A

PROJECT REPORT ON

Online Blog System

By

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B. Tech CE Semester VI
Subject: Advance Technology
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CERTIFICATE

This is to certify that the practical / **term work** carried out in the subject of

Web Service Development and recorded in this

journal is the bonafide work of

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Contents

Abstract

The Blogque project is designed to provide a platform for users to create, share, and read blog articles. The site includes a user registration and login system to ensure security and privacy of user data. Users can view blog articles posted by other users and can also create, edit, and delete their own blog articles. The site is built with auser-friendly interface, allowing users to easily navigate and search for content. The project is ideal for bloggers who want to showcase their writing skills and connect with like-minded individuals in an online community.

Introduction

Blogque is built using ASP .NET Web API and React, and provides a platform for users to engage with various topics and interact with like-minded individuals through blogging. Users can easily register, login, and browse through a wide range of blog posts covering diverse topics, including technology, business, travel, lifestyle, and more. The site also enables users to create, edit, and publish their own blog posts, complete with multimedia content and commenting features. User security and privacy are prioritized through robust authentication mechanisms. Overall, the platform offers a seamless and user-friendly experience forindividuals seeking to express themselves through writing and connectwith a community of like-minded individuals.

Technology

Backend

- ASP .NET Core WEB API(C#)

Frontend

- React.js
- Bootstrap
- CSS

Database

- MS SQL Server

Tools

- Visual Studio Code
- Visual Studio
- GitHub
- Any Browse

Software Requirement Specification (SRS)

Functional Requirements

1. Authentication

1.1 Create Account

Description: Only those who already have accounts on our site are eligible to create new blogs. Yet, anyone may read blogs without logging in. To sign up as a new user, the usermust enter their username and password. A unique id would be generated and these details would be kept in a database. Input: Username, Password

Output: Unique user id

1.2 Login into System

Description: Registered user can login into the site by entering their email address and password. After successfullogin users would be redirected to the homepage of the site.Input: Username, password

Output: Home Screen

1.3 Logout

Description: For security reasons, users can log out of theirsessions after browsing a website.

Output: Logout successful message.

2. Manage Blog

2.1 View Blog

Description: Any user can read the available blogs on this site.There is no need to login for view blogs.

Output: Blogs List

2.2 Create a blog

Description: With this website, users may easily establish new blogs by entering the blog's title, category, banner url,and content.

Input: Blog details

Output: Success message

2.3 Edit blog

Description: Author of the blog can edit blog in future ifhe/she things that there was a mistake in it.
Input: Details to be update
Output: Blog List

2.4 Delete a blog

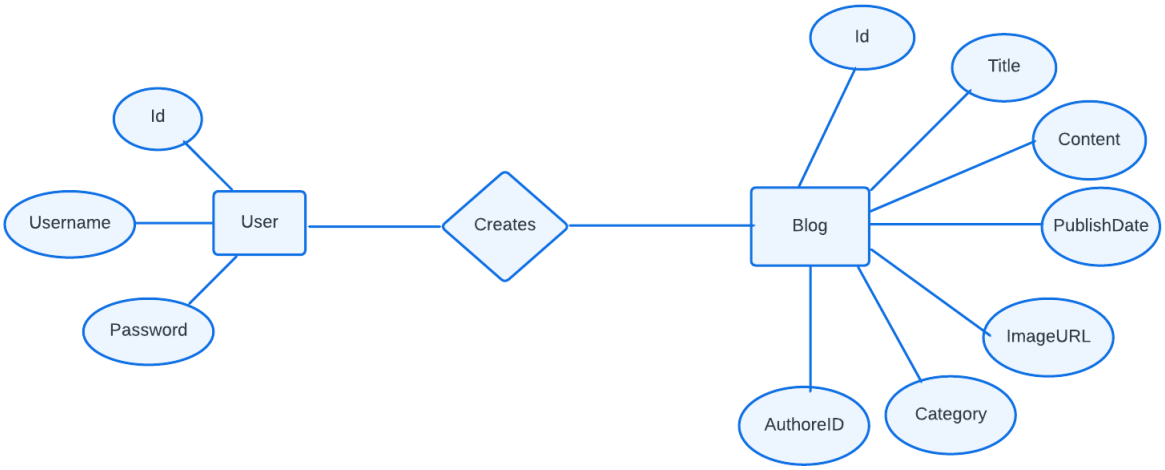
Description: On this website, users can delete the blog whichwas previously created by him/her.
Input: Delete confirmation

