

## Tutorial/Practical 10 on Week 11 – Software Testing II

In this tutorial, you will answer some questions regarding Software Testing II

**Relevant Course Materials:** Week 10: Lecture and Lectorial (Software Testing II)

**Relevant Assignments:** Assignment 4

### Part A: Software Testing Concepts (35 mins)

1. Answer the following questions

- What are the differences between System testing and Release testing?
- Explain three types of User Testing?
- What is Performance Testing?
- Explain the key activities in Test-driven Development?

### Part B: JUnit Test for the Online Bookstore Platform (70 mins)

Imagine you (students) are a software engineer working in a software development organization and want to develop an Online Bookstore Platform using an Agile Method like Scrum. The Online Bookstore Platform stores and sells different types of books. In the following parts, you are expected to work on the design process of the Online Bookstore Platform. You have freedom and have to add more features, services, requirements, etc. to the Online Bookstore Platform.

Suppose you are going to write a function called **AddBook** in the Book class. This function can add the information of a new book to the database of the Online Bookstore Platform.

```
public class Book {  
    private String bookID;  
    private String bookTitle;  
    private int bookQuantity;  
    private double bookPrice;  
    private String bookType;  
    public String AddBook ()  
    {  
        //return "The book information cannot be added";  
        //return "The book information can be added";  
    }  
}
```

**There are some constraints on this function:**

- ID should be a string that has exactly 5 characters long and starts with a digit.
- Adding the books that have titles with less than 2 words and more than 4 words should result in an error message.
- Prices should be more than \$5 and less than \$250

- i. The price of Kid Books (Type= “Kids”) should not also be more than \$40.

You are asked to test and implement the **AddBook** function using Test-driven Development and JUnit in Java.

**Note 1.** You may need to design the different test data to test the **AddBook** function. You can use the following test cases and test data.

**Note 2.** You are NOT required to store the book information in a database such as Oracle and MySQL. You JUST need to test whether the AddBook function with the specified input should be able to add the book information to the database.

**Note 3:** Use JUnit 5 (JUnit Jupiter)

Test Cases	Test Data	Expected Result	Test Result	Pass/Fail
<b>Test Case 1.</b>  Check the function with <u>valid inputs</u>	(“1abcd”, “First Book”, 10, 5.1, “Kids”)  (“1abcd”, “First Book AB AC”, 10, 39.7, “Kids”)  (“1abcd”, “First Book”, 10, 249.6, “History”)	The book information can be added.		
<b>Test Case 2.</b>  Check the function with <u>invalid ID</u>	(“1abc”, “First Book”, 10, 15.4, “Kids”)  (“abc”, “First Book”, 10, 15.4, “Kids”)  (“abcde”, “First Book”, 10, 15.4, “Kids”)	The book information cannot be added.		
<b>Test Case 3.</b>  Check the function with <u>invalid Title</u>	(“1abcd”, “Book”, 10, 15.4, “Kids”)  (“1abcd”, “Book AB AC AD AE”, 10, 15.4, “Kids”)	The book information cannot be added.		

<b>Test Case 4.</b> Check the function with <u>invalid Price</u>	("1abcd", "First Book", 10, 4.6, "Kids")  ("1abcd", "First Book", 10, 4.6, "History")  ("1abcd", "First Book", 10, 40.1, "Kids")  ("1abcd", "First Book", 10, 251.3, "History")	The book information cannot be added.		
<b>Test Case 5.</b> Check the function with <u>invalid ID and invalid Title</u>	("1abc", "First", 10, 7.1, "Kids")  ("abc", "First", 10, 39.2, "Kids")  ("abcde", "First", 10, 5.2, "Kids")  ("1abc", "Book AB AC AD AE AF", 249.2, "History")  ("abc", "Book AB AC AD AE AF", 10, 249.2, "History")  ("abcde", "Book AB AC AD AE AF", 10, 249.2, "History")	The book information cannot be added.		
<b>Test Case 6.</b> Check the function with <u>invalid ID and invalid Price</u>	...			
<b>Test Case 7.</b> Check the function with <u>invalid Tile and invalid Price</u>	..			

<b>Test Case 8.</b> Check the function with <u>invalid ID, invalid Title, and invalid Price</u>	..			
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