A

PROJECT REPORT
ON

PETOPIA: A PET ADOPTION WEB APPLICATION

Submitted in partial fulfillment for the award of

Post Graduate Diploma in Advance Computing

(PG-DAC) from

INSTITUTE OF EMERGING TECHNOLOGIES

Authorized Training Centre

Under the Guidance of

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CERTIFICATE

This is to certify that the project report entitled **PETOPIA: A PET ADOPTION WEB APPLICATION** is a bonfire work carried out by **Rutu Chowgule, Shreyas Narlawar, Parul Singh, Omkar Totre, Mitali Patil** and submitted in partial fulfilment of the requirement for the C-DAC ACTS, DAC course in Institute of Emerging Technology in the batch of Aug 2024.

Course Coordinator **External Examiner**

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This project **Petopia: A Pet Adoption Web Application** was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC).

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Abstract

Petopia is an innovative online platform that makes pet adoption easier and more accessible by directly connecting pet owners with individuals looking to adopt. Instead of relying on shelters or third-party agencies, Petopia allows pet owners to create detailed profiles for their pets, including photos, descriptions, and key information such as age, breed, and temperament. Prospective adopters can browse through available pets, filter based on their preferences, and directly reach out to pet owners for more details. This direct interaction ensures transparency, helping adopters make informed decisions while allowing pet owners to find the best possible homes for their pets.

Beyond simply listing pets, Petopia fosters a community-driven approach to adoption. The platform encourages responsible rehoming by facilitating open communication between users, ensuring both parties can discuss pet needs, expectations, and adoption arrangements before making a decision. By eliminating unnecessary barriers and middlemen, Petopia streamlines the adoption process, making it faster and more efficient. With a user-friendly interface, a seamless communication system, and a focus on ethical pet rehoming, Petopia is transforming the way people connect and find loving homes for pets in need.

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1. Introduction

Pet adoption is often a complex and time-consuming process, with many individuals struggling to find reliable platforms that facilitate direct and transparent interactions between pet owners and adopters. Traditional adoption methods often involve lengthy procedures, limited availability of information, and barriers to communication, making it difficult for pets to find suitable homes efficiently. Recognizing these challenges, Petopia was developed as a full-stack web application to simplify and enhance the pet adoption experience. By leveraging technology, Petopia connects pet owners looking to rehome their pets with potential adopters in a streamlined, user-friendly manner.

Petopia aims to provide a secure, scalable, and efficient platform that fosters a community-driven approach to pet adoption. Built with a React frontend, C# ASP.NET Core backend, and SQL Server database, the system allows users to register, authenticate, and manage pet profiles while ensuring transparency in the adoption process. Key features include image uploads, filtering options, and location-based search, enabling users to find pets that match their preferences quickly. The backend employs RESTful API endpoints to facilitate seamless data retrieval, while an MVC architecture ensures maintainability and scalability. By prioritizing usability, security, and accessibility, Petopia not only simplifies adoption logistics but also strengthens the bond between pet owners and adopters, ensuring pets find loving homes efficiently.

2. Problem Definition & Scope

2.1 Problem Definition

The pet adoption process often lacks efficiency, transparency, and accessibility, making it difficult for pet owners to rehome their pets and for adopters to find suitable companions. Traditional adoption methods involve lengthy paperwork, limited communication channels, and a lack of real-time information, leading to delays and unsuccessful adoptions. Many existing platforms focus on shelter-based adoptions, leaving private pet owners with limited options to responsibly rehome their pets. Additionally, scattered and unreliable listings across various platforms make it challenging for adopters to find accurate and up-to-date pet profiles. There is a clear need for a centralized, user-friendly, and community-driven platform that enables direct interaction between pet owners and adopters, ensuring a more transparent, efficient, and responsible pet adoption process.

2.2 Goals & Objectives

The primary goal of this project is to bridge the communication between donors and adopters by providing an efficient, technology-operated solution. Major objectives include:

- To streamline the pet adoption process by providing a centralized and user-friendly platform for pet owners and adopters.
- To enhance transparency and trust in pet rehoming by enabling direct communication between users.
- To ensure responsible pet adoption by offering a secure and structured platform for listing and browsing pets.
- To leverage technology to simplify pet profile management, search, and communication.
- To promote community-driven adoption, reducing reliance on shelters and third-party agencies.
- Implement secure user authentication for registration, login, and profile management.
- Enable pet profile management, allowing users to add, update, and delete listings.

- Provide image upload functionality, storing images efficiently while maintaining database references.
- Implement location-based data and contact information display for seamless communication.
- Ensure data security and access control, restricting profile modifications to pet owners only.
- Develop a RESTful API for efficient frontend-backend communication.
- Optimize system performance, scalability, and usability for a seamless user experience.

2.3Major Constrains And Outcomes

Major Constrains

- **User Access Control:** Restricting pet profile modifications and deletions to their respective owners while maintaining platform integrity.
- **Regulatory Compliance:** Adhering to relevant data protection laws and pet adoption regulations where applicable.

Expected Outcomes

- Fully functional web application that simplifies pet adoption by enabling direct user interactions.
- A secure and intuitive user authentication system that protects user data while allowing easy access.
- A dynamic pet profile management system where owners can add, update, and remove listings seamlessly.
- An efficient image upload and retrieval mechanism integrated into pet profiles.
- A filtering and search feature that allows adopters to quickly find pets matching their preferences.
- A transparent and community-driven platform that fosters trust and responsible pet rehoming.
- A scalable and well-structured system capable of handling growth in users and pet listings over time.

3. Software Requirement Specification

3.1 Purposed System

The proposed system, Petopia, is a full-stack web application designed to facilitate seamless pet adoption through direct user interactions. The platform is developed using a React frontend for a responsive and dynamic user experience, a C# ASP.NET Core backend for efficient processing and business logic, and a SQL Server database for secure and scalable data management. The system includes user authentication, pet profile management, image uploads, filtering to enhance adoption efficiency. A RESTful API enables smooth communication between the frontend and backend, while secure authentication and role-based access control ensure that only pet owners can modify their listings. The application is designed to be scalable, secure, and user-friendly, providing an intuitive interface, optimized search capabilities, and efficient data retrieval to enhance the overall pet adoption experience.

