

APPLICATION DESIGN DOCUMENT

National Parks Management System(NPMS)

By: Abhishek Josyula

UMD email ID:ajosyula@umd.edu

Table of Contents

1) Introduction	3
1.1 Purpose.....	3
1.2 Scope.....	3
2) Architectural Design.....	4
2.1 System Design	4
2.2 Database Design.....	4
2.3 Internal Component Design	6
2.4 Security Functionality	7
3) Testing	7

List of Figures

Figure 1: System Design.....	4
Figure 2: Data Flow Diagram	5
Figure 3: Interface Design	6

1) Introduction

This application design document is going to provide an architectural blueprint for National Parks Management System (NPMS). All the functionalities are discussed in detail here and how they are going to be met.

1.1 Purpose

The application design document is going to illustrate all the designs and standards of NPMS. This document is intended to help the developers, document personnel and the testers working on this application.

1.2 Scope

The NPMS application assists customers to view details about national parks like holidays, timings, how to reach, activities currently going on in national parks. The NPMS is designed to help customers to purchase parking passes online allowing them to skip the long queues at the entrance and can also buy individual passes if customers are arriving by walk. NPMS also allows regular customers to buy subscriptions and based on the subscription they would be getting discounts on parking passes, entrance fees and various events. The application has an Admin actor who has the highest level of access to manage the whole application and people who are registered with the application.

2) Architectural Design

2.1 System Design

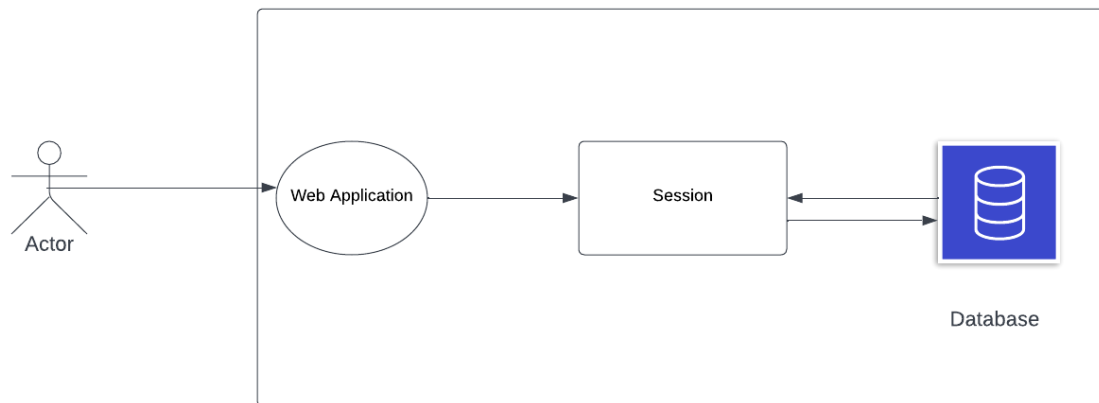


Figure 1: System Design

Customer/User is going to be interacting with the NPMS web application interface. The system is going to provide all functionalities which are accessible as roles defined in the Software Requirements Specification(SRS). Any required data is going to be fetched from database.

2.2 Database Design

Following are the tables of database:

1. Users
2. Subscription Details
3. Roles
4. Park Details

Users

Field Name	Type
UID	int
fname	string
lname	string
Date_of_Birth	date
email	string
contact	string
password	string

