Laboratory 9

Title of the Laboratory Exercise: Implementation and Testing

1. Introduction and Purpose of Experiment

   Students will use JavaDoc and similar standards to ensure good documentation and maintainability of code

2. Aim and Objectives

   Aim

   - To implement a given design with appropriate coding standards

   Objectives

   At the end of this lab, the student will be able to

   – Apply industry standard coding standards

   – Use automatic documentation tools

   – Create maintainable code

3. Experimental Procedure

   - Work in teams of 7 students
   - Each team should read the class diagram and identify objects, interactions and states of objects
   - Each team will then split workload and develop classes individually.
   - Each individual will then write their lab manual, documenting their observations

4. Calculations/Computations/Algorithms

Shop functionality

Shop Front Page

   - Featured Products with link to corresponding product detail page

- Features for «New Arrivals», «On Sale» and «Best Rated» Products

Products

- Products fetched from FireBase backend and cached for future requests
- Sorting: Products can be sorted by date created, price and name
- Products can be viewed in a grid or a list view
- Products are shown paged via a PagingService
- When logged in as a user with adminstrative rights, additional buttons are shown for product CRUD operations

Product CRUD

- Add a new product
- Edit existing product
- Delete existing product
- Images handled with Firebase Storage

Cart

- Products can be added from the list/grid View or product detail view
- Cart is handled via a CartService
- Adding the same product multiple times, increases the amount in cart
- Cart has a dedicated cart page and is visible as a dropdown widget as well
- Quantity of each cart item can be adjusted via cart page
- Cart can be cleared at once
- Single products can be removed from cart
- Subtotal and Totals will be calculated on the fly
- Link to Checkout is available from both carts

Checkout

- Prefill fields, if user is already logged in
- Enter Address, Shipping Method and Payment Data with Validation
- Show review of the order before final submit
- When submitting a order, OrderService creates a new Order linked to the user
- Anonymous Orders are possible too, in that case OrderService creates a new anonymous order

- Order summary is shown in the sidebar during the checkout process

Authentication

- Checkout: As registered user / guest

- Sign up: Create user account

- Log in: General login or during checkout

- Role based authentication

Account

- Create new shop user accounts

- Login with existing user account

- User Profile, Email, Password, Firstname, Lastname are updateable via account page

- Order history is visible to logged in users

- Role base authentication via Firebase, roles can be assigned to users like isAdmin

Orders

- Checkout process generates Order for registered user or guest

- Order / Confirmation Email for Shop/User/Guest

- Orders can be viewed by logged in user

5. Presentation of Results

Requirement No. And Description	Test Case Number	Procedure	Input	Expected Output	Status
FR1 The software must allow the user to login	TC1	The user must enter the username or email-id in username field and the password in password field and then click the submit button.	ECP **Email-id:** Invalid1: 133@xyz Valid: abc@xyz.com Invalid2: #123h.com Invalid 3:	**The application will allow the user to home page**	**PASS**

			Abcx$yz **Password:** Invalid1: <5 123hgys Valid: 4-10 abcxyz123 Invalid2: >10 12ghvhva		
FR2- The software should display the list of products based on category	TC2	After login into the software the user should click on the display button and press enter.	Valid: bag Invalid: bus	Valid: Display all the available bags. Invalid: Display the bus which is not present.	**PASS**
FR3 – The Software must display complete product details of a valid product.	TC3	The software should be able to display and products and it should be able to display the details of the products.	Valid: black and grey colured bagpack, padded mesh back, 2 main compartments with zip closure. Invalid: pink coloured monkey	Display the complete details of the available bag Invalid: Display item which is not available.	**PASS**
FR3- The software allows users to search and sort the valid products.	TC4	Launch the application and select the search option and enter the item name after choosing search option.	Valid: Bag Invalid: Toy	Valid: Display all the available bags. Invalid: Display item not present"	PASS
	TC5	Select the sort option and choose based on what it should sort the items.	Valid: discount Invalid: rating	Valid: display the items based on sort.	PASS

FR5 – The software must allow valid users to add valid products to cart.	TC6	Software must allow the user to shop by category and it must allow the user to add the selected item to cart.	Valid: Only one cart Invalid: Two carts	Valid: display the selected item in the cart.	PASS

Application Screenshots:

Figure 0-1 Login and Register Testing

Fizz Sch Bag 32 L Backpack
starting at ~~₹2,300.00~~ **₹1,139.00**

SHOP NOW

AMERICAN TOURISTER

NEW ARRIVALS

Running Shoes For Men
~~₹2,000.00~~ ₹1,899.00

Fizz Sch Bag 32 L Backpack
~~₹2,300.00~~ ₹1,139.00

ON SALE

Fizz Sch Bag 32 L Backpack
~~₹2,300.00~~ ₹1,139.00

Running Shoes For Men
~~₹2,000.00~~ ₹1,899.00

BEST RATED

Fizz Sch Bag 32 L Backpack
~~₹2,300.00~~ ₹1,139.00

Running Shoes For Men
~~₹2,000.00~~ ₹1,899.00

Free Worldwide Shipping
Free shipping for all orders over $100

Money Back Guarantee
We return money within 30 days

24/7 Customer Support
Friendly 24/7 customer support

Secure Online Payment
We posess SSL / Secure Certificate

GET IN TOUCH WITH US

Phone: +91 7892137665

shadowleaf.satyajit@gmail.com

ACCOUNT & SHIPPING INFO

› Your Account
› Shipping Rates & Policies
› Refunds & Replacements
› Taxes
› Delivery Info
› Affiliate Program