3.2 Scope

- **User Authentication & Management:** Secure registration, login, and profile management for pet owners and adopters.
- **Pet Profile Management:** Users can create, update, and delete pet listings, including images and key details (breed, age, location, etc.).
- **Image Upload & Storage:** Pet images are uploaded and stored efficiently in the backend with database references for easy retrieval.
- **RESTful API Integration:** Ensures smooth data exchange between the frontend and backend for real-time updates.
- **Access Control & Security:** Role-based access restrictions to ensure only pet owners can modify their listings, with secure user authentication.
- **Scalability & Performance Optimization:** The system is designed to handle increasing users, pet listings, and image uploads without performance issues.
- **Cross-Platform Compatibility:** Accessible across various devices and browsers for a seamless user experience.
- **Community-Driven Adoption Approach:** Encourages responsible pet rehoming by providing a transparent and trustworthy adoption platform.

4. System Modules

The Petopia system consists of multiple modules that work together to provide a seamless pet adoption experience, including user management, pet profile management, image handling, and administrative controls. The system is designed with a user-friendly interface and a robust backend, ensuring smooth interaction between pet owners, adopters, and administrators.

User Management Module
This module handles user authentication, registration, and profile management.

Features:
- User Registration & Login
- Secure Authentication
- User Profile Management

Pet Image Upload & Management Module
This module enables pet owners to upload and manage images of their pets.

Features:
- Upload Pet Images
- View & Retrieve Pet Images
- Image Optimization & Storage Management

Admin Panel Module
This module provides administrators with full control over the system.

Features:
- User Management
- Pet Profile Moderation

5. Performance-Requirements

5.1.1 Hardware Requirements

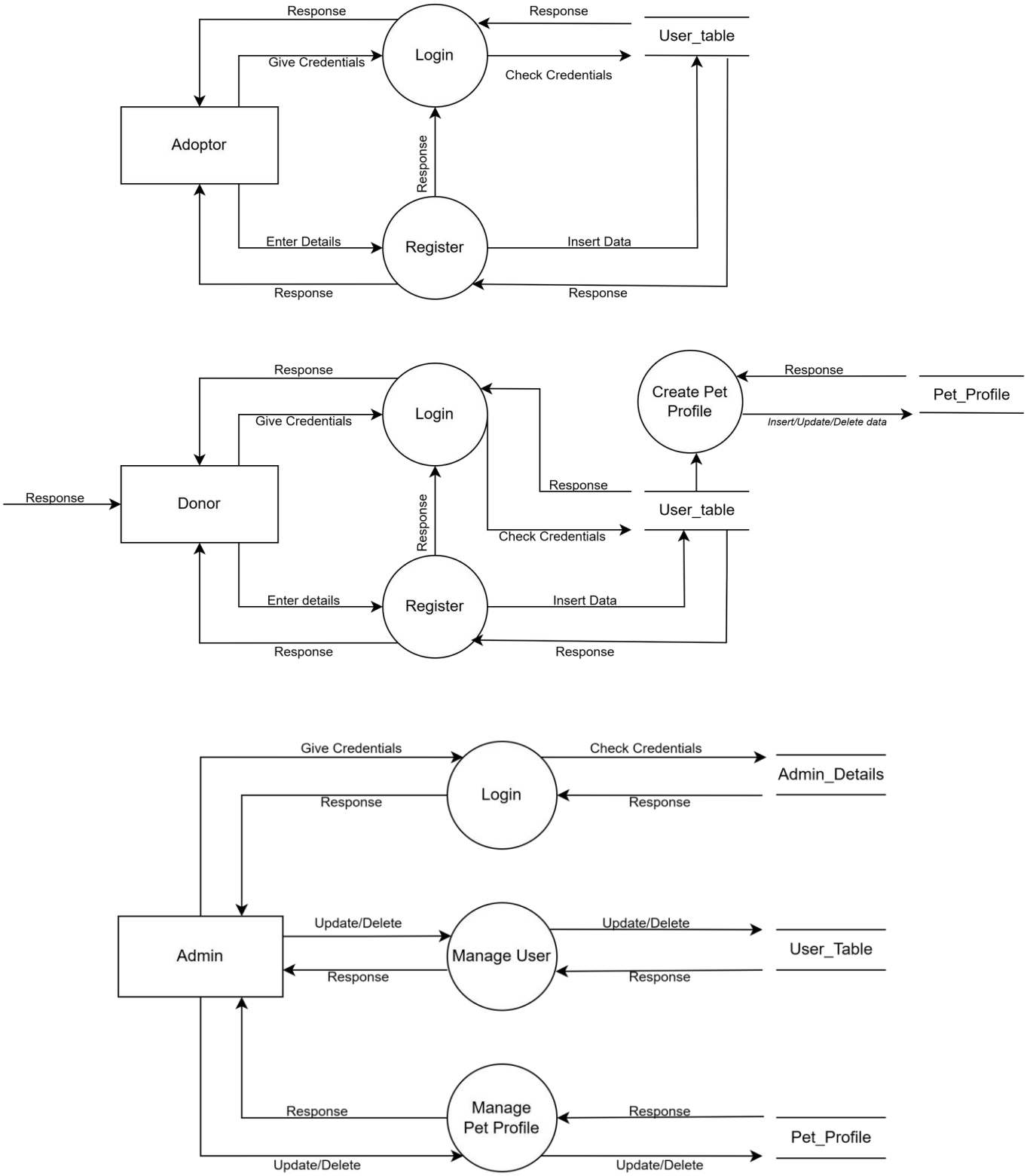
Component	Minimum Requirement
Processor (CPU)	Intel Xeon Quad-Core or higher
RAM	4 GB or more
Storage (HDD/SSD)	256 GB SSD or higher
Operating System	Windows 7 and Above
Internet Connectivity	High-speed broadband (50 Mbps or more)
Web Browser	Chrome, Firefox, Edge (Latest Versions)
Database Server	MySQL / MS SQL
Cloud Hosting (Optional)	AWS (EC2 Instance),RDS(DataBase)