Subscription Details

Field Name	Type
Subscription ID	int
Subscription Type	string

Roles

Field Name	Type
UID	int
Role id	Int

Park Details

Field Name	Type
Park Name	string
Park ID	int
Park Description	String

Event Details

Field Name	Type
Event Name	string
Event Id	int

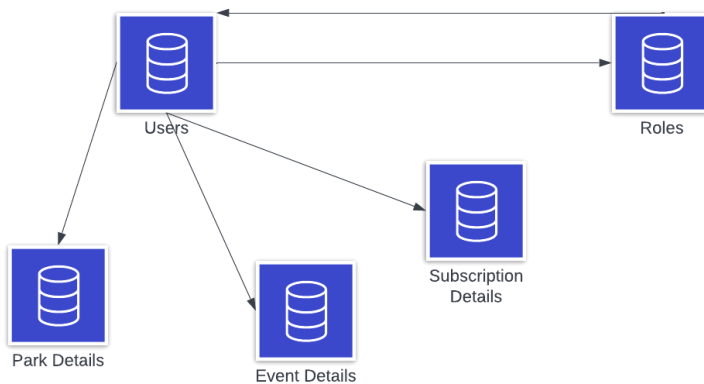


Figure 2: Data Flow Diagram

2.3 Internal Component Design

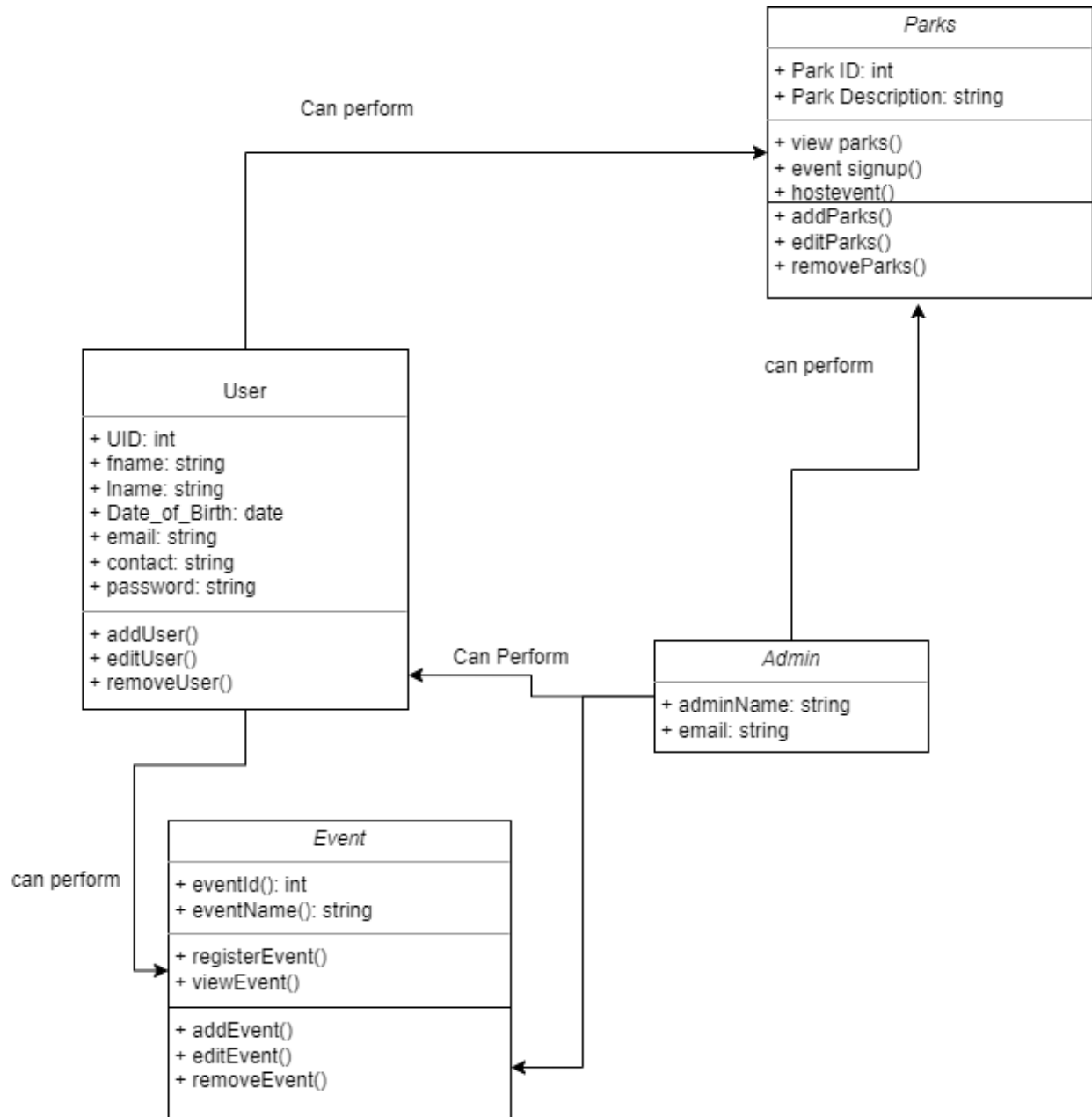


Figure 3: Interface Design

2.4 Security Functionality

- The application has several security functionalities that prevent attackers from attacking the application.
- Implement proper logging mechanism so that in the case of an incident the security team will be able to respond as quickly as possible before the situation gets out of hand.
- Ensuring the flow of traffic between the application and the internet is encrypted.
- Ensuring that there are no open sensitive ports which are accessible from outside.
- Implementing input sanitization to prevent from attacks like SQL injection, XSS, Regex DoS etc..
- The passwords stored in the database will be in the encrypted using secured hashing algorithms format rather storing them in the plain text format
- Implementing principle of least privilege to prevent attacks like privilege escalation.
- Implementing Session handling to handle sessions properly and ensuring that application creates, maintains and destroys session tokens properly over life-cycle of a user'

3) Testing

- A valid user with valid login credentials only can login into the system
- An invalid user cannot login into the application
- A new customer can sign up with valid credentials
- A logged in customer can sign up for events
- A logged in customer can host events
- Checking password lengths based on password policy
- Admin can add or update details of park details
- Admin can maintain access of users
- A valid user can logout successfully
- A valid user can buy parking passes
- Any customer can view details of national parks when accessed the application.