Assignment 3: System Testing

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Question 1:

Give one positive and one negative test situation for each functional requirement in Section A?

Functional Requirement # F1	
Functional Requirement Statement	F1. The *e-BookStore* shall allow the addition of books to the store's *books catalogue* F1.1. The following information shall be provided for each book: • a mandatory category • a mandatory book id that must be between 5 and 8 characters long • a mandatory book title • a mandatory book author name(s) • an optional book description • a mandatory cost that must be a decimal number greater or equal to 0.0
Positive Test Case	Attempt to add a book while providing a category, a book id between 5 and 8 characters, a book title, a book author, a book description, and a book cost.
Negative Test Case	Attempt to add a book without providing a category, book id, book title, book author name, book description, and a cost.

Functional Requirement #F2	
Functional Requirement Statement	F2. The *e-BookStore* shall allow customers to browse through the store's *books catalogue* by displaying books resulting from a search F2.1. The *e-BookStore* shall allow books to be searched by category F2.2. The whole catalogue shall be returned for a search with an empty value for category
Positive Test Case	Attempt to find a book by searching with the category the book belongs to
Negative Test Case	Attempt to input the cost of the book in the category filtering section

Functional Requirement #F3	
Functional Requirement Statement	The e-BookStore shall allow customers to add books to a books order
Positive Test Case	Add a book to *Books order* and check to see if the book has been added
Negative Test Case	User cannot view an unadded book in the *Books Order* Section

Functional Requirement #F4

Functional Requirement Statement	F4. The *e-BookStore* shall allow customers to view the content of their *books order* F4. 1. The following information shall be shown for each of the book in the *books order* • book id • book description • book unit cost • number of ordered copies • total cost of the ordered copies (before taxes, shipping and handling)
Positive Test Case	Add a book to *books order* then ensure that the book id, description, unit cost, number of ordered copies, and total costs of all ordered copies are displayed
Negative Test Case	Users cannot view books' information in a *books order* where no books have not been added.

Functional Requirement #F5

Functional Requirement Statement	F5. The e-BookStore shall allow customers to update the number of ordered copies of books in their books order F5.1. A book shall be removed from the books order if its number of ordered copies is less or equal to 0
Positive Test Case	Borrow a book, view the book in the *Books Order* section, set the number of ordered copies to 5, then check if the info has been updated
Negative Test Case	Borrow a book, view the book in *Books Order,* ensure that a book is not displayed when its number of ordered copies is less or equal to 0.

Functional Requirement #F6

Functional Requirement Statement	F6. The *e-BookStore* shall compute and present upon checkout to customers: • the date of their *books order* • the total amount of their *books order* • the amount of taxes of their *books order* • the amount of handling and shipping fee of their *book order* F6.1. The *e-BookStore* shall apply a tax rate of 13% on all *books orders* F6.2. The *e-BookStore* shall apply a fixed rate of $10 plus 5% of a *books order* amount as handling and shipping fee.

Positive Test Case	Validate that the following information corresponding to a non-empty order are displayed and are correct during checkout: ● The date of their *Books Order* ● The total amount of their *Books Order* ● The amount of taxes of their *Books Order* ● The amount of handling and shipping fee of their *Book Order*
Negative Test Case **CHECK THE TEST ASKED Q ON PIAZZA** https://piazza.com/class/knxg0zgsce5jp?cid=366	**Assumption:** The system should not charge any amount of money for shipping when the user checks out an empty cart Attempt to checkout an empty *Book Order* and ensure that no charges occur.

Functional Requirement #F7	
Functional Requirement Statement	The e-BookStore shall allow the removal of books from the store's books catalogue
Positive Test Case	Attempt to remove a book from the book catalogue and ensure that it is gone.
Negative Test Case	The user does not remove any books and none of the books are removed.

| Functional Requirement #F8	
Functional Requirement Statement	The e-BookStore shall allow the authentication of administrators before allowing them to add/remove books to/from the catalogue
Positive Test Case	The Administrator logs in and can remove a book from the catalogue
Negative Test Case	Tha administrator fails to login and he is not able to add a book to the catalogue

Question 2:

Derive test cases based on the use cases in section C. For each use case give:
1) A Scenario Graph
2) A set of scenarios ensuring branch coverage of the scenario graph
3) Abstract test cases corresponding to scenarios

