

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

| - | | | D |
|------------------------------------|---|---|------|
| Type invalid User name and type | Admin1 Display error message "Incorrect | | Pass |
| correct password then click log in | admin | username or password." | |
| button | | After pressing OK button, set cursor | |
| | | focus to Username input box. | |
| Type valid User name and keep | admin | Display error message | Pass |
| password empty then click log in | | "Incorrect username or | |
| button | | password " | |
| Type valid User name and invalid | admin | Display error message | Pass |
| password then click login | | "Incorrect username or | |
| button | 5456456 | password. "Set focus on | |
| | | password field | Pass |
| Keep both user name and | | Display error message "Incorrect username or password." After | Pd55 |
| password empty and click login | | pressing OK button, set cursor focus | |
| button | | to username input box. | |
| | | , and a second | |
| Type both user name and | adminn | Display error message "Incorrect | Pass |
| password invalid and click login | adddminnn | username or password." | |
| button | | After pressing OK button, set cursor | |
| | | focus to Username input box. | |
| Keep user name blank and type | - | Display error message "Incorrect | Pass |
| correct password and click login | admin | username or password." | |
| button | | After pressing OK button, set cursor | |
| | | focus to Username input box. | |
| Keep user name blank and type | | Display error message "Incorrect | Pass |
| | _ | | rass |
| incorrect password and click | Admin1233 | username or password." | |
| login button | | After pressing OK button, set cursor | |
| | | focus to Username input box. | |
| | 1 | <u> </u> | |

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 |

Documentation

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

<u>Database Table Design:</u> 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

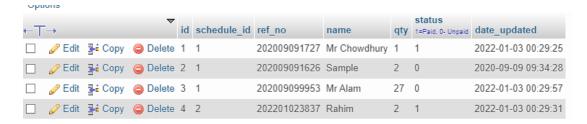


Table 2: bus

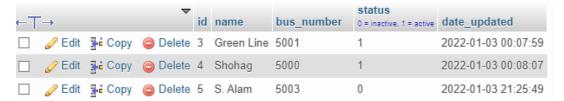


Table 3: location



<u>Table 4 : schedule_list</u>



Table 5: users



USER INTERFACE DESIGN

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

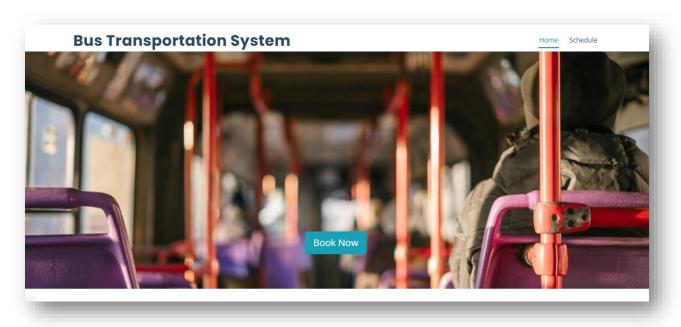
Language Used: PHP

Database Used: MySQL

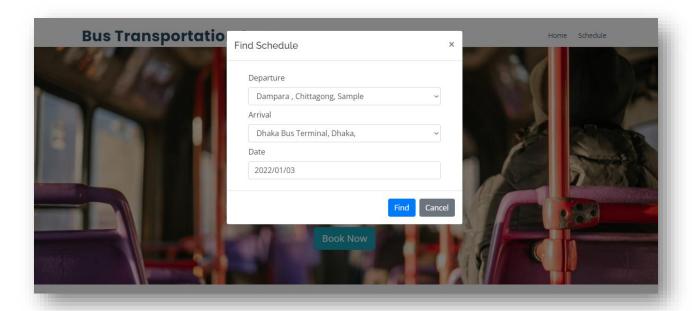
Design Interface: Bootstrap JavaScript, HTML, Ajax, JQuery

