

## Testing Concepts – V2.0 Lab Book



## **Document Revision History**

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## Lab 1.Software Testing Basics – White Box Testing

<ul> <li>Learn to prepare Condition Coverage Matrix</li> </ul>
<ul> <li>Learn to determine Cyclomatic Complexity</li> </ul>
180 Minutes
•

## 1.1 Create Condition Coverage Matrix

**Table: Template of Condition Coverage Matrix with an Example:** 

Test Condition	Description	<b>Expected Output</b>
cond1 = true cond2 = notEval	Raining and Wind is true. Therefore, else condition is not evaluated	Stay Inside
cond1 = true cond2 = notEval	Evening is true. Therefore, else condition is not evaluated	Stay Inside
cond3=true	Sunshines is true	Go to beach

#### See the below specification:

IF (it rains AND there is wind) OR it is evening

THEN stay inside **ELSE** go outside

**END IF** 

IF the sun shines THEN go to the beach

**END IF** 

How many test situations result from applying the coverage type of decision points with multiple condition coverage and how many test situations have "go to the beach" as the result?

## 1.2 Consider the below code to solve the following subsections

```
#include<stdio.h>
void main() {
A, B, C;
PrintF ("Enter three numbers:");
scanf("%d %d %d", &A, &B, &C);
if ((A>B) && (A>C))
    printf ("%d is greater", A);
```



```
elseif (B>C)
    printf ("%d is greater", B)
else
    printf ("%d is greater", C)
```

## 1.2.1 Create condition coverage matrix

```
cond1 = true
               cond2 = not eval
                                             cond3 = false
cond1 = ?
               cond2 = ?
                                      cond3 = ?
cond1 = ?
               cond2 = ?
                                     cond3 = ?
```

**Table: Template of Condition Coverage Matrix with an Example:** 

Test Condition	Description	<b>Expected Output</b>
cond1 = true cond2 = notEval cond3 = false	A>B and A>C both are true. Therefore, elseif and else conditions are not evaluated	A is greater

## 1.2.2 Validate the coding standards

Note: You can make use of Code Review Check list explained in Lesson 02. You can also make use of sample template given below

**Table: Template of Code Review Checklist** 

Sr. No.	Question	Remark (Yes / No)				
Synta	Syntactical Errors					
1	Does every statement has a delimiter?					
2	Are the in-built functions spelled properly?					
Data	Declaration Errors					
3	Have all variables been explicitly declared?					
4	Are variables properly initialized in declaration sections?					
Comp	Comparison Errors					
5	Are there any comparisons between variables having inconsistent data types?					
Contr	Control Flow Errors					
6	Does every cause has an effect?					
Input	Input / Output Errors					
7	All Input statements handled correctly?					
8	All Output statements handled correctly?					



## 1.2.3 Write test cases

Consider the following scenarios to write the test cases for the above code:

- As you see in the above code, the data type of the variables is not specified. Write test case to validate whether the values stored in the variable A, B & C are integer data type
- Write test cases to validate the Comparison code

## 1.3 Draw Flow Graph & Determine CC

Draw corresponding flow graph and find the cyclomatic complexity (CC) for the following specifications:

Specification 1		Specification 2		
IF	A AND B		IF	customer no. > 200 AND article group = 330
THEN	C=50			THEN discount = 5%
ELSE			ENDIF	
	IF THEN	C AND D Error message	IF	region code = 4 OR 8
	ENDIF	Life message		THEN invoice type = A
ENDIF	LINDII		ELSE	invoice type = B
LINDII			ENDIF	



## Lab 2.Software Testing Basics – Black box Testing

Goals • Learn to apply basic techniques for writing test cases.			
		•	Learn to prepare finite and best suitable test cases
	Time	180	) Minutes
- 1			

#### 2.1 Validate Date field

Format of Date field is : dd/mm/yyyy

#### 2.2 Validate Command Line utility

Validate Command Line utility - 'MAX'.

The utility displays the maximum of the 2 specified Integers. Please note down any assumptions that you make.

