International Islamic University Chittagong(IIUC)

Computer and Communication Engineering(CCE)

LAB REPORT -04

Write a report on Testing and Implementation of the System of your assigned project including:

i. Test Case Design

ii. White-Box Testing

iii. Black-Box Testing

iv. Documentation

Course Code: CCE-3508
Course Title: System Analysis, Design and Development Sessional

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Introduction:

Software bugs will usually exist in any application or software module. However, it's not because of the programmer's carelessness or irresponsibility; it's due to the complexity. Humans have a limited capacity for dealing with complexity. The testing of the solution and implementation of our project has been shown below.

Testing

Software Testing is the process of executing a program or system with the intent of finding errors. The scope of software testing often includes examination of code as well as execution of that code in various environments and conditions. Testing stages of the project can be explained as below and system was tested for all these stages.

- Component or unit testing

   -Individual components are tested independently;

   -Components may be functions, objects, or coherent groupings of these entities.

- System testing
-Testing of the system as a whole. Testing of emergent properties is particularly important.

- Acceptance testing
- Testing with customer data to check that the system meets the customer's needs

Test Cases

Three sample Test Cases and result have been attached in below Table 1.1, Table 1.2 and Table 1.3 .

Test Case ID: 1

User Interface: Book ticket

Operation: Ticket Booking

Action	Input	Expected Output	Status
To show home page.	Any user can access this page and view the list of main sections provided on the platform.	User can access this page and view the list of main sections provided on the platform properly	Pass
To show Schedule page	Any user can access this page and view the list of main sections provided on the platform.	User can access this page and view the list of main sections provided on the platform properly	Pass
To Book a ticket	Any user can access this page and Book ticket by select schedule	User can access this page and Book ticket by select schedule properly.	Pass

Table 1.1 : Test Case for Test Case ID 1

Test Case ID: 2

Admin Interface: Login

Operation: System Login

Action	Input	Expected Output	Status
Type User Name Password and click log in button. (Correct user name and correct password)	admin admin	Login to the System with appropriate permissions.	Pass
Type invalid User name and keep password empty then click log in button	Admin1	Display error message "Incorrect username or password." After pressing OK button, set cursor focus to Username input box.	Pass

Type invalid User name and type correct password then click log in button	Admin1 admin	Display error message "Incorrect username or password." After pressing OK button, set cursor focus to Username input box.	Pass
Type valid User name and keep password empty then click log in button	admin	Display error message "Incorrect username or password "	Pass
Type valid User name and invalid password then click login button	admin 5456456	Display error message "Incorrect username or password. "Set focus on password field	Pass
Keep both user name and password empty and click login button		Display error message "Incorrect username or password." After pressing OK button, set cursor focus to username input box.	Pass
Type both user name and password invalid and click login button	adminn adddminnn	Display error message " Incorrect username or password." After pressing OK button, set cursor focus to Username input box.	Pass
Keep user name blank and type correct password and click login button	- admin	Display error message "Incorrect username or password." After pressing OK button, set cursor focus to Username input box.	Pass
Keep user name blank and type incorrect password and click login button	- Admin1233	Display error message "Incorrect username or password." After pressing OK button, set cursor focus to Username input box.	Pass

Table 1.2 : Test Case for Test Case ID 2

Test Case ID: 3

Admin Interface: Add/Edit/Remove Location, Schedule

Operation: Add / Modify

Action	Input	Expected Output	Status
Add New Admin	-Jaser -123456	Data Successfully Saved	Pass
Add New Location	Bohoddarhat Bus Terminal, Chittagong	Enable true the Save button and once press the save button, data Successfully Saved	Pass
Delete Bus	5001, S.Alam	Data Successfully Deleted	Pass
Edit Schedule	Estimated Arrival Time 2022/01/3 07:00 Availability 31 Price: 250	Data Successfully Deleted	Pass

Table 1.3: Test Case for Test Case ID 3

White Box Testing:

White box testing (glass box testing) strategy deals with the internal data structures and algorithms. The tests written based on the white box testing strategy incorporate coverage of the code written, branches, paths, statements and internal logic of the code etc. These testers require programming skills to identify all paths through the software.

