

# Online Bus Ticket Reservation System

CS814 Course Project Report

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# Abstract

Online Bus Ticket Reservation System is currently is used every traveller to book advance ticket using online application. Security is main concern in this type of application. This application contains different types of users like user to book tickets, user who administers the application etc. These users have different functionality in this application. To add different functionalities and should not be able to access functionality of other users we need to build a good strong security policy. In this application we implemented RBAC policy which is based on role-permission thing which is suitable of out application.

**Keywords:** RBAC, Role-permission, security policy.

# 1 Introduction to Application

Online Bus Ticket reservation System is one of the ease way to reserve bus ticket. This application will help user to compare and buy ticket online according to user convenience.

## 1.1 Ticket Reservation System

Online Bus Ticket Reservation System is build to be intermediary between user (who wants to travel through bus) and Travel agencies (who want to sell bus ticket online). This Application will display different travel agencies buses schedule and type of buses (like AC, non-AC) from different cities. User will able to pick any type of bus according to user's destination on any date he wants to visit. Also this platform contains many travel company ,so user is able to compare and book ticket of any bus as per users convenience.

Now for travel agency, application will provide different features for travel agency too. To avail this features travel agency have to assign one agent from there side who can access this features. This agent is varified and added by administration of the application. The agent have to schedule a buses from their agencies every day.

## 1.2 Types of Users and thier functionalities

The Online Bus Ticket reservation System have 3 types of user:

1. **Application User**
2. **Travel Agency Agent**
3. **Admin**

Lets see the Functionality of each user one by one

- **Application User:** Application User when first time visit this application then he have to create new account to enter into application. or else he have just sign in into application through required credentials. After login he could search bus by providing source, destination and date. This information will provide user details

about different agencies buses on that day. Details will include price, number of seats, type of bus (AC, Non-Ac). User now will be able to choose bus from this option and be able to book his ticket for that bus according to his choice.

- **Travel Agency Agent:** The main functionality of this agent is to schedule a bus or add new bus whenever required. This agent will work for his travel agency by adding new buses in application. Added bus will go directly into system database and will be displayed whenever bus is searched. These agents are verified and added by admin only.
- **Admin:** Main functionality of admin is to run application error free. For this special powers are given to Admin. Admin has power to add permissions to all kind of user exist on the application. Permission like normal cannot access add bus section are given to admin. Also admin is the one who can add agent after verification of him from respective travel agency.

## 2 Authorization

Online Bus Ticket Reservation System have 3 types of users as mentioned in above section. Although there are 3 users we are using single login page for all this users. First stage of security is done through Authentication in login page by comparing credentials on Login page with database. After successful login next step of security is Authorization. As we have 3 different type of users we used RBAC policy to implement Authorization

### 2.1 Need of RBAC based Authorization

Online Bus Ticket Reservation System have following type of hierarchy

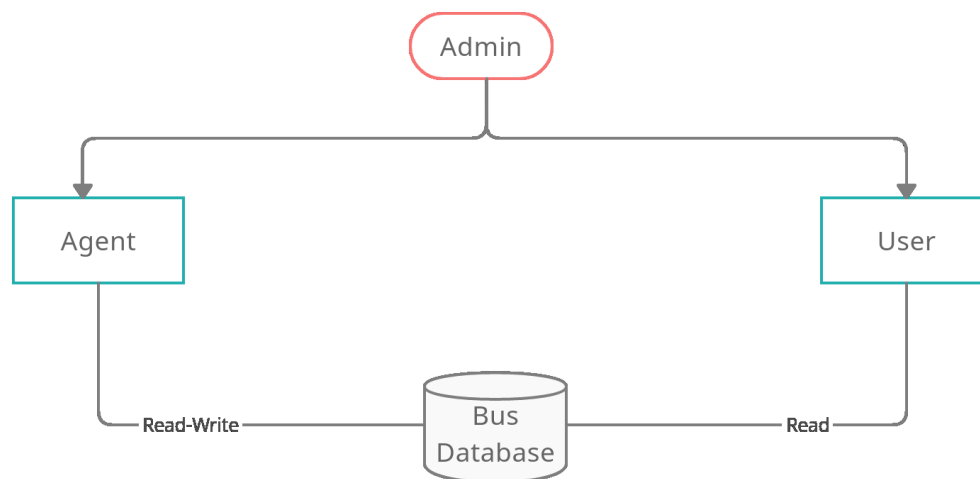


Figure 1: Application User hierarchy

From the above hierarchy we can see that security should be provided to access the database. We must provide certain permission to every user to access the database for his functionality. We know that RBAC is Role based policy where access is given to every user according to role assigned to that user. In this application we have 3 types of roles and we need to assign permission to each role. So RBAC is perfect security policy we should implement for this application.