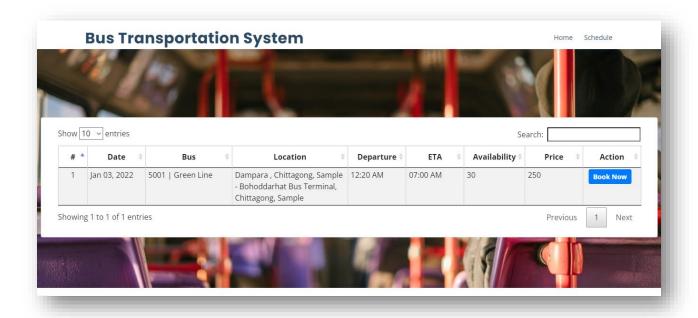
The button on the middle is for user to book ticket. On the top right side, there are two button named home and schedule. The home button is for homepage. The schedule is for viewing bus schedules.

Homepage

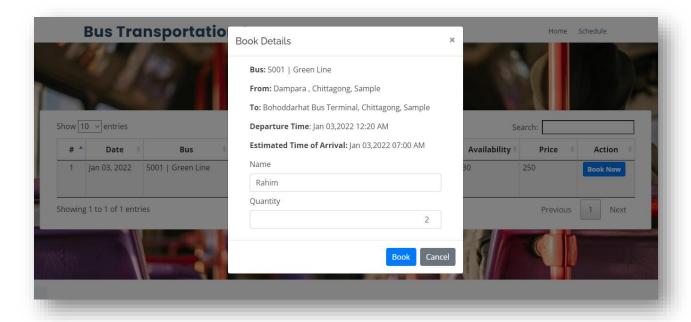


Select Schedule

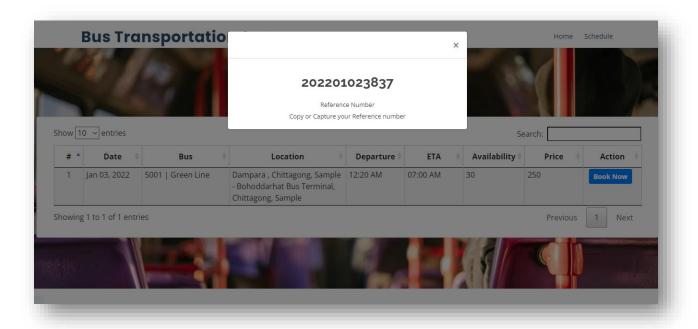




Confirm Ticket