5.1.2 Hardware Requirements

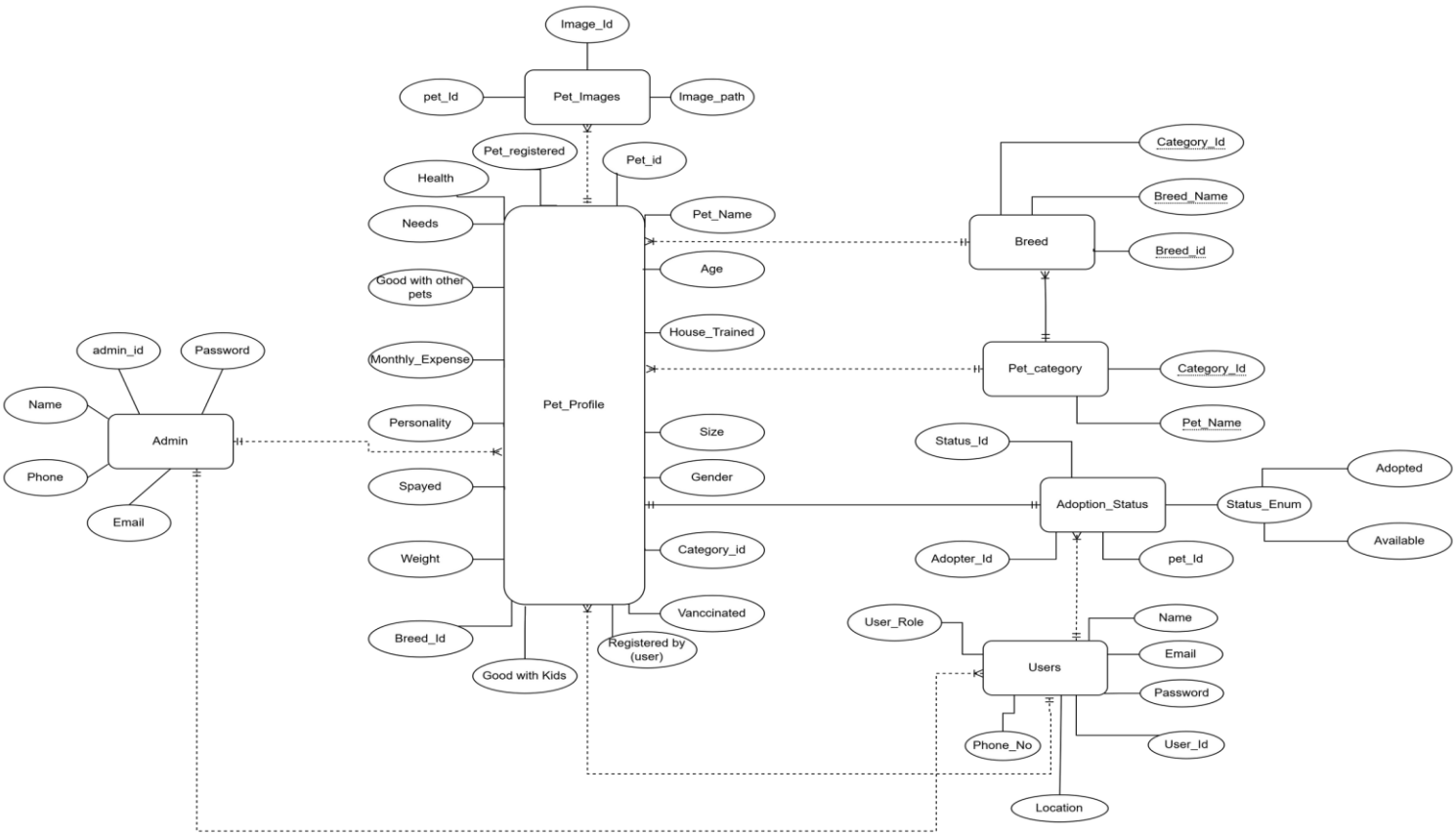
Component	Minimum Requirement
Operating System	Windows Server
Programming Languages	.NET Core Web API
Database	MySQL/ MSSQL Server
Web Technologies	React.js,HTML,CSS,Javascript
Backend Frameworks	ASP .NET CORE/Entity Framework
API Services	RESTful APIs
Development Tools	Visual Studio 2022, VS Code
Cloud/Hosting Services	AWS

