1.4.1 | Ensure user is presented with add Unit Price field when adding Products to the shopping cart |
| TC 1.4.2 | Enter valid unit price in add Unit Price field |
| TC 1.4.3 | Enter invalid unit price in add Unit Price field |
| TC 2 | Using shopping cart front end UI ensure user can add Quantity when adding Products to the shopping cart |
| TC 2.1 | Ensure user is presented with add Quantity field when adding Products to the shopping cart |
| TC 2.2 | Enter valid quantity in add Quantity field |
| TC 2.3 | Enter invalid unit quantity in add Quantity field |
| TC 2.4 | Attempt to enter quantity without adding Product |
| TC 3 | Using shopping cart front end UI ensure user can update Quantity of Products in the shopping cart |
| TC 3.2 | Update quantity of Products in the shopping cart by value > 1 |
| TC 3.3 | Update quantity of Products in the shopping cart by value < 1 |

**Shopping Cart Frontend Automation Tool:**

An automation tool that I would recommend for automation of the above test cases would be Selenium. Benefits of using Selenium WebDriver include its open source, works a across different browsers and platforms, tests can be written in multiple languages including C# and testers can make use of web browser dev tools to identify and make use web elements.