Use Case 1

Scenario Graph:
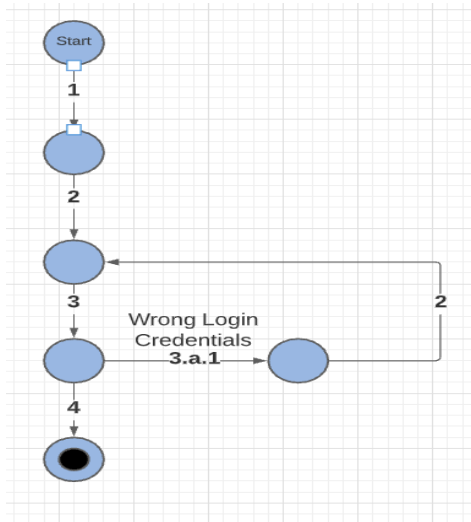
Scenarios:

Id	Events	Description
1.1	1-2-3-4	The administrator attempts to login and he enters the right credentials from the first try.
1.2	1-2-3-3.a.1-2-3-4	The administrator attempts to login however he enters the incorrect credentials once then on the second try he enters the correct ones

Abstract Test Cases:

Test Case: 1.1
Goal: Test if the user authentication is allowing valid credentials to gain access
Scenario Reference: 1.1
Setup: e-bookstore is running, the administrator login page is currently displayed and the cookies are cleared so that no one is logged in.
Course of test case:

	External Event		Comments

1	Enter the following credentials: username: admin password: password	Entering valid credentials to gain access into admin features
2	Click on the sign in button	

Pass Criteria: The administrator is logged in and admin page is displayed

<mark>**Test Case:** 1.2</mark>

Goal: Test id the system allows more than one attempt to login.
Scenario Reference: 1.2
Setup: e-bookstore is running, the administrator login page is currently displayed.
**Course of test case:**

	External Event	**Comments**
1	Enter the following credentials: username: falseTest password: false	Entering invalid credentials
2	Click on the sign in button	
3	Enter the following credentials: username: admin password: password	Entering valid credentials to ensure that the system allows multiple login attempts
4	Click on the sign in button	

Pass Criteria: After event 2, an error informing you that your credentials are incorrect appears. After event 4, the administrator is logged in.

Use Case 2

Scenario Graph:
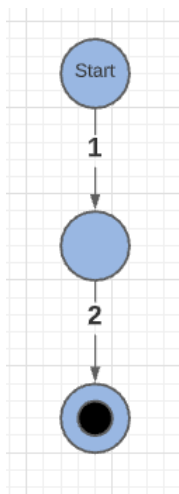
Scenarios:

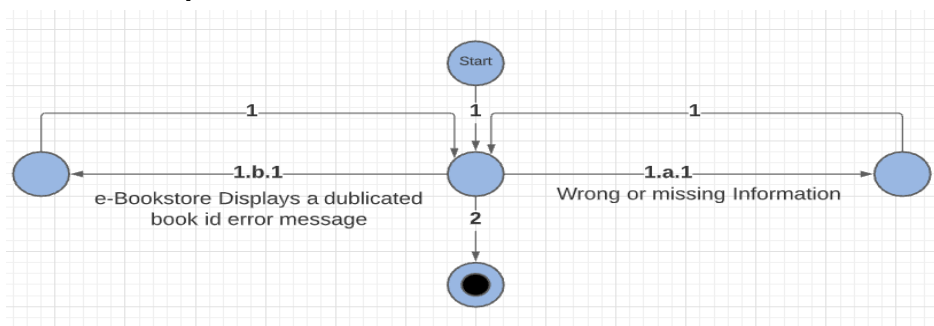| Id	Events	Description
2.1	1-2	Administrator signs out of the system

Abstract Test Cases:

Test Case: 2.1
Goal: Test the Sign out functionality; whether an admin can sign out of his/her account.
Scenario Reference:
Setup: Admin is already logged in and the admin homepage is displayed
Course of test case:

	External Event	Comments
1	Click on the Sign Out button on the admin homepage	Logged in Admin attempts to sign out.