E.g. MAX 2 3

Steps to run Max command line utility

- 1. create a folder demo on E drive
- 2. Copy max.exe file in to demo folder
- 3. Click on start > run. Type cmd
- 4. Type "E:"
- 5. Type " cd demo"

Use following command to run max utility

E:\demo> max 25 34 E:\demo> max 25 b E:\demo> max a 34 E:\demo> max 25.45 34.67

#### 2.3 Validate Phone Number field.

Format of the number is:

Country Code (10 to 999) City Code (10 to 99999) Phone Number (1000000 to 9999999)

#### 2.4 Validate Password Field

Write the test case for password field. Password should be the combination of Alphabets, numeric values and special characters. It should contain one upper case letter, at least one digit and at least one special character. The length of the password should be of minimum 8 characters.

#### 2.5 Determine ECP & BVA

Consider a scenario where a 'Driver on Hire' agency provides most reliable and affordable drivers on hire. The monthly salary structure configured for the drivers of this





agency is: drivers up to 25 years old get a pay of Rs. 15000/-; drivers of age 65 and older get a pay of 5% more and drivers of age 40 and older get a pay of 10% more than that of the drivers up to 25 years get. How many equivalence classes are distinguished in the above? Also, which values are chosen for making test cases when the normal variant of the boundary values analysis is used?

2. Consider a scenario where a 'Winter Sale' provides heavy discounts. A person he/she of age less than 8 years old (<8), or a person aged between 35 and 45 years (>35 and <45) or older than 60 years (>60) is eligible for the discounts in Winter Sale. How many equivalence classes can be distinguished in this example?



# Lab 3.Creating Test Scenario – Post an Ad on EXCHANGE on WEB

Goals	<ul> <li>Read 'INSTRUCTIONS' before starting the assignment.</li> <li>Understand the application and develop Test Scenarios</li> </ul>	
Time	60 minutes	

# 3.1: Test Scenario Case Study. 'Posting an Ad on EXCHANGE on WEB (EoW)'

<u>www.eow.com</u> is the most preferred online web application in India for exchanging/selling of old products. In this case study, customer posts and advertisement of his product on the EoW portal.

Participants need to write Test Scenarios for testing Buttons, Hyper Links, and Form fields.

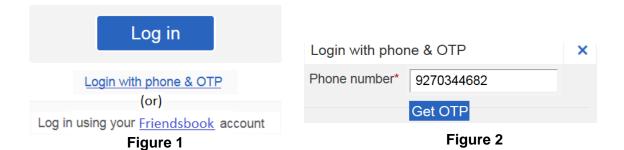
**Note:** Trainer will discuss the Test Scenario template and will share the same with participants

## 3.2: Steps to follow to post an Ad

- 1. The customer visit https:\\www.eow.com site. To login, click on 'Login with phone & OTP'. Login using Friendsbook account is out of scope.
- 2. The customer enters 10 digit mobile no and clicks on '**Get OTP**'. The application sends an OTP (One Time Password) on his phone no.
- 3. The portal asks for the OTP confirmation code. User can enter the code and 'CONFIRM' to continue or CANCEL it. If the user has timed out (at max. 60 sec) in typing the OTP code, he can click **Resend code** for receiving another OTP code.
- 4. The portal displays the home page. Customer clicks on 'Submit a Free Ad' to post a new add. Searching for products is out of scope.
- 5. Form of 'Submit a Free Classified Ad' is displayed. Fill all the details in the form and click 'Submit' button
- 6. The portal asks for the OTP sent on phone no. that is given while submitting the free classified Ad. User can enter the code and 'CONFIRM' to continue or CANCEL it. If the user has timed out (at max. 60 sec) in typing the OTP code, he can click **Resend code** for receiving another OTP code.
  - On entering correct OTP, it displays the message 'Ad is successfully posted' else it displays the message 'Wrong Verification code! Ad is not posted'

**Note:** Refer the figures corresponding to the steps.





Confirm Your Mobile Number Enter the confirmation code that was texted to your phone