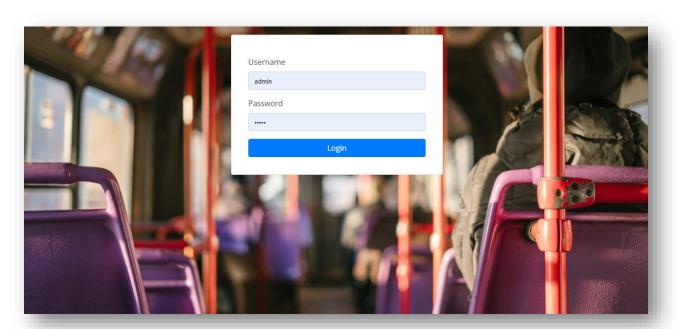


Online Ticket



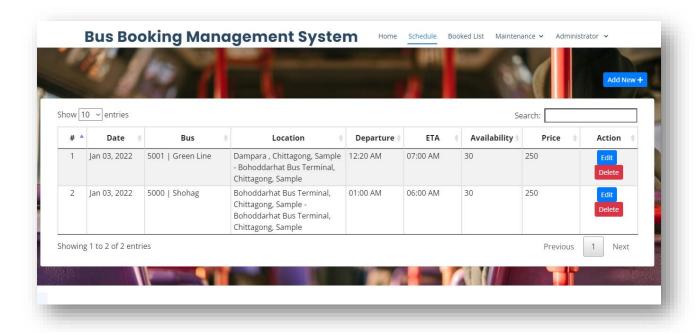
Admin Interface

Login

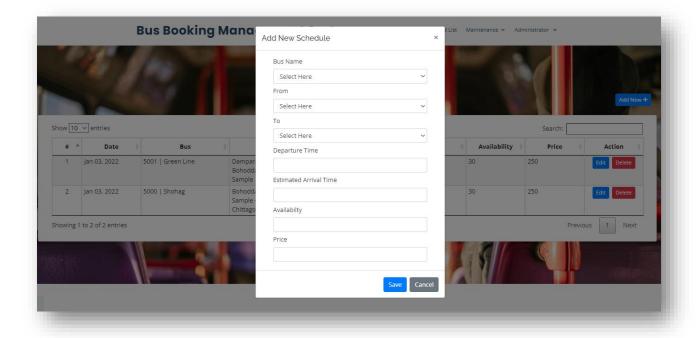


Schedule

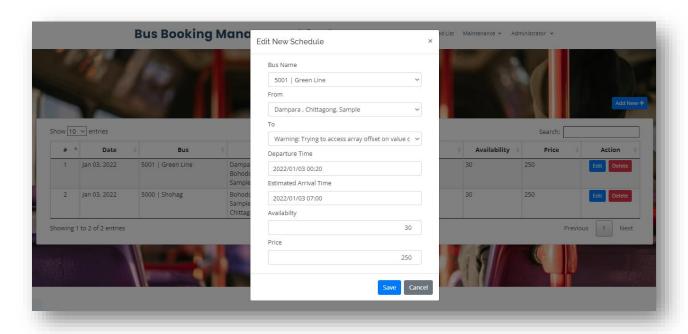




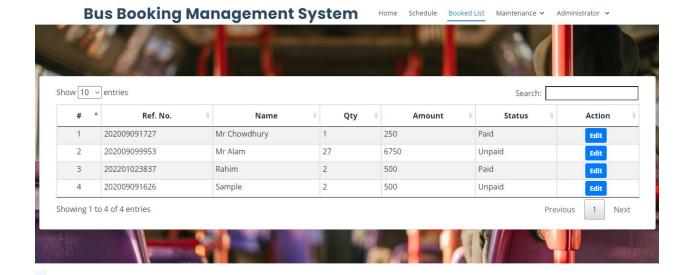
Add New Schedule



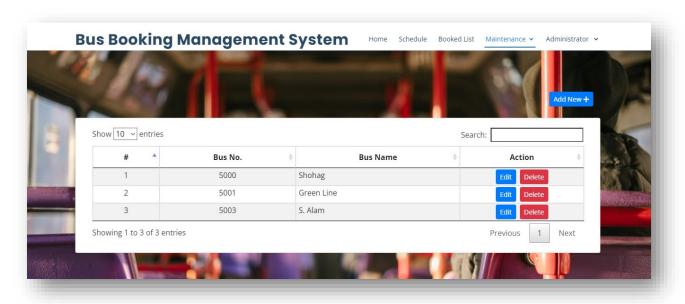
Edit Schedule



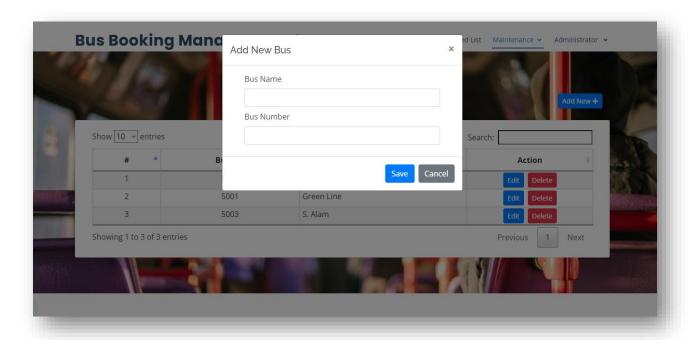