Non-functional Requirements

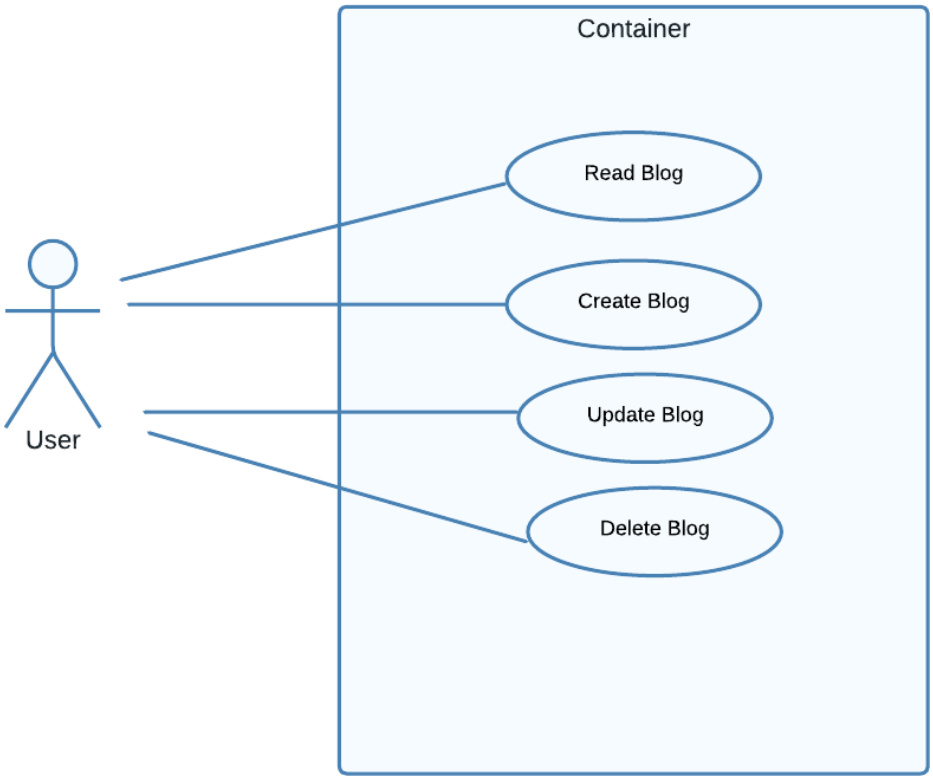
N.1: Database: A data base management system that is available freeof cost in the public domain should be used.
N.2: Data integrity: Data integrity refers to maintaining and assuringdata accuracy and consistency over its entire lifecycle. If this factor iscorrupted, data is lost due to a database error.
N.3: Platform: Windows, Unix and Mac versions of software need tobe developed.
N.4: Web-support: It should be possible to invoke the query bookfunctionality from any place by using web browser.
N.5: Performance: System performance defines how fast a systemcan respond to a particular user's action under a certain workload.

Design

ER DIAGRAM



USE CASE DIAGRAM



Data Dictionary

dbo.BlogPosts [Design] | **dbo.Users [Design]**

Update | Script File: dbo.Users.sql

Name	Data Type	Allow Nulls	Default
Id	int	☐	
Username	nvarchar(MAX)	☐	
PasswordHash	varbinary(MAX)	☐	
PasswordSalt	varbinary(MAX)	☐	
		☐	

Keys (1)
PK_Users (Primary Key, Clustered: Id)
Check Constraints (0)
Indexes (0)
Foreign Keys (0)
Triggers (0)

dbo.BlogPosts [Design] | dbo.Users [Design]

Update | Script File: dbo.BlogPosts.sql

Name	Data Type	Allow Nulls	Default
Id	int	☐	
Title	nvarchar(MAX)	☐	
Content	nvarchar(MAX)	☐	
PublishDate	datetime2(7)	☐	
ImageURL	nvarchar(MAX)	☑	
Category	nvarchar(MAX)	☑	
AuthorId	int	☐	
		☐	

Keys (1)
PK_BlogPosts (Primary Key, Clustered: Id)
Check Constraints (0)
Indexes (1)
IX_BlogPosts_AuthorId (AuthorId)
Foreign Keys (1)
FK_BlogPosts_Users_AuthorId (Id)
Triggers (0)

User Model

```
namespace BlogAPI.Models
{
    11 references
    public class User
    {
        6 references
        public int Id { get; set; }
        5 references
        public string Username { get; set; }
        2 references
        public byte[] PasswordHash { get; set; } = Array.Empty<byte>();
        2 references
        public byte[] PasswordSalt { get; set; } = Array.Empty<byte>();
        1 reference
        public List<BlogPost>? BlogPosts { get; set; }

    }
}
```