Pass Criteria:

Use Case 3

Scenario Graph:

Scenarios:

Id	Events	Description
3.1	1-2	Administrator adds a book with no duplicate id and the correct information from the first time
3.2	1-1.a.1-1-2	Administrator first adds a book with wrong or missing information then he fixes the information on the second attempt.
3.3	1-1.b.1-1-2	Administrator first adds a book with a duplicate ID then the admin changes the book ID on the second attempt.

Abstract Test Cases:

Test Case: 3.1
Goal: Test if the administrator can add book that has no duplicate id and the correct information
Scenario Reference: 3.1
Setup: Ensure that the e-bookstore is running and that the administrator is logged in and that the admin page is displayed.
Course of test case:

	External Event	Comments
1	On the admin page (localhost:8080/admin) , fill out the form with the following information: Category: "Fiction" Book id: "h11023" Title: "Of Mice and Men" Author(s): "John Steinbeck" Description: "The book talks about two ranch workers during the great depression." Cost: 20.00	Attempting to add a book with the correct information and with no duplicate id.
2	Click the Add button under the form	

Pass Criteria: The system must display that a book has been added and the books should be added to the catalogue.

Test Case: 3.2
Goal: Testing if the system allows and notifies the user to fix his mistakes - book info he enters - while adding a book after the first attempt.
Scenario Reference: 3.2
Setup: Ensure that the e-bookstore is running and that the administrator is logged in and that the admin page is displayed.
Course of test case:

	External Event	Comments
1	On the admin (localhost:8080/admin) page, fill out the form with the following information: Category: "" Book id: "" Title: "" Author(s): "" Description: "" Cost:	Attempting to add a book with missing information - no information is provided at all for the book info.
2	Click the Add button under the form	Note that after clicking the button, the system must display an error message

	External Event	Comments
3	On the admin page (localhost:8080/admin), fill out the form with the following information: Category: "Non-fiction" Book id: "h12321" Title: "To Kill a Mockingbird" Author(s): "Harper Lee" Description: "The book talks about a lawyer fighting against racism." Cost: 30.00	Adding a book with correct information - no missing info or duplicate id
4	Click the Add button under the form	

Pass Criteria: After event 2, the system should display an error message notifying the user of the missing information. After event 4, the system should display a message telling the user that the addition of the book was successful and the book must be present in the catalogue.

Test Case: 3.3
Goal: Testing to verify that the system does not accept duplicate ids for a book that needs to be added and that the system allows the user to give a different book id if the one entered in previous attempts exists.
Scenario Reference: 3.3
Setup: Ensure that the e-bookstore is running and that the administrator is logged in and that the admin page is displayed.
**Course of test case:**

	External Event	Comments
1	On the admin (localhost:8080/admin) page, fill out the form with the following information: Category: "Fiction" Book id: "hall001" Title: "The Great Gatsby" Author(s): "F. Scott Fitzgerald" Description: "The book was made into a movie." Cost: 20:00	
2	Click the Add button under the form	The system must display an error showing that there is a book already with the entered ID
3	On the admin (localhost:8080/admin) page, fill out the form with the following information: Category: "Fiction" Book id: "h2501" Title: "The Great Gatsby"	

	Author(s): "F. Scott Fitzgerald" Description: "The book was made into a movie." Cost: 20:00	
4	Click the Add button under the form	

Pass Criteria: After step 2, there should be a message saying that there is a book with the same entered ID. After step 4, the system must display a message that the book was added and it should appear in the catalogue.

Use Case 4

Scenario Graph:
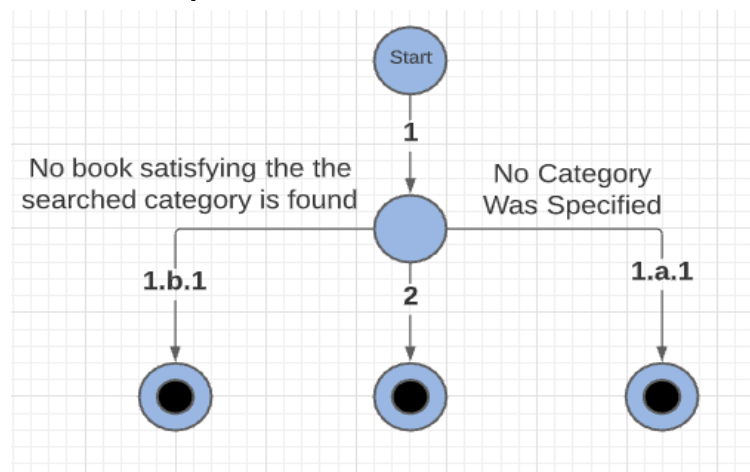
Scenarios:

Id	Events	Description
4.1	1-2	The user specifies a category in which there is at least one book that belongs to that category
4.2	1-1.a.1	The user does not specify a category in his search
4.3	1-1.b.1	The user specifies a category in which there are no books that belong to the specified category

Abstract Test Cases:

Test Case: 4.1
Goal: Testing if the system can filter books based on a given category.
Scenario Reference: 4.1
Setup: Ensure that the e-bookstore is running and that the homepage (main page) is displayed
Course of test case:

	External Event	Comments

	External Event	Comments
1	On the homepage (localhost:8080), insert "kids" for the category input	
2	Click on the search button	The system should display the books that belong to the category

Pass Criteria: The system displays the books belonging to the category kids. Specifically, in a system where no books have been added, the books with the titles "The Chronicles of Narnia", "The Prydain Series", and "The Harry Potter Series" should be displayed.

Test Case: 4.2
Goal: Testing the behaviour of the category search feature when no category is specified.
Scenario Reference: 4.2
Setup: ensure that the e-bookstore is running and that the homepage (main page) is displayed
Course of test case:

	External Event	Comments
1	On the homepage (localhost:8080), click the search button while ensuring that the category input field is empty	

Pass Criteria: The system should display all the books available in the system

Test Case: 4.3
Goal: Testing the category search feature of the catalogue when the category that is specified has no books associated with it.
Scenario Reference: 4.3
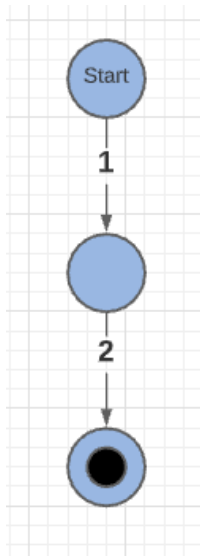**Setup:** Ensure that the e-bookstore is running and that the homepage (main page) is displayed
Course of test case:

	External Event	Comments
1	On the homepage (localhost:8080), insert "blah" for the category input	
2	Click on the search button	

Pass Criteria: The system should display no books in the catalogue and should display a message saying that no books exist under the specified category

Use Case 5

Scenario Graph:

Scenarios:

Id	Events	Description
5.1	1-2	Administrator removes a book from the catalogue

Abstract Test Cases:

Test Case: 5.1
Goal: Testing that the system allows an administrator to remove a book.
Scenario Reference: 5.1
Setup: Ensure that the e-bookstore is running and that the administrator is logged in and that the admin page is displayed.
**Course of test case:**

	External Event	Comments
1	On the admin page, click on search while the category is empty.	This step should take you to the catalogue that contains all the book in the system - specifically (localhost:8080/admin/catalog)
2	Click on the delete button that corresponds to the book with the title "The Harry Potter Series" by J.K. Rowling.	

Pass Criteria: The book "The Harry Potter Series" should be removed and should no longer appear in the catalogue.

Use Case 6

Scenario Graph:
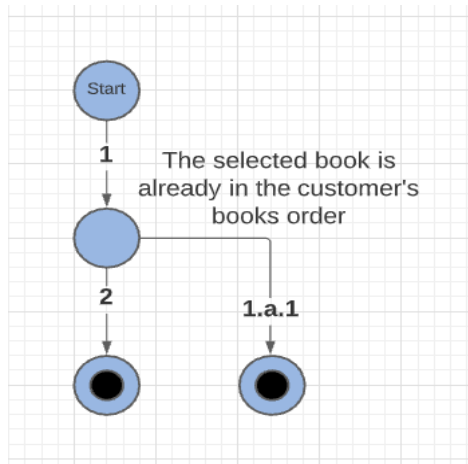
Scenarios:

Id	Events	Description
6.1	1-2	The customer adds a books that has **not** already been added added to his books order
6.2	1-1.a.1	The customer adds a book that already has been added to his books order

Abstract Test Cases:

Test Case: 6.1
Goal: Testing the system's behaviour when the customer adds a book that has not been added to his *books order*
Scenario Reference: 6.1
Setup: Ensure that the e-bookstore is running and that the homepage (main page) is displayed and that the current user of the system is not an admin.
Course of test case:

	External Event	Comments
1	On the homepage (localhost:8080), click on the search button while ensuring that no category has been specified - empty field.	
2	Click the Add to Cart button that corresponds to the book "The Prydain Series" by Lloyd Alexander.	