7070

CANCEL

Confirm



Figure 3



Figure 4



Submit a Free	Classified Ad			
Ad Title*	Touch pad Samsung Mobile			
Category*	Mobiles » Mobile Phones » Samsung			
Price*	₹ 2000			
Ad Description*	Samsung - Model 16802 Year of purchase 2012 Touch Pad, touch Stick gorilla glass 13 px front camera 6 px rear camera 1 GB internal memory			
Upload Photos	• •			
Name*	Anita Tiwari			
Phone number*	+919270896678			
Enter a city*	Pune, Maharashtra			
locality (nearby)	Swargate			
	Submit			

Figure 5

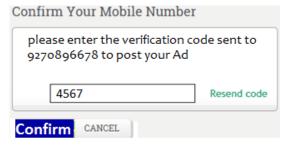


Figure 6



#### 3.3 Rules:

- 1. The phone number should accept only 10-digit number
- The OTP should accept only 4-digit number
   The fields marked as \* are mandatory fields on the form
- 4. Ad Title should accept maximum 70 characters and minimum 15 characters
- 5. The Category should accept only values given in following table

Category	Sub Category	Sub Category
Mobiles	Mobile phones	Iphone, Karbon, Lava, LG, Samsung, Micromax
	Tablets	Asus, Samsung, Appel I Pad
Cars	Cars	Toyota, Chevrolet, Zen, Swift
	Spare parts	Car glass, amplifier, Stereo system
	Beds	Single bed, double bed
	Wardrobes	Single door, two door, sliding door

- 6. Price accepts only digits in Rupees format
- 7. Ad Description should accept maximum 70 characters and minimum 15 characters
- 8. Upload Photos should allow browsing the pictures from your local machine. Minimum one photo should be uploaded.
- 9. Name should accept only characters
- 10. Select the City from the drop down box. This will automatically populate the Loacality based on the selected City. Refer the below given table for sample valid values of Cities and Localities combination.

City	Locality
	Swargate
Pune, Maharashtra	Hinjewadi
	Shaniwarwada
	Whitefield
Banglore, Karnataka	Mathalli
	Bujgiri
	MG Road
Mumbai, Maharashtra	Dadar
	Nalasopara



## **Lab 4.Creating Test Cases – Customer Complaint Form**

Goals	<ul> <li>Read "Customer Complaint Form Instructions" before starting the assignment.</li> <li>Understand the application and develop creative test cases.</li> </ul>
Time	60 minutes

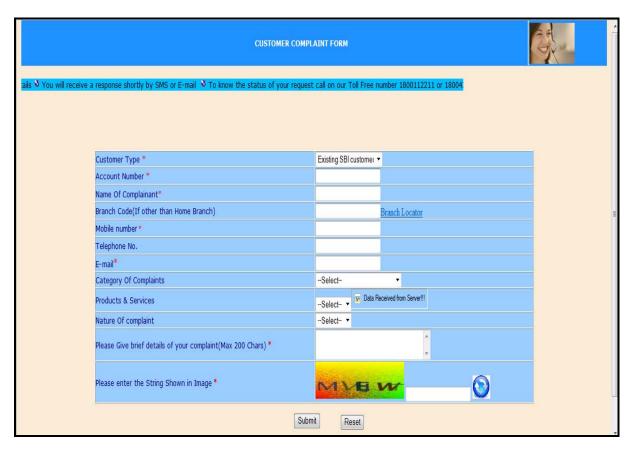
#### 4.1 Case Study: Customer Complaint Form

This is a customer complaint form for the bank customers, those who want to raise the bank related complaints.

#### 4.2 Instructions

Write the test case for this Customer Complaint form, based on the requirements given below.

While the customer clicking on the submit button, if all are correct, the details should be registered in the database and generated complaint number should be displayed on the screen





#### 4.3 Rules

**Customer Type**: Existing SBI customer • Account Number : Should be 11 digits : should be 4 digits **Branch Code** 

Nature of Complaint will be displayed based on the selection of Products & Services and Products & services will be displayed based on the selection of Category of Complaints. Refer the below table.