BlogPost Model

```
using System.ComponentModel;
using System.ComponentModel.DataAnnotations;

namespace BlogAPI.Models
{
    9 references
    public class BlogPost
    {
        3 references
        public int Id { get; set; }
        0 references
        public string Title { get; set; }
        0 references
        public string Content { get; set; }
        [DataType(DataType.Date)]
        0 references
        public DateTime PublishDate { get; set; }
        [DefaultValue("https://tse2.mm.bing.net/th?id=OIP.wsVlPGCwZ8_WwYZmtpKbAAHaCZ&pid=Api&P=0")]
        0 references
        public string? ImageURL { get; set; }
        0 references
        public string? Category { get; set; }

        2 references
        public int AuthorId { get; set; }
        1 reference
        public User? Author { get; set; }
    }
}
```

BlogDbContext

```
using Microsoft.EntityFrameworkCore;
using System.Collections.Generic;

namespace BlogAPI.Models
{
    13 references
    public class BlogDbContext : DbContext
    {
        0 references
        public BlogDbContext(DbContextOptions<BlogDbContext> options) : base(options)
        {

        }

        11 references
        public DbSet<BlogPost> BlogPosts { get; set; }

        13 references
        public DbSet<User> Users { get; set; }

        0 references
        protected override void OnModelCreating(ModelBuilder modelBuilder)
        {
            modelBuilder.Entity<BlogPost>()
                .HasOne(p => p.Author)
                .WithMany(u => u.BlogPosts)
                .HasForeignKey(p => p.AuthorId);
        }

    }
}
```

Implementation Details

This project consists of 2 major modules.

- User Module
- Blog Module

Each module consists of several methods to implement the requiredfunctionality.

User Module

There are basically two functionalities in this module. Create a new user and login to existing user. This module is the base for authentication and authorization. Here we have used JWT token for theauthentication.

```
[HttpPost("Register")]
0 references
public async Task<ActionResult> Register(UserRegisterDTO userDTO)
{
    var res = await _authRepo.Register(new User() { Username = userDTO.Username }, userDTO.Password);
    if (res == 0)
    {
        return BadRequest($"Cannot register {userDTO.Username}");
    }
    return Ok($"User registered successfully!");
}
```

```
[HttpPost("Login")]
0 references
public async Task<ActionResult> Login(UserLoginDTO userDTO)
{
    var res = await _authRepo.Login(userDTO.Username, userDTO.Password);
    Console.WriteLine(res);
    if (res == null)
    {
        return BadRequest($"Incorrect username or password!");
    }
    return Ok(new { token = res, status = 200 });
}
```

Blog Module

There are mainly four things can be done with blogs. First, we can fetchall the blogs, create a new blog, edit existing blog and delete blog.

```
// GET: api/BlogPosts
[AllowAnonymous]
[HttpGet]
0 references
public async Task<ActionResult<IEnumerable<BlogPost>>> GetBlogPosts()
{
  if (_context.BlogPosts == null)
  {
      return NotFound();
  }
    return await _context.BlogPosts.ToListAsync();
}
```

```
// GET: api/BlogPosts/5
[AllowAnonymous]
[HttpGet("{id}")]
0 references
public async Task<ActionResult<BlogPost>> GetBlogPost(int id)
{
  if (_context.BlogPosts == null)
  {
      return NotFound();
  }
    var blogPost = await _context.BlogPosts.FindAsync(id);

    if (blogPost == null)
    {
        return NotFound();
    }

    return blogPost;
}
```

```
// get blog by user id
[AllowAnonymous]
[HttpGet("/blog/{id}")]
0 references
public async Task<ActionResult<IEnumerable<BlogPost>>> GetBlogsById(long id)
{
    return await _context.BlogPosts.Where(x => x.AuthorId == id).ToListAsync();

}
```

```
// PUT: api/BlogPosts/5
[HttpPut("{id}")]
[Authorize]
0 references
public async Task<IActionResult> PutBlogPost(int id, BlogPost blogPost)
{
    if (id != blogPost.Id)
    {
        return BadRequest();
    }
    _context.Entry(blogPost).State = EntityState.Modified;
    try
    {
        await _context.SaveChangesAsync();
    }
    catch (DbUpdateConcurrencyException)
    {
        if (!BlogPostExists(id))
        {
            return NotFound();
        }
        else
        {
            throw;
        }
    }

    return NoContent();
}
```

```
// POST: api/BlogPosts
// To protect from overposting attacks, see https://go.microsoft.com/fwlink/?linkid=2123754
[HttpPost]
[Authorize]
0 references
public async Task<ActionResult<BlogPost>> PostBlogPost(BlogPost blogPost)
{
  if (_context.BlogPosts == null)
  {
      return Problem("Entity set 'BlogDbContext.BlogPosts'  is null.");
  }
    _context.BlogPosts.Add(blogPost);
    await _context.SaveChangesAsync();

    return CreatedAtAction("GetBlogPost", new { id = blogPost.Id }, blogPost);
}
```

```
// DELETE: api/BlogPosts/5
[HttpDelete("{id}")]
[Authorize]
0 references
public async Task<IActionResult> DeleteBlogPost(int id)
{
    if (_context.BlogPosts == null)
    {
        return NotFound();
    }
    var blogPost = await _context.BlogPosts.FindAsync(id);
    if (blogPost == null)
    {
        return NotFound();
    }

    _context.BlogPosts.Remove(blogPost);
    await _context.SaveChangesAsync();

    return NoContent();
}
```