PayPal   VISA   MasterCard   Maestro

₹0.00   0

Products

+ ADD PRODUCT

Sort by   Newest Articles ▸   Showing: 1 - 12 items

Fizz Sch Bag 32 L Backpack
50% Off
~~₹2,399.00~~ ₹1,139.00
EDIT
ADD TO CART

Running Shoes For Men
5% Off
~~₹2,999.00~~ ₹1,899.00
EDIT
ADD TO CART

← PREVIOUS   1   NEXT →

50% Off

★ ★ ★ ★ ★ 1 customer reviews

Fizz Sch Bag 32 L Backpack
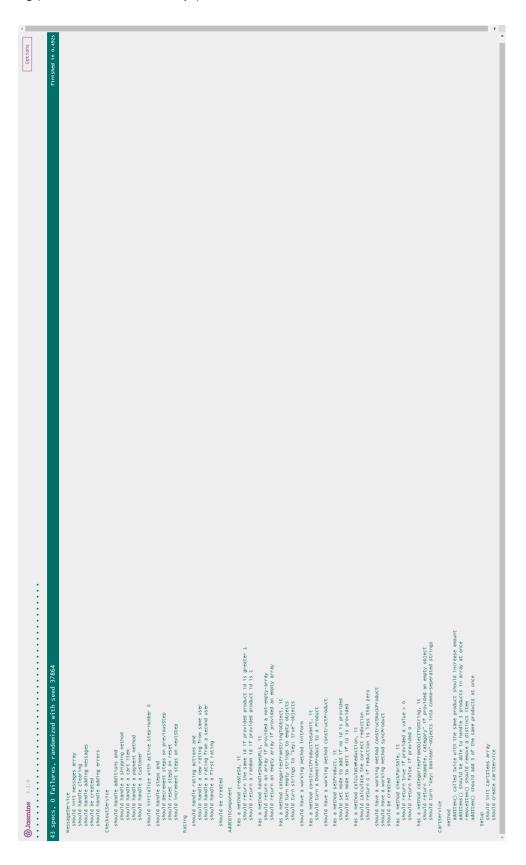
~~₹2,300.00~~ ₹1,139.00

At American Tourister, we believe travel should be fun. We take pride in making stylish, high quality, and yeah, fun backpacks that you can rely on. Marking our presence in 100+ countries AT is considered to be the most preferred luggage brand worldwide.

Quantity

1 ▶

SKU: 1010683145345

Categories: bags

Your Rating

5 Stars ▶

🛒 ADD TO CART

Karma Testing (Test Runner for JavaScript)

Options

43 specs, 0 failures, randomized with seed 37864   finished in 0.492s

MessageService
  should init messages array
  should handle clearing
  should handle adding messages
  should be created
  should handle adding errors

CheckoutService
  should handle additions and
    should handle a shipping method
    should handle a cart item
    should handle a payment method
    should handle a customer
  should initialize with active step-number 0
  should handle steps and
    should decrement steps on previousStep
    should reset steps on reset
    should increment steps on nextStep

Rating
  should handle rating actions and
    should handle a new rating from same user
    should handle a rating from a second user
    should handle a first rating
  should be created

AddEditComponent
  has a method createId, it
    should return the same id if provided product id is greater 1
    should return a random id if provided product id is 1
  has a method handleImageURLs, it
    should return an array if provided a not-empty-array
    should return an empty array if provided an empty array
  has a method categoriesFromStringToObject, it
    should turn empty strings to empty objects
    should turn strings to "key: true"-objects
  should have a working method initForm
  has a method constructProductToSubmit, it
    should turn a DomainProduct to a Product
  should have a working method constructProduct
  has a method setProduct, it
    should set mode to add if no id is provided
    should set mode to edit if id is provided
  has a method calculateReduction, it
    should calculate the correct reduction
    should return 0 if reduction is less than zero
  should have a working method constructMockProduct
  should have a working method syncProduct
  should be created
  has a method checkForSale, it
    should return true if provided a value > 0
    should return false if provided 0
  has a method categoriesFromObjectToString, it
    should return "example, category" if provided an empty object
    should turn "key: boolean"-objects into comma-seperated strings

CartService
  method
    addItem() called twice with the same product should increase amount
    addItems() should be able to handle 3 products in array at once
    removeItem() should remove a distinct item
    addItem() should add 3 of the same products at once
  Setup
    should init cartItems array
    should create cartService

6. Analysis and Discussions

It is an essential practice to properly document the code, as well follow code conventions. Special attention is given to the developer's documentation. It is helpful for development, maintenance and knowledge transfer to other developers. Description of code gives a clear idea of what is happening.

The technologies used here are Angular 7, TypeScript, JavaScript, Firebase, Karma (for testing), HTML, CSS and SCSS.

The code that was written follows the Model-View-Presenter pattern where the HTML/CSS provides the raw front end for it and TypeScript makes this front-end dynamic, the back end is Firebase and any database queries are made here, any changes made from the user to the view makes changes to the model, that alters the database. Although any design pattern of Model-View type can be used such as the Façade design pattern.

Testing for the same was done using Karma which is a framework to test JavaScript Code. The main goal for Karma is to bring a productive testing environment to developers. The environment being one where they don't have to set up loads of configurations, but rather a place where developers can just write the code and get instant feedback from their tests. Because getting quick feedback is what makes you productive and creative.

7. Conclusions

In this lab, we implemented our design and carried out testing of an independent and dependent function. The test cases were designed and carried out using black box testing. The test cases need to be extensive and thorough and testing is a very important activity in software development.

8. Comments

1. Limitations of Experiments

Large scale applications with several lines of code take time to document.

2. Limitations of Results

Documentation requires time and effort, but it saves time spent on reading and correcting code later on.

3. Learning happened

Implementation process, good coding and documentation practices and their need.

4. Recommendations

None.

Component	Max Marks	Marks Obtained
Viva	6	
Results	7	
Documentation	7	
Total	20	