Category of Complaints	Products & Services	Nature of Complaint
General Banking	Branch Related	<ul><li>No Response to queries</li><li>Single Windows not doing all transactions</li></ul>
	Pass Book Related	Error in passbook entries     Passbook not issued/Delayed
Deposits	Opening of Accounts	Nominee Updation Not done     Delay in opening Accounts
	Transfer of accounts	<ul><li>Delay in transfer of fixed Deposits</li><li>Others</li></ul>
Internet Banking	Pre Login Complaints	<ul> <li>Username/Password provided by branch not functional</li> <li>Transaction rights not given</li> </ul>
	Online Bill Payment	<ul><li>Unable to view Bills</li><li>Unable to view payment History</li></ul>

Details of complaint: Should be of 200 characters max.



## Lab 5.Creating Test Cases – Conference Room Booking

Goals	<ul> <li>Read 'BOOKING INSTRUCTIONS' before starting the assignment.</li> <li>Understand the application and develop creative test cases.</li> </ul>	
Time	90 minutes	

#### 5.1: Case Study. 'ONLINE CONFERENCE ROOM BOOKING' on Intranet

Note: Please do not try using the system available on intranet. This is just a case study.

#### **Booking Instructions**

- 1. Invoke intranet by typing the URL <a href="https://intranet.igate.com">https://intranet.igate.com</a>
- 2. Login using id and password
- 3. Intranet home page is displayed
- 4. Select Employee Corner and Click on Conference Room Booking option
- 5. 'My Bookings' option on the Conference Menu Page displays the View / Cancel Booking Page.
- 6. 'New Booking' option on the Conference Menu Page displays the Conference Booking Page.

#### Making a new booking:

- 1. If you belong to a Non-GE Business Unit, you can book conference rooms only in Non-GE areas. However if you belong to a GE Business unit, you can book conference rooms at any location.
- 2. The employee Email id field is automatically filled with the email id of the person logged in.
- 3. Select the location from the location drop down box. This will automatically populate
  - sub-locations under the selected location in a new drop down box.
- 4. Select the sub-location from the sub-location drop down box. This will automatically populate the date drop down boxes.
- 5. Select the month from the month drop down box. Booking of conference rooms can be done only one month in advance. The date drop down boxes will be appropriately populated for this.
- 6. Select the date from the date drop down box.
- 7. Select the year from the year drop down box.
- 8. Upon selecting a valid location, sub location and date the complete Conference Room booking form is displayed
- 9. The rooms and devices available at the selected sub-location will be displayed in tabular format.
- 10. Enter your extension number and email id if it is not displayed correctly.
- 11. Select the room from the room drop down box.
- 12. Select the time span for which you want to book the conference room.
- 13. Select the communication and visual device if required.

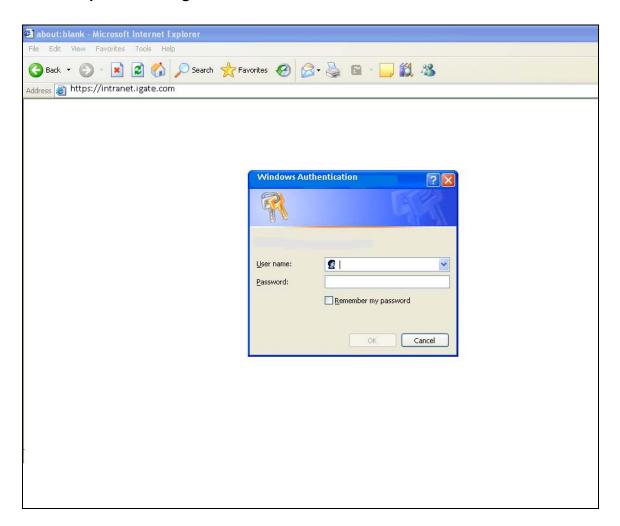


- 14. Clicking 'Submit' button would validate whether the room and devices requested are available in the time span specified.
- 15. If either the room or devices requested are not available in the time span selected, an appropriate error message will be displayed else the booking will be registered. An Email will be sent to you as a confirmation for the same.