## **2.2 Components of RBAC in Application**

Online Bus Ticket Reservation System Database is implemented on MySQL database which is relational database management system. In this we have include 3 tables namely "routes", "users", "bookings".

In this Online Bus Ticket Reservation System we have mainly 2 tables where we have to add access permission which is routes and users.

In users table, all user info with their roles are given. Whenever their is new user in the application, automatically user role is given to that user after successful registration is done through SignUp. Also their is agent role in users table which is for travel agents. This travel agent are only added by admin. This is one of the permission we have to give to admin according RBAC. There is only one admin so its already set in users database and this role cannot be shared.

Main issue routes table, where different permission are given to different users. For assigning this permisssions we have to create one more table in database called permission, and access for this table is for only admin role. For this permission table we created 2 column role and permission. According to RBAC it is Role-Permission Assignment component. There is one more component in RBAC which is User-Role Assignment, but in this application we have only one role to each user so for this application we dont need this component of RBAC.

## **2.3 Administrive model components**

We have to implement Role-Permission assignment of RBAC for our application. We have Following roles in our application.

Roles: User, Agent, Admin.

Now we will what different permission we have to assign to each of this role. For this we have considered following permissions.

Permissions:



1. booking- to book a ticket.(write on booking table)
2. search- to search a bus.(read on routes table)
3. add\_bus- to add new bus.(write on routes table)
4. buses- to see all buses in database.(read on routes table)

From above role and permissions we created Role-Permission assignment component as follows

role	permsn
agent	add_bus
agent	buses
user	bookings
user	search

Figure 2: Role-Permission assignment component

## 2.4 Implementation of Authorization

This RBAC policy is implemented using Role-permission assignment component. After successful login each user will see following pages according to this component.

As you can see user (first image) webpage have booking and search menu on top left. That are the permission given by RBAC. Also for agent (2nd image) add bus and buses menu is there as per permission given. admin have add agent, user, agent, permission menu which are predefine permission of admin.