Types of white box testing includes code coverage (creating tests to satisfy some criteria of code coverage.), mutation testing methods, fault injection methods, static testing.

WHITE BOX TESTING: -

Techniques of white-box testing are -

1) Basic path of Testing.

2) Condition Testing.

3) Data Flow Testing.

White box testing involves the testing of the software code for the following:

- ➢ Internal security holes
- ➢ Broken or poorly structured paths in the coding processes
- ➢ The flow of specific inputs through the code
- ➢ Expected output
- ➢ The functionality of conditional loops
- ➢ Testing of each statement, object, and function on an individual basis

How to perform white box testing

1. Understand the source code

A tester must first know the software programming language and be familiar with secure coding practices. Security is a primary reason to test software, so the goal is to find security concerns to prevent hacker attacks and malicious code from being unknowingly injected into an application.

2. Test the software

Step two involves examining the software source code for correct flow and structure. One way to test the software is by designing and writing additional code which can then appraise the source code. A tester who has a good knowledge of code typically develops little tests each application process. Manual testing — another testing method — uses testing tools for the job.

Black box Testing:

Black box testing is testing without the knowledge of the internal workings of an application or a website. By short when a user login into a website of an application the functions are shown or available to the user are the functions of the Black box testing. In other words, it shows the output and hides how the output is shown.

In the following project, the black box is used for the user interface. In this project, online ticket booking system the focus of black box testing is on the validation of the functional requirements. It also gives abstraction from code and focuses on testing effort on the software system behavior. In addition, the Black box testing facilitates testing communication amongst modules.

BLACK BOX TESTING: -

a) Black box testing relies on the specification of the system or component, which is being tested to drive test cases.

b) The system in a 'Black-Box' whose behavior can only be determined by studying its inputs and the related outputs.

c)   Another name for this is Functional Testing because mathematical functions can be specified using only their inputs and outputs.

d) This model is the same as that used for reliability testing.

e)   The key problem for the defect tester is to select inputs that have a high probability of being members of the set. In many cases, the selection of these test cases is based on the previous experience of test engineers. They use domain knowledge to identify test cases, which are likely to reveal defects.

f)   Objectives of Black-Box testing are to find out:

1) Incorrect or missing functions.

2) Interface errors.

3) Errors in data structure and external database access.

4) Performance errors.

5) Initialization and termination errors.

Here the black box is a function dedicated for the user. It shows the inputs of the result needed to show the user. For example-In the login page if the user inputs or selects an unavailable option then the user will face an error or it will show no data. If only and only if the user selects the valid options or inputs and valid data the system will take an entry. Also there is a bug where if the admin adds too many bus entries or locations the (Add New+) button will become inaccessible.

Table 1:

Data Sample(Admin Panel)	Estimated Result	Result	Conclusion
Username: admin' – Password: admin' --	**No Entry**	**No Entry**	**Incorrect username or password**
Username: admin'# Password: admin' #	**No Entry**	**Entry**	**Login Successful**
Username: admin'/* Password: admin'/*	**No Entry**	**No Entry**	**Incorrect username or password.**
Username:' or 1=1— Password:' or 1=1--	**No Entry**	**Entry**	**login Successful**
Username: ' or 1=1— Password: ' or 1=1#	**No Entry**	**Entry**	**login Successful**
Username: ' or 1=1-- Password: ' or 1=1/*	**No Entry**	**No Entry**	**Incorrect username or password.**
Username: ') or '1'='1— Password: ') or '1'='1—	**No Entry**	**No Entry**	**Incorrect username or password.**
Username:') or '1'='1– Password: ') or '1'='1–	**No Entry**	**No Entry**	**Incorrect username or password.**

Table 2:

Data Sample	Estimated Result	Result	Conclusion
Bohoddarhat, Bus terminal	entry	entry	Show Booking option
Dampara, CTG	entry	entry	Show Booking option
1/01/2022	No data	No data	Failed

<u>Documentation</u>

Implementation:

The implementation phase of the project has by far been the most challenging of the phases of this project. Many hopes and dreams were shattered. Because of the significant time constraint, many functions that initially seemed trivial to implement became very time consuming to implement. Below is a list of features & functions that we intended to implement.