1. UML Diagrams

1.1 DFD



1.2ERD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Needs
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Age
Good with other pets
House_Trained
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Personality
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Spayed
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Breed_Id
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Breed_Name
Breed
Breed_id
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Pet_Name
Status_Id
Adopted
Adoption_Status
Status_Enum
Available
Adopter_Id
pet_Id
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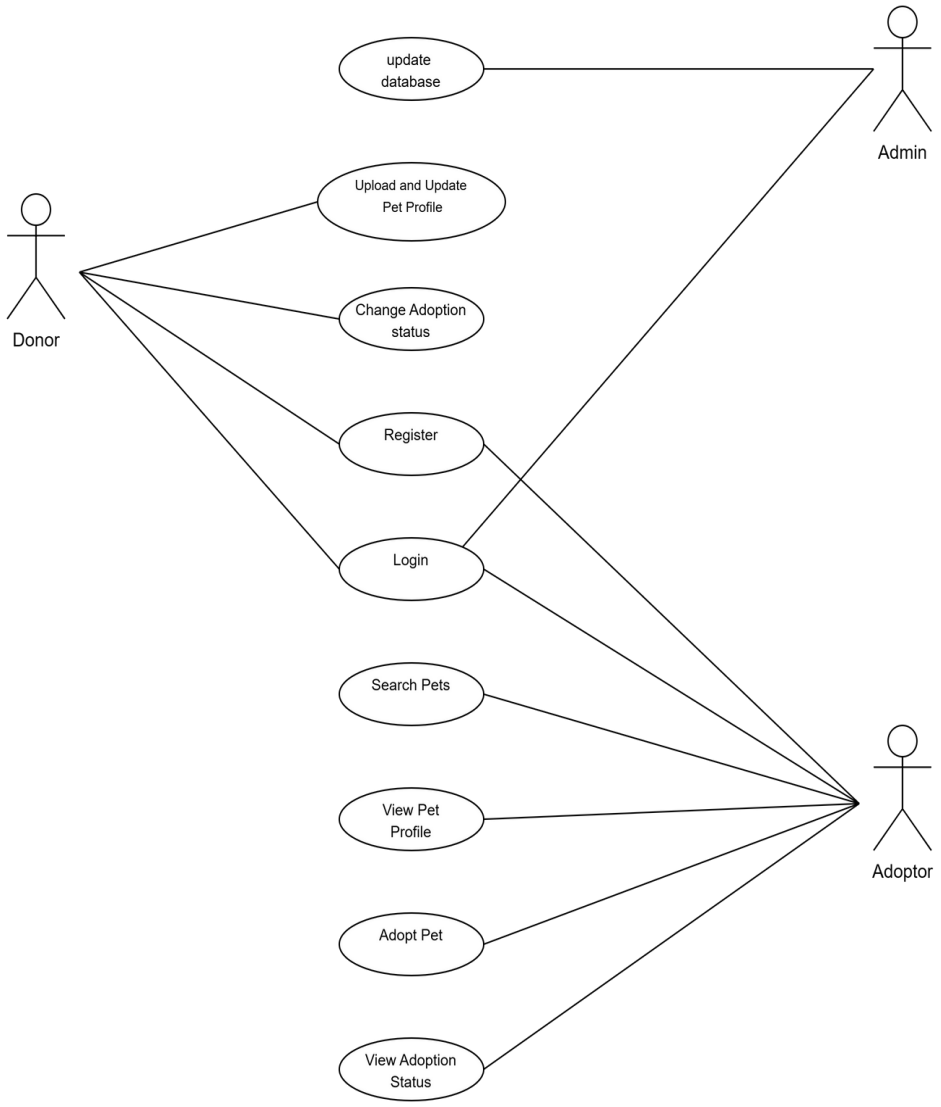
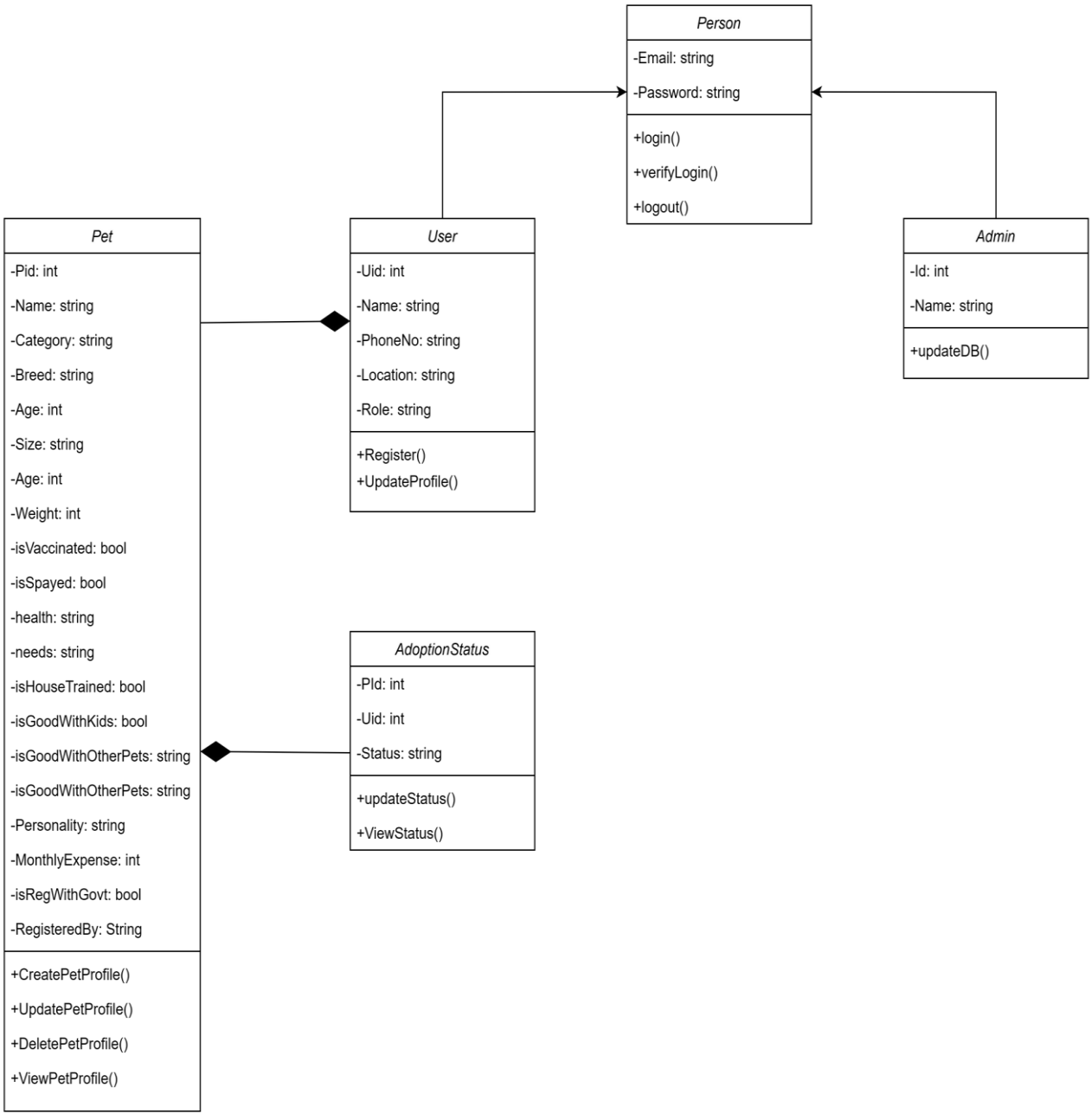
Admin
Phone
Email
User_Role
Name
Email
Users
Password
Phone_No
User_Id
Location