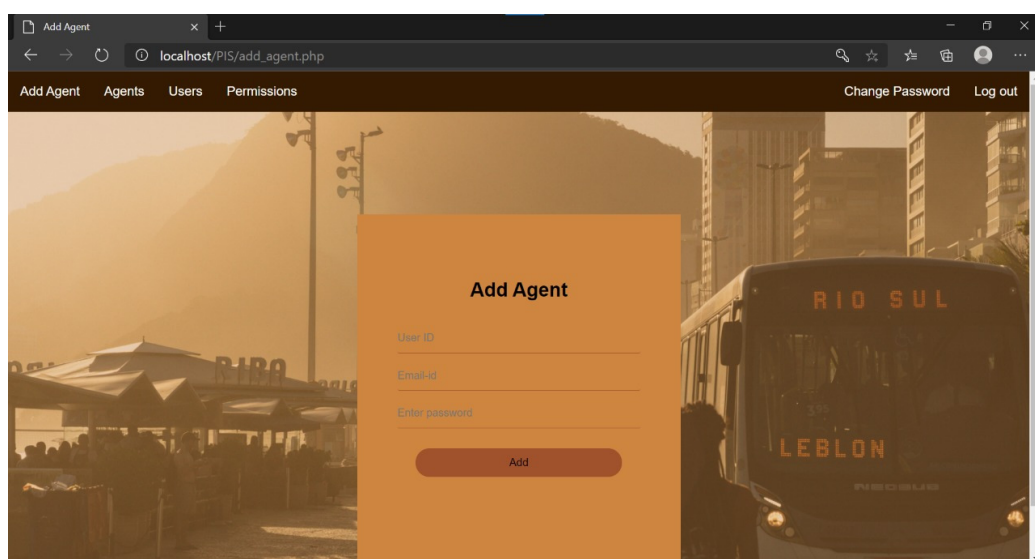
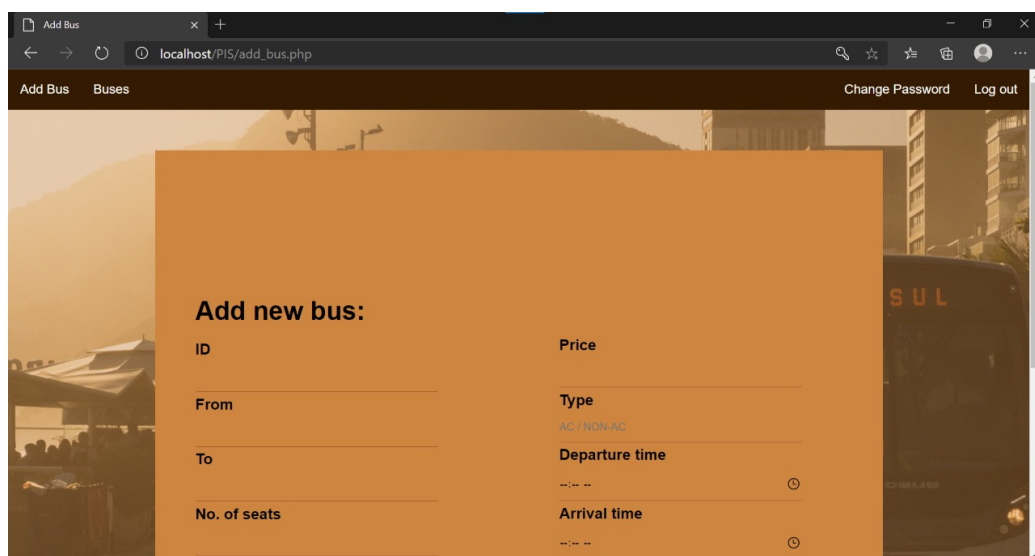
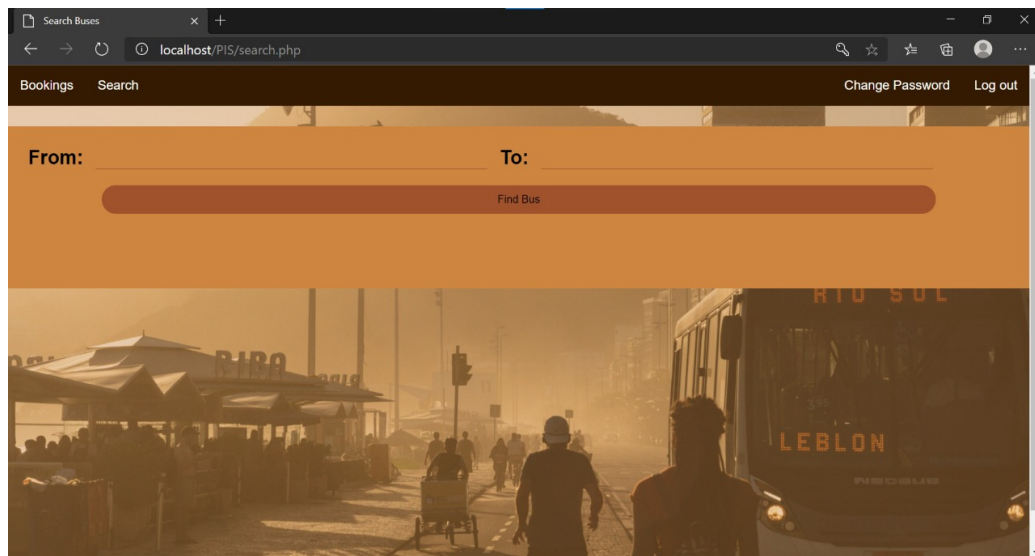


Figure 3: Implementation 1.user 2.agent 3.admin

### **3 Conclusion and Future work**

Online Bus Ticket Reservation System is currently is used every traveller to book advance ticket using online application. To make user work easy to find best deal or to plan a trip this application brought multiple travel agencies together on same platform. Because of this their might be chance of voilation of security laws by using users private info by other means. This cause to implement stronger security system for authorization such as RBAC. In this application we successfully implemented RBAC policy. Future work maybe implement the same for transaction at the end of the application which is not done in this application.