Features of the Project

Online Admin Dashboard
Home, Schedule, Booklist, Maintenance, Bust list, Location List, User, Manage Account.

Schedule
Show Entries, Search, Id Numbers, Date, Bus, Location, Departure, ETA, Availability, Price,

Action, Delete, and Edit.

Booked List
ID Number, Ref Number, Full Name, Quantity, Amount, Status, Show Entries, Search, and Edit.

Bus List
ID Number, Bus Number, Bus Name, Show Entries, Edit, Delete, and Search.

Location List
ID Number, Terminal, City, Province State, Show Entries, Edit, Delete, and Search.

User
ID Number, Name, User Name, Edit, Delete, Show Entries, and Search.

User Dashboard Schedule
ID Number, Date, Bus, Location, Departure, ETA, Availability, Price, Book, Show Entries, and

Search.

Functions

1. User functions

    I.   Booking

    II.   Select Schedule

2. Server functions

    I.   User functions

    II.   select order from list of existing orders

    III.   add items to existing order

    IV.   remove items from existing order

    V.   create new order

    VI.   close order

    VII.   total price of order (automatic)

3. Admin functions

    I.   User functions

    II.   Server functions

    III.   Manage User

    IV.   Add an admin

    V.   Remove an admin

    VI.   Edit bus schedule

    VII.   Edit location

    VIII.   Change name

    IX.   Change id

X.   Edit payment method

XI.   Add new location

XII.   Remove location

XIII.   Add new bus

XIV.   Change bus name

XV.   Remove bus

XVI.   Change ticket price

Database Table Design: - This module is consisting the different tables that are being utilized by the system. While designing the database records for the system proper care has been taken for not allowing the duplicate records and unnecessary redundancy of data.

Table 1 : booked

	id	schedule_id	ref_no	name	qty	status 1=Paid, 0- Unpaid	date_updated
Edit Copy Delete	1	1	202009091727	Mr Chowdhury	1	1	2022-01-03 00:29:25
Edit Copy Delete	2	1	202009091626	Sample	2	0	2020-09-09 09:34:28
Edit Copy Delete	3	1	202009099953	Mr Alam	27	0	2022-01-03 00:29:57
Edit Copy Delete	4	2	202201023837	Rahim	2	1	2022-01-03 00:29:31

Table 2 : bus

	id	name	bus_number	status 0 = inactive, 1 = active	date_updated
Edit Copy Delete	3	Green Line	5001	1	2022-01-03 00:07:59
Edit Copy Delete	4	Shohag	5000	1	2022-01-03 00:08:07
Edit Copy Delete	5	S. Alam	5003	0	2022-01-03 21:25:49

Table 3 : location

			id	terminal_name	city	state	status 0= inactive , 1= active	date_updated
☐	✏ Edit	⌗ Copy	⊝ Delete	1	Bohoddarhat Bus Terminal	Chittagong	Sample	1	2022-01-03 00:05:39
☐	✏ Edit	⌗ Copy	⊝ Delete	2	Dampara	Chittagong	Sample	1	2022-01-03 00:06:32
☐	✏ Edit	⌗ Copy	⊝ Delete	3	Dhaka Bus Terminal	Dhaka		1	2022-01-03 00:06:59
☐	✏ Edit	⌗ Copy	⊝ Delete	4				1	2022-01-03 21:23:38

Table 4 : schedule_list

+ Options

			id	bus_id	from_location	to_location	departure_time	eta	status	availability	price	date_updated
☐	✏ Edit	⌗ Copy	⊝ Delete	1	4	1	1	2022-01-03 01:00:00	2022-01-03 06:00:00	1	30	250	2022-01-03 00:19:48
☐	✏ Edit	⌗ Copy	⊝ Delete	2	3	2	1	2022-01-03 00:20:00	2022-01-03 07:00:00	1	31	250	2022-01-03 21:27:21