## Viewing / Cancellation of Bookings:

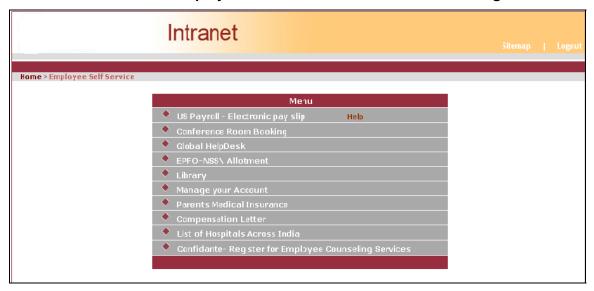
- 1. All the booking made by you will be displayed. Bookings of current and future dates will only be displayed.
- 2. Select the bookings you wish to delete
- 3. Click the 'Delete' button to delete the selected bookings.

#### Invoke https://intranet.igate.com

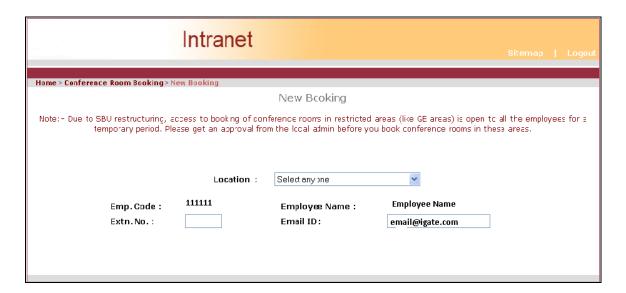




## Intranet home →Employee Corner →Conference Room Booking

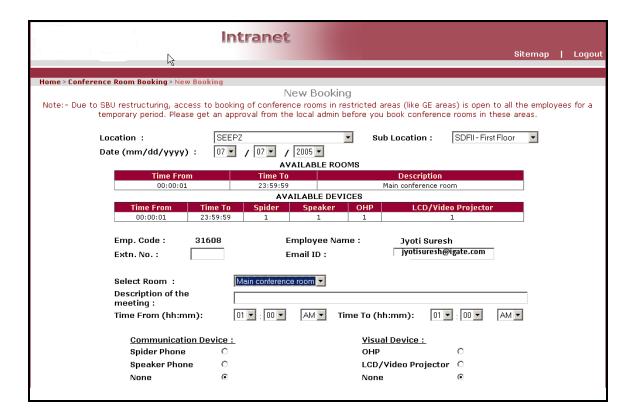


## Conference Room Booking → New Booking





## HOME→Conference Room Booking → New Booking



If booking is successful, the following screen is displayed

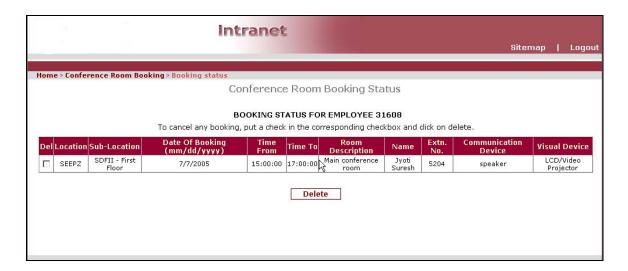
HOME → Conference Room Booking → New Booking





The booking status is also shown under My Bookings as shown below:-

## **HOME** → Conference Room Booking → Booking Status





## Lab 6: Creating Test Cases – Cyber Shopee

(	Soals	•	assign	ment		•			Ü	the
		•	Deveic	pp cre	ative test cases fo	i the Cybe	ershopee Online	SHOPPIN	g website	
•	Time	180 minutes								

You need to go through the given case study carefully and write the appropriate test cases using different testing techniques learnt so far.