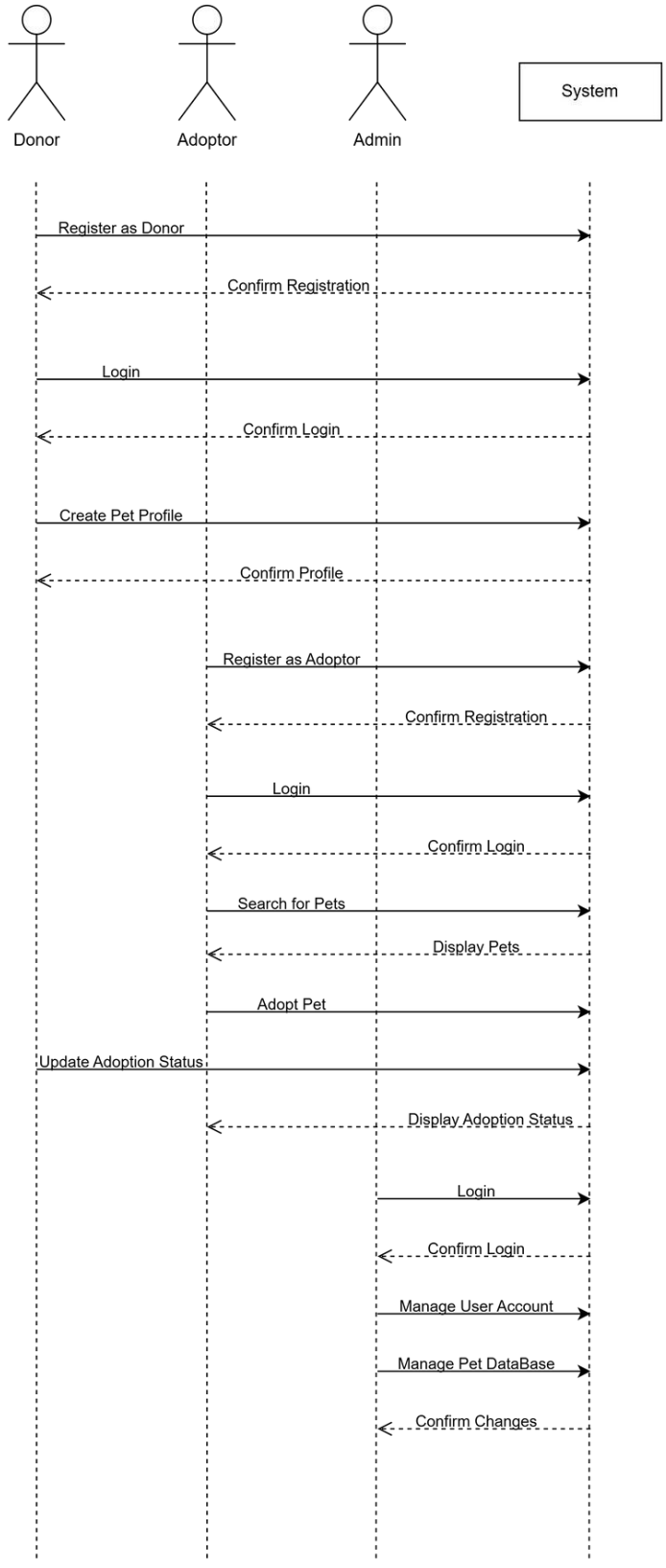
1.3Use Case Diagram



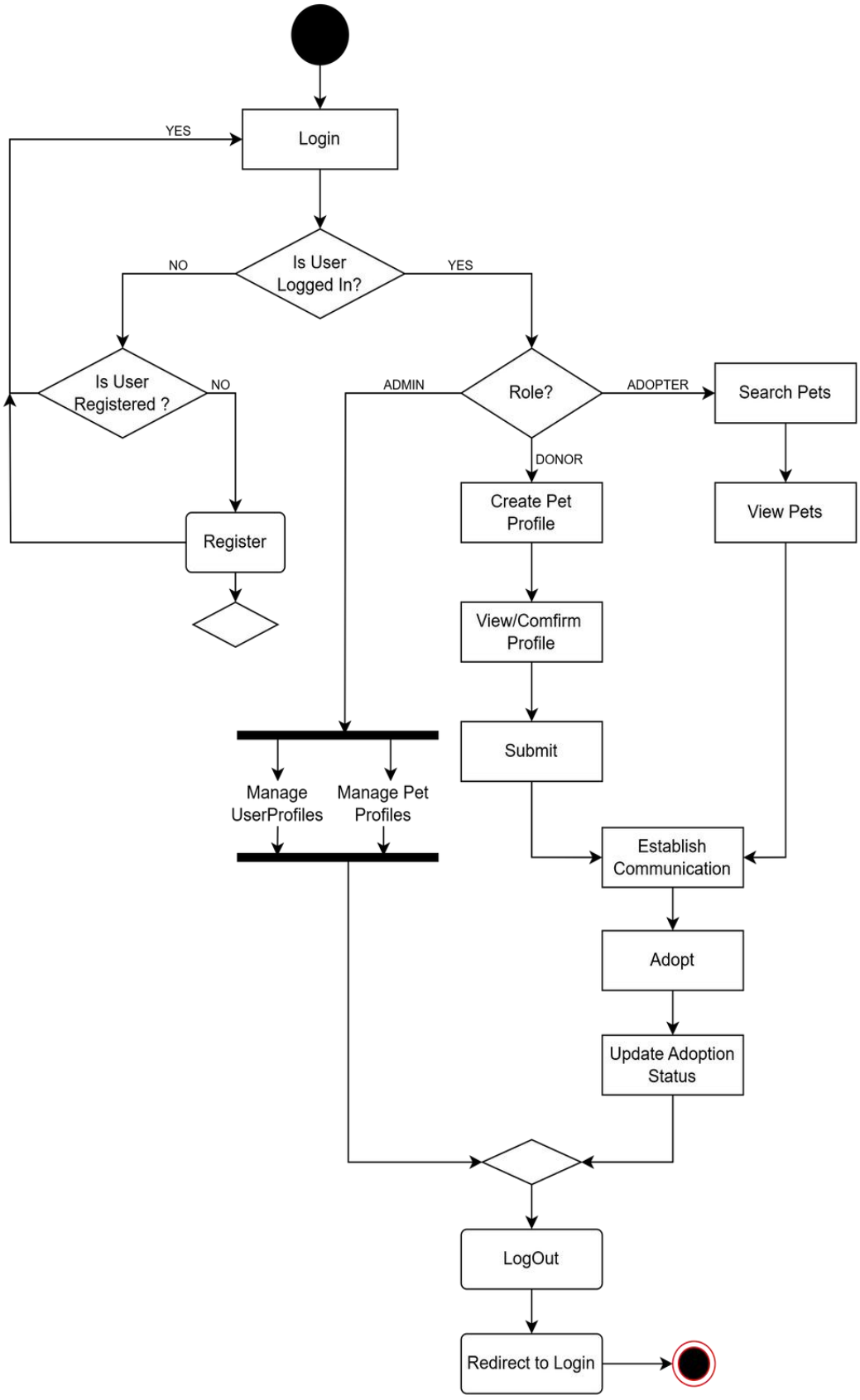
1.4Class Diagram



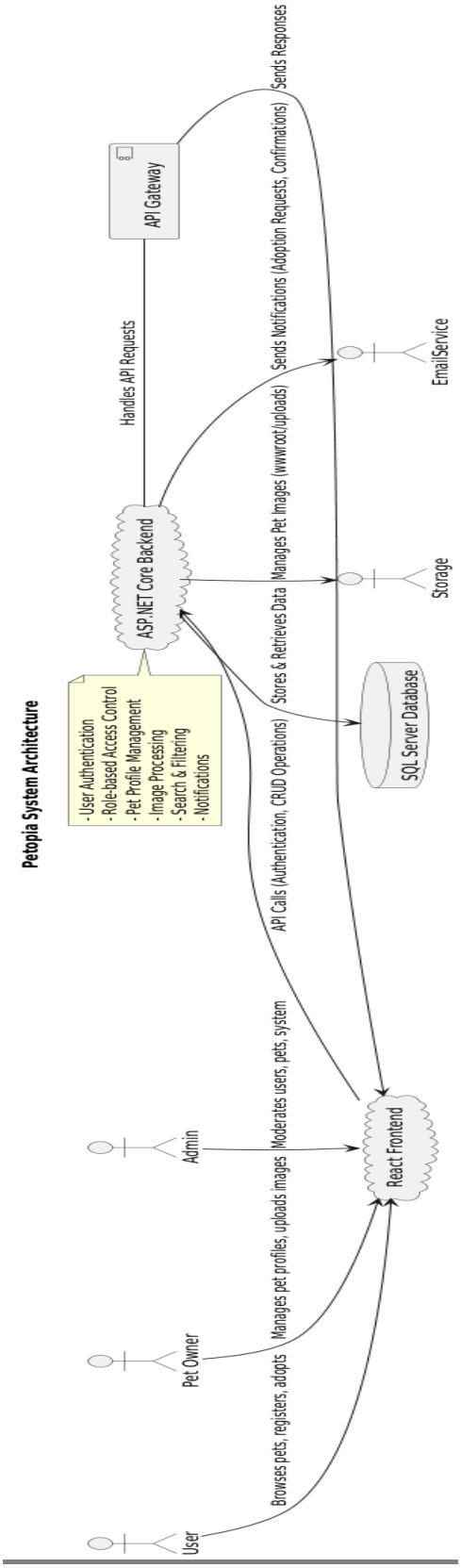
1.5 Sequence Diagram



1.6Activity Diagram



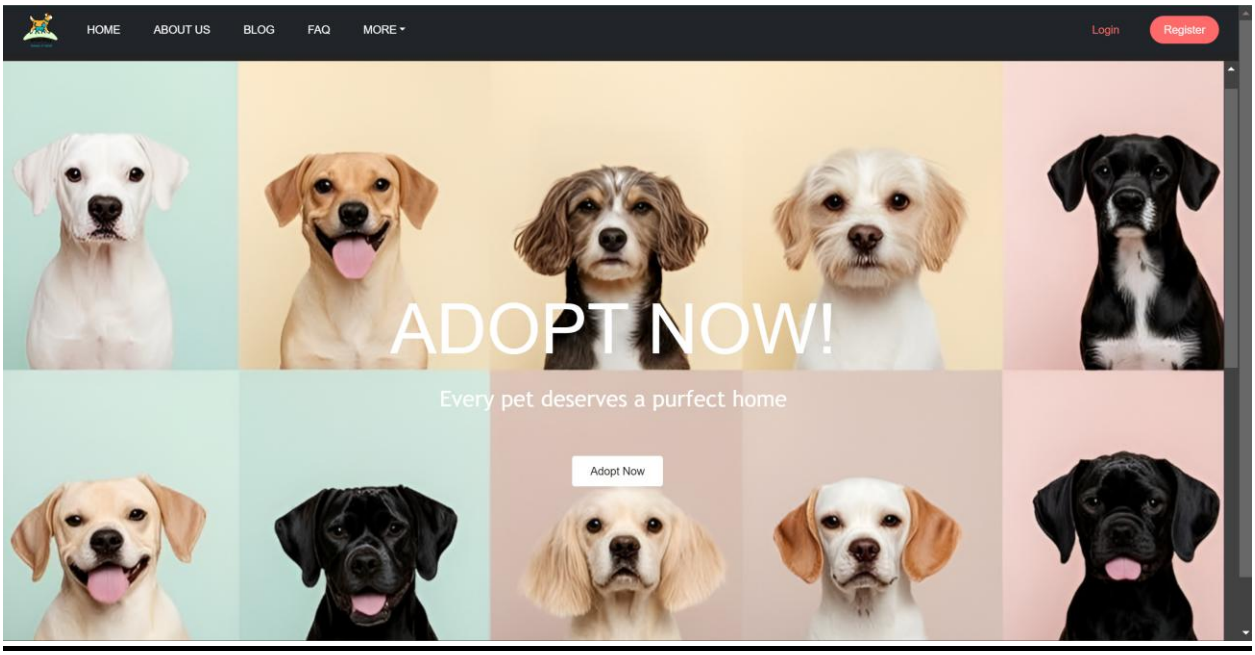
1.7System Architecture

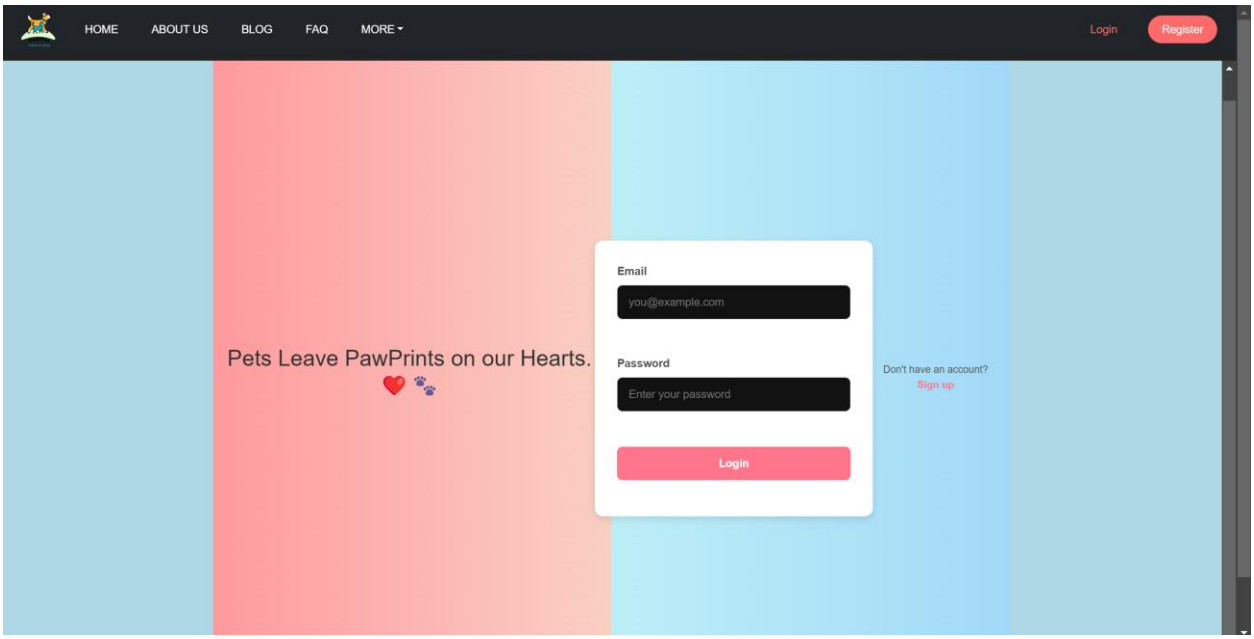


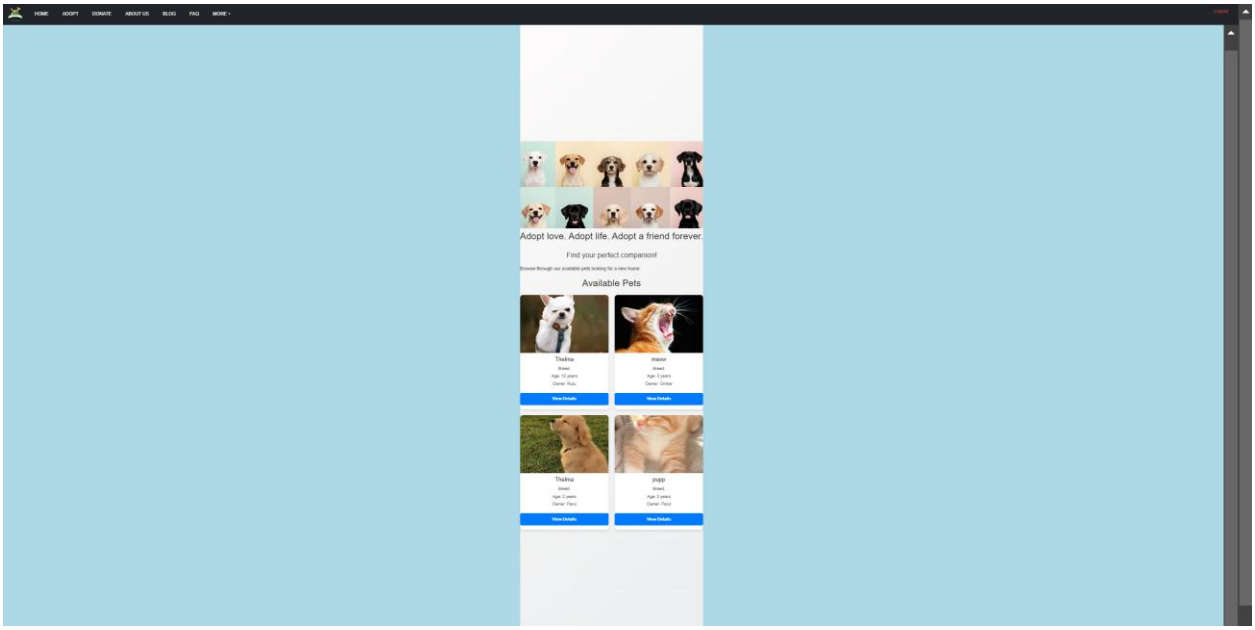
2. Test Cases

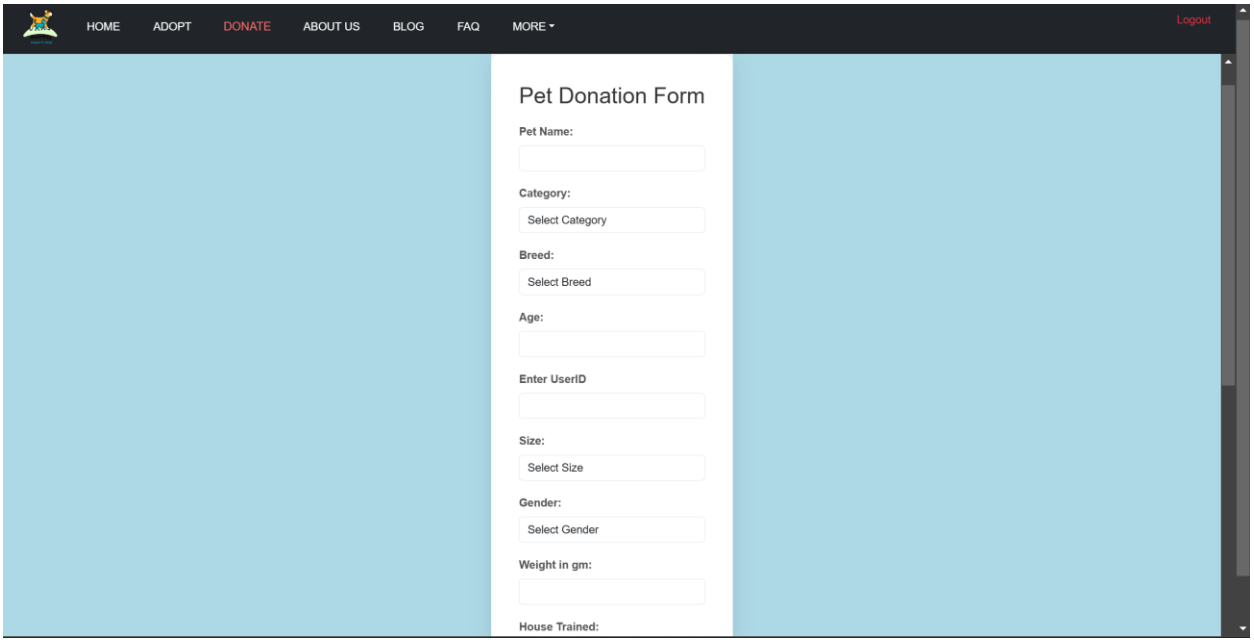
Test Case ID	Module	Test Scenario	Test Steps	Expected Result	Status
TC001	User Authentication	User Registration with valid details	Enter valid name, email, password → Click Register	User account created, confirmation email sent	Pass
TC002	User Authentication	User Registration with existing email	Enter already registered email → Click Register	Error message: "Email already in use"	Pass
TC003	User Authentication	Login with valid credentials	Enter registered email & correct password → Click Login	User is logged in successfully	Pass
TC004	User Authentication	Login with invalid credentials	Enter incorrect email/password → Click Login	Error message: "Invalid email or password"	Pass
TC005	Pet Profile Management	Add a new pet profile	Login as pet owner → Click "Add Pet" → Fill details → Upload image → Save	Pet profile is created successfully	Pass
TC006	Pet Image Upload	Upload valid image file	Login as owner → Edit pet profile → Upload valid image format (JPG, PNG)	Image uploaded successfully	Pass
TC007	Pet Image Upload	Upload invalid image format	Try uploading unsupported format (e.g., .exe, .txt)	Error message: "Invalid image format"	Pass
TC008	Admin Panel	Admin deletes an inappropriate pet listing	Login as admin → Navigate to pet listing → Click "Delete"	Pet profile is removed from the system	Pass