Pass Criteria: Ensure that the book "The Prydain Series" has been added to the cart (by clicking on the cart item). It should be in the cart with a quantity (number) of 1.

Test Case: 6.2
Goal: Testing the situation of adding existing books to the *books order.*
Scenario Reference: 6.2
Setup: Ensure that the e-bookstore is running and that the homepage (main page) is displayed and that the current user of the system is not an admin.
**Course of test case:**

	External Event	Comments
1	On the homepage (localhost:8080), click on the search button while ensuring that no category has been specified - empty field.	
2	Click the Add to Cart button that corresponds to the book "The Chronicles of Narnia" C.S. Lewis.	
3	Click the Add to Cart button that corresponds to the book "The Chronicles of Narnia" C.S. Lewis again.	

Pass Criteria: Ensure that the book "The Chronicles of Narnia" has been added to the cart (by clicking on the cart item). It should be in the cart with a quantity (number) of 2.

Use Case 7

Scenario Graph:
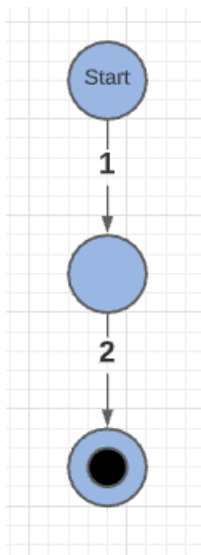
Scenarios:

Id	Events	Description
7.1	1-2	The customer views his books order

Abstract Test Cases:

Goal: Testing if the system allows the user to view his book order.
Scenario Reference: 7.1
Setup: Ensure that the e-bookstore is running and that the homepage (main page) is displayed and that the current user of the system is not an admin. Also, ensure that the *Books Order* - or cart - is empty before executing the test in order to achieve the same pass criteria.
**Course of test case**

	External Event	**Comments**
1	On the homepage (localhost:8080), click on the search button while ensuring that no category has been specified - empty field.	
2	Click the Add to Cart button that corresponds to the book "The Chronicles of Narnia" by C.S. Lewis	Adding a book in order to view it in the cart
3	Click on the Cart icon that appears on the screen	

Pass Criteria: The system should display the *Books Order* section and in that section there should only be one book titled "The Chronicles of Narnia" - assuming that the *Books Order* Section was cleared out before executing the test.

Use Case 8

Scenario Graph:
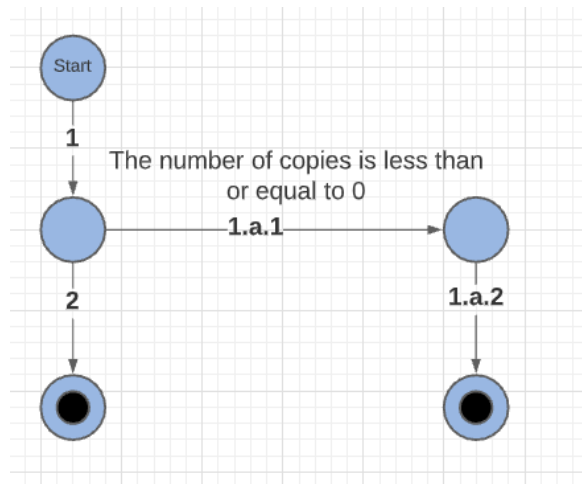
Scenarios:

Id	Events	Description
8.1	1-2	The customer specifies the number of copies for an ordered book such that the number of copies is **greater** than 0
8.2	1-1.a.1-1.a.2	The customer specifies the number of copies for an ordered book such that the number of copies is **less than or equal** to 0

Abstract Test Cases:

Test Case: 8.1
Goal: Testing if the system has the correct total price in the cart after a series of events.
Scenario Reference: 8.1
Setup: Ensure that the e-bookstore is running and that the homepage (main page) is displayed and that the current user of the system is not an admin.
Course of test case:

	External Event	Comments
1	On the homepage (localhost:8080), click on the search button while ensuring that no category has been specified - empty field.	
2	Click the Add to Cart button that corresponds to the book "Core Web Programming, 2nd Edition" by Marty Hall and Larry Brown	Adding a book in order to view it and edit it in the *Books Order* section.
3	Click on the Cart icon that appears on the screen	
4	Enter the value 4 for the "Number" input that corresponds to the book with the title "Core Web Programming, 2nd Edition"	Change the number of ordered copies to 4
5	Click on the update button that corresponds to the event in step 4.	

Pass Criteria: The total cost must be updated specifically to the value of $199.96.

Test Case: 8.2
Goal: Testing the system behaviour when the number of order copies is specified to be less than or equal to 0.
Scenario Reference: 8.2
Setup: Ensure that the e-bookstore is running and that the homepage (main page) is displayed and that the current user of the system is not an admin.
**Course of test case:**

	External Event	Comments
1	On the homepage (localhost:8080), click on the search button while ensuring that no category has been specified - empty field.	
2	Click the Add to Cart button that corresponds to the book "Core Servlets and JavaServer Pages 2nd Edition (Volume 1)" by Marty Hall and Larry Brown	Adding a book in order to view it and edit it in the *Books Order* section.
3	Click on the Cart icon that appears on the screen	
4	Enter the value -4 for the "Number" input that corresponds to the book with the title "Core Servlets and JavaServer Pages 2nd Edition (Volume 1)"	Change the number of ordered copies to 4
5	Click on the update button that corresponds to the event in step 4.	
6	Refresh the page	Refreshing the page will ensure that the book from the list of ordered books

Pass Criteria: After step 5, the total cost must be updated to 0 and after step 6 the book should be removed from the list of the *Books Order* section.

Use Case 9

Scenario Graph:
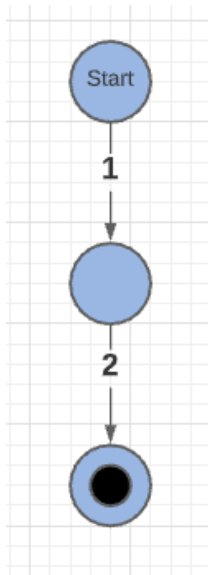
Scenarios:

Id	Events	Description
9.1	1-2	The customer proceeds to checkout

Abstract Test Cases:

<mark>**Test Case:** 9.1</mark>
Goal: Test if the customer can proceed to checkout.
Scenario Reference: 9.1
**Setup:** The e-bookstore is running and the *Books Order* section is empty prior to the execution of the test.
Course of test case:

	External Event	Comments
1	On the homepage (localhost:8080), click on the search button while ensuring that no category has been specified - empty field.	
2	Click the Add to Cart button that corresponds to the book "Core Servlets and JavaServer Pages 2nd Edition (Volume 1)" by Marty Hall and Larry Brown	Adding a book in order to view the checkout
3	Click on the Cart icon that appears on the screen	After this step the books order should appear with only the added book - assuming that the cart was empty as required by the setup for this test.
4	Click on the "Proceed to Checkout" button	

Pass Criteria: The system should display a message of your cart order total and it will confirm that the purchase has been completed.

Use Case 10

Scenario Graph:
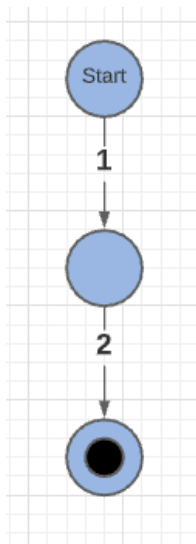
Scenarios:

Id	Events	Description
10.1	1-2	The customer selects the language of his preferences for the e-bookstore

Abstract Test Cases:

Test Case: 10.1
Goal: Test if the system is able to change the language for the e-bookstore
Scenario Reference: 10.1
Setup: The e-Bookstore is running
Course of test case:

	External Event	Comments
1	Change the e-bookstore language to french on the e-book homepage	This test tests if it is possible to change the language of the e-bookstore

Pass Criteria: The e-bookstore language must change to french