## 6.1 Case Study: CyberShoppe

"CyberShopee" is a web based application and can be accessed over the internet. Using this application a user can shop online for different products.

This online shopping website facilitates user to shop various products such as TV, Camera etc. belonging to different categories.

Following is the complete list of functionalities of the system. You can make appropriate assumptions wherever necessary and proceed.

There are four categories of users who would access the system viz. **Admin, Customer, Dealer** and **Delivery**. Each one of these users would have some exclusive privileges to be exercised on this website.

## Note: Delivery user is out of scope.

Following are the functionalities to be performed by the **Admin** user.

- 1. Register on the website
- 2. Login
- Approve Dealer
- 4. Approve Agency
- 5. Add Category
- Add Sub Category

Following are the functionalities to be performed by the **Customer**.

- 1. Register on the website
- 2. Login
- 3. View Product Details
- 4. Purchase Products
- 5. Place the Order
- 6. view Account



#### 7. Change Password

Following are the functionalities to be performed by the **Dealer**.

- Register on the website
- 2. Login
- 3. Add Agency
- **Perform Dealer Operations**

**Note:** Other than First Time registration, the other operations are allowed only for the registered users.

Once the Order is confirmed, Cyber Shopee will deliver the ordered products to the customer on his address specified during the registration. The Payment mode will be Cash on Delivery, Debit Card, Credit Card, NetBanking etc.

#### 6.2 Process Work Flow:

#### 6.2.1 Visit CyberShopee Website

Visit <a href="https://cyberShopeesystem.com">https://cyberShopeesystem.com</a> link through internet. This will take the user to the Home page of the website as given below. Refer to Figure 1.1.



Figure 1.1 CyberShopee Home Page

## 6.2.2 Register

Purpose	To register with CyberShopee website



**Functionality** User can register on the website.

As mentioned earlier, the user need to register on the website to avail different facilities provided. The user needs to fill in the registration form to do so. Refer to the Figure 1.2. Once the user has been successfully registered on the website, he can login to the website with the registered username & password and proceed.



Figure 1.2 Register

#### Requirements:

- 1. All fields are mandatory.
- 2. User Id should contain only 6 characters.
- 3. Full Name should contain upt0 30 characters and begin with uppercase letter.
- 4. Address should contain 200 alphanumeric characters.
- 5. Email should accept only valid email address e.g. someone@gmail.com
- 6. Password should contain at least one uppercase character and one special character.
- 7. Contact Number should contain only 10 digits and begin with 7/8/
- 8. Role should be populated with these options (Admin, Customer, Dealer and Delivery).



#### 6.2.3 Admin Module

Note: Dealer approval and Agency Approval not in scope.



Figure 1.3 Admin Home Page

## a. Add Category

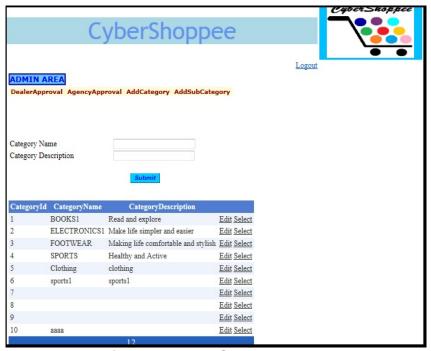


Figure 1.4 Add Category Page

Purpose	To add product categories



Functionality	Admin can add product category
	<ul> <li>Admin can edit product category</li> </ul>
	<ul> <li>Admin can update product category</li> </ul>

## **Requirements:**

- 1. Category Name and Category Description cannot be blank.
- 2. Admin can edit any information of existing category & it should be successfully updated.