Booked List



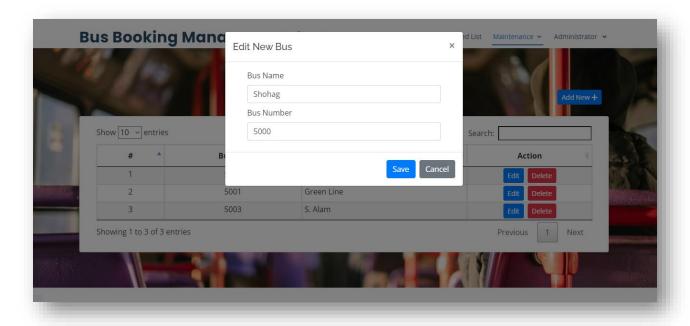
Bus List



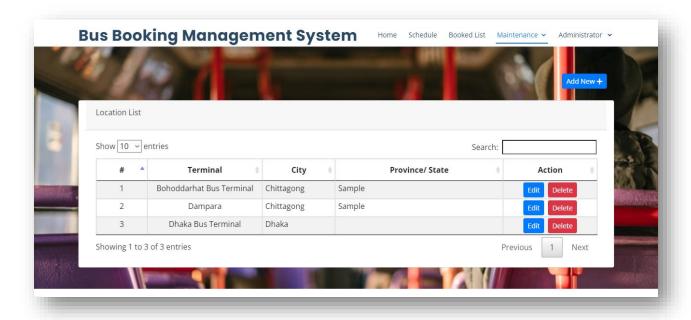
Add New Bus



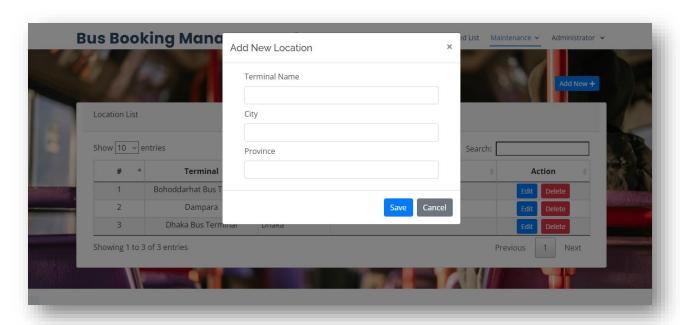
Edit Bus Name & No



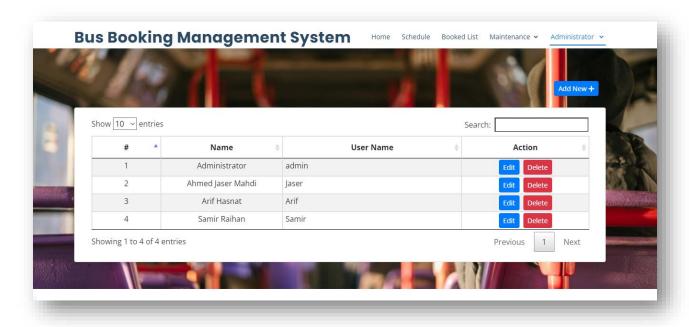
Location



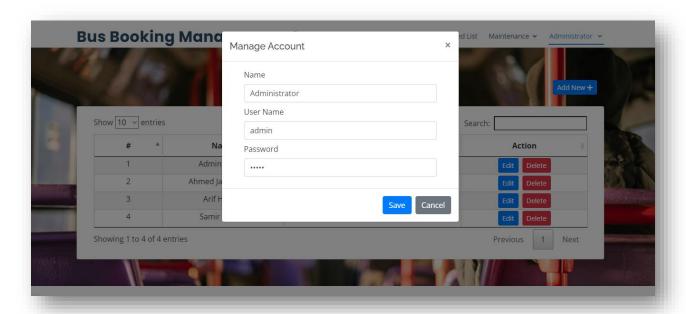
Add New Location



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.