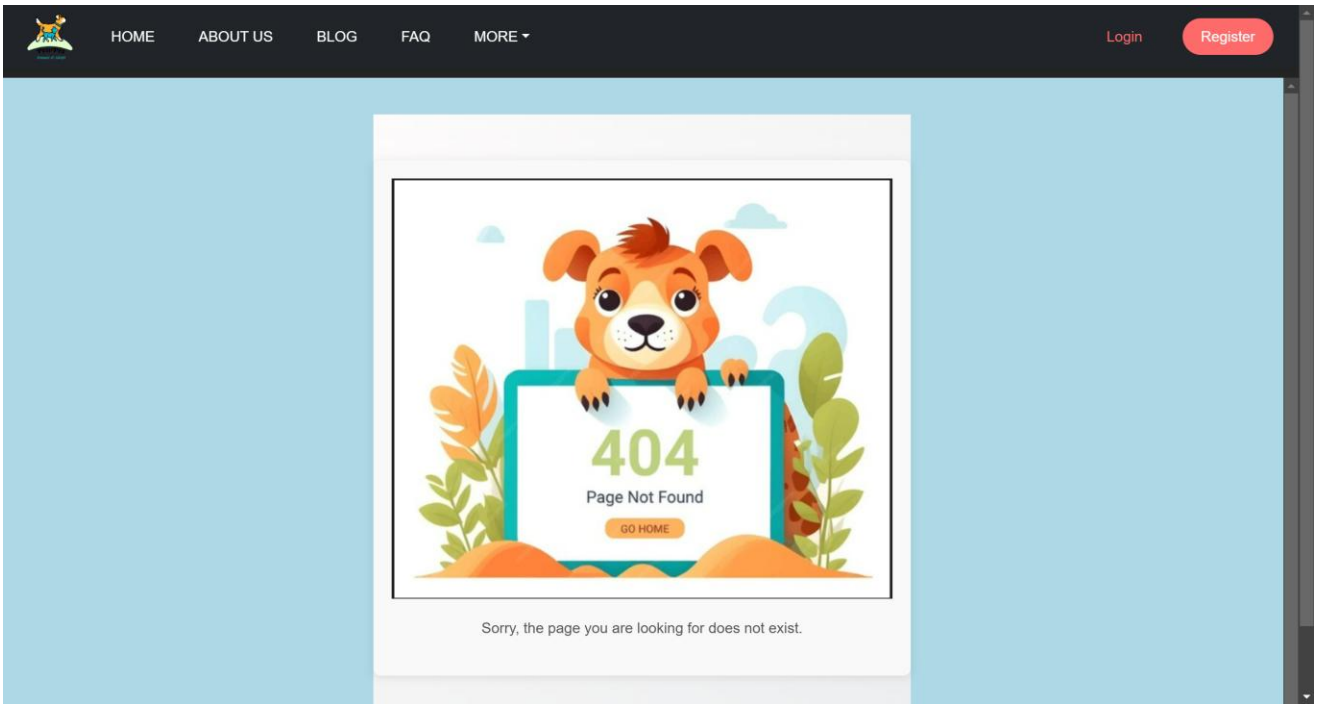
3. Screenshots






HOME
ADOPT
DONATE
ABOUT US
BLOG
FAQ
MORE
Adopt love. Adopt life. Adopt a friend forever.
Find your perfect companion!
Available Pets
Thelma
meow
Thelma
puppy


HOME
ADOPT
DONATE
ABOUT US
BLOG
FAQ
MORE
Logout
Pet Donation Form
Pet Name:
Category:
Select Category
Breed:
Select Breed
Age:
Enter UserID
Size:
Select Size
Gender:
Select Gender
Weight in gm:
House Trained:


HOME
ABOUT US
BLOG
FAQ
MORE
Login
Register
404
Page Not Found
GO HOME
Sorry, the page you are looking for does not exist.

4. References

- **W3Schools** (https://www.w3schools.com): This resource provided valuable insights into web development technologies and practices, enhancing the application's frontend design and functionality.
- **GitHub** (https://www.github.com): GitHub served as a pivotal platform for collaborative development and version control, enabling seamless teamwork and code management.
- **Node.js Documentation** (https://nodejs.org/en/docs): The Node.js documentation proved essential in understanding and implementing backend functionalities, ensuring efficient server-side operations.
- https://youtube.com/playlist?list=PLp_RsiLZjwQQ7CxVhnM4G8i5veEClNPfX&feature=shared Provided great insight on dotnet core frame work and approach to building a backend code.