## b. Add Sub Category

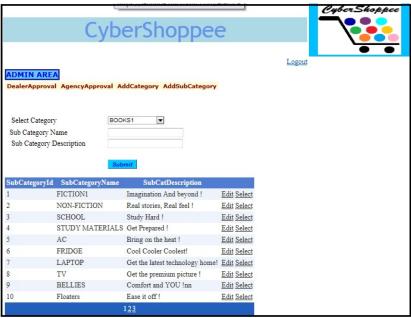


Figure 1.5 Add Sub Category Page

To add product sub category	
<ul><li>Admin can add product sub category</li><li>Admin can update product sub category</li></ul>	

## Requirements:

- 1. The select category dropdown box should auto populate with the existing category ids.
- 2. User need to select category id
- 3. User need to fill in the subcategory name and subcategory description & both fields cannot be left blank.



- 4. Admin can edit any information of a product subcategory using same page.
- 5. User need to click on the "Edit" link to update the details of existing subcategory.
- 6. Once user has edited the details, he can confirm the same by clicking on the Update link.

#### 6.2.4 Customer Module

## a. Search Products



Figure 1.6 Search Product Page





Figure 1.7 Add To Cart Page

Purpose	To search product
Functionality	<ul> <li>Customer can search for a product</li> <li>Customer can then add the searched product in the shopping cart</li> </ul>

#### Requirements:

- **1.** Customer need to select the category.
- 2. Based on category selected the subcategory will be populated.
- **3.** Customer need to click on the Search button to initiate the search of the product.
- 4. If the matching product exists, the details will be displayed in the table below.
- 5. Customer can click on View Product link to view the selected product and at the same time he can also add this product to the cart by clicking on the Add To Cart button.
- 6. When user clicks on "Add To Cart" button the product should get added in to the cart.
- 7. Select Quantity field cannot be null.



8. When user clicks on "Cancel" button user should navigate to Search Product page.

## b. My Orders



Figure 1.8 My Orders Page

Purpose	To view orders	
Functionality	<ul> <li>Customers can view orders placed by him</li> </ul>	

## Requirements:

- 1. Customer can click on My Orders tab to view his orders.
- 2. If the cart is null, and user clicks on "Place Order" Button, the order should not get added into My Orders.

## c. My Cart



Figure 1.9 My Cart Page



Purpose	To view products in cart and place order	
Functionality	<ul><li>Customer can add products in cart</li><li>Customer can place order</li></ul>	

## Requirements:

- 1. Customer can place order for selected items form the cart.
- 2. Customer can remove selected items form the cart.

d. Change Password



Figure 1.10 Change Password Page

I iguie il io change i accircia i age		
Purpose	To change password	
Functionality	Customer can change password	

## Requirements:

- 1. Customer can click on "Change" button and change the password.
- 2. Customer can click on "Exit" button to come out from current page and navigate to customer's home page...
- 3. New password and Confirm password should match with each other.
- 4. If Old password is incorrect, system should alert customer with proper error message.



## e. My Account



Figure 1.11 My Account Page

Purpose	To Edit account Details
Functionality	Customer can edit his account details.

## Requirements:

- 1. Customers are restricted to edit "Customer Id".
- 2. Customer Name should contain only characters and begin with uppercase letter.
- 3. Email should be in someone@gmail.com format.
- 4. Contact Number should contain only 10 digits and begin with 7or 8 or 9.
- 5. Customer can click on "Edit profile" to edit the profile.
- 6. Customer can click on "Save Changes" button to save edited profile.
- 7. Customer can click on "Cancel" button to cancel the changes and should navigate to Customer Home page.

#### 6.2.5 Dealer Module

## a. Dealer Operations





Figure 1.12 Add Product Details

Purpose	To add product details
Functionality	<ul><li>Dealer can add product details.</li><li>Dealer can update product details.</li></ul>

## Requirements:

- 1. All fields are mandatory.
- 2. Sub category dropdown box should auto populate.
- 3. Product Name can be alphanumeric.
- 4. Model Number can be alphanumeric.
- 5. Unit cost should contain only digits.
- 6. Description should contain 100 characters.
- 7. Dealer can click on browse button and able to upload the image.
- 8. Dealer can click on "Add" button to add the products.
- 9. Dealer can click on "Update" button to update the products.
- 10. Dealer can click on "Add Size Quantity" button to add the product quantity.