Table 5: users

			id	name	user_type 1 = admin, 2= faculty , 3 = student	username	password	status 0 = incative , 1 = active	date_updated
☐	✏ Edit	⌗ Copy	⊝ Delete	1	Administrator	1	admin	admin	1	2021-12-28 01:58:04
☐	✏ Edit	⌗ Copy	⊝ Delete	2	Ahmed Jaser Mahdi	1	Jaser	admin	1	2021-12-28 01:58:42
☐	✏ Edit	⌗ Copy	⊝ Delete	3	Arif Hasnat	1	Arif	admin	1	2021-12-28 01:59:48
☐	✏ Edit	⌗ Copy	⊝ Delete	4	Samir Raihan	1	Samir	admin	1	2021-12-28 02:00:01
☐	✏ Edit	⌗ Copy	⊝ Delete	5	Jaser	1	Jaser	123456	1	2022-01-03 20:57:08
☐	✏ Edit	⌗ Copy	⊝ Delete	6	Arif Hasnat	1	Arif	admin	0	2022-01-03 21:00:57

↑ ☐ Check all   With selected: ✏ Edit   ⌗ Copy   ⊝ Delete   ▤ Export

USER INTERFACE DESIGN

Because of the nature of our project, an intuitive graphical user interface is required. The user interface design was made by:

**Language Used**: PHP

Database Used: MySQL

**Design Interface**:   Bootstrap JavaScript, HTML, Ajax, JQuery

The button on the middle is for user to book ticket. On the top right side, there are two button named home and schedule. The home button is for homepage. The schedule is for viewing bus schedules.

Homepage

Select Schedule

Confirm Ticket

Online Ticket

Admin Interface

Login

Schedule

# ▲	Date	Bus	Location	Departure	ETA	Availability	Price	Action
1	Jan 03, 2022	5001	Green Line	Dampara , Chittagong, Sample - Bohoddarhat Bus Terminal, Chittagong, Sample	12:20 AM	07:00 AM	30	250	Edit Delete
2	Jan 03, 2022	5000	Shohag	Bohoddarhat Bus Terminal, Chittagong, Sample - Bohoddarhat Bus Terminal, Chittagong, Sample	01:00 AM	06:00 AM	30	250	Edit Delete

Show 10 entries   Search:

Add New +

Showing 1 to 2 of 2 entries   Previous 1 Next

Add New Schedule

Edit Schedule

Booked List

Bus Booking Management System   Home   Schedule   Booked List   Maintenance ⌄   Administrator ⌄

Show 10 ⌄ entries   Search: [   ]

# ▲	Ref. No. ⇕	Name ⇕	Qty ⇕	Amount ⇕	Status ⇕	Action ⇕
1	202009091727	Mr Chowdhury	1	250	Paid	Edit
2	202009099953	Mr Alam	27	6750	Unpaid	Edit
3	202201023837	Rahim	2	500	Paid	Edit
4	202009091626	Sample	2	500	Unpaid	Edit

Showing 1 to 4 of 4 entries   Previous   1   Next

Bus List

Bus Booking Management System   Home   Schedule   Booked List   Maintenance ⌄   Administrator ⌄

Add New +

Show 10 ⌄ entries   Search: [   ]

# ▲	Bus No. ⇕	Bus Name ⇕	Action
1	5000	Shohag	Edit Delete
2	5001	Green Line	Edit Delete
3	5003	S. Alam	Edit Delete

Showing 1 to 3 of 3 entries   Previous   1   Next

Add New Bus

Edit Bus Name & No

Location

Add New Location

Administration

Edit Admin List

Summary:

This project is about designing a Bus Transportation System. In this project, we made a website by using PHP as the scripting language, HTML, CSS , JS and we used XAMPP for local host..The webpage has different options for a user to select his/her desired destination and bus. By using some simple steps, a user can easily book a bus ticket for any given location. Although, there are some bugs in the whole process but it run smoothly.