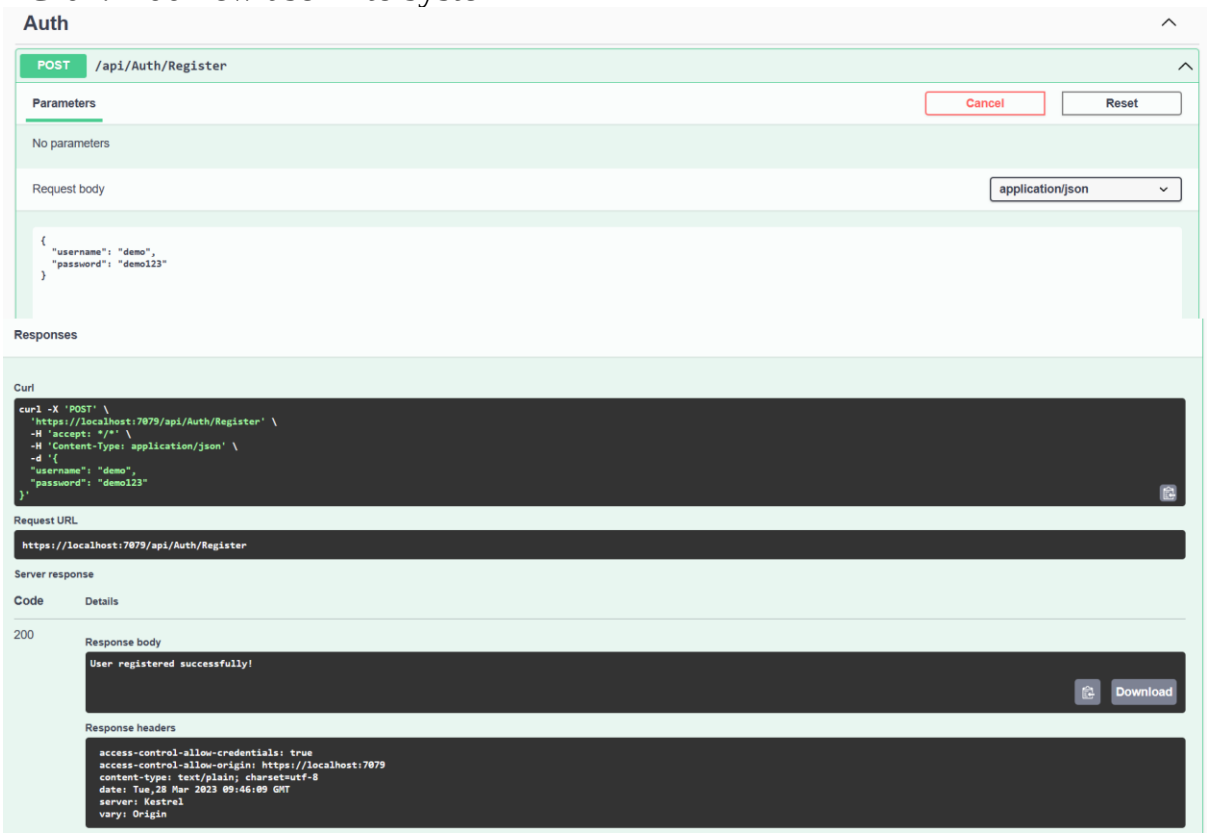
```
1 reference
private bool BlogPostExists(int id)
{
    return (_context.BlogPosts?.Any(e => e.Id == id)).GetValueOrDefault();
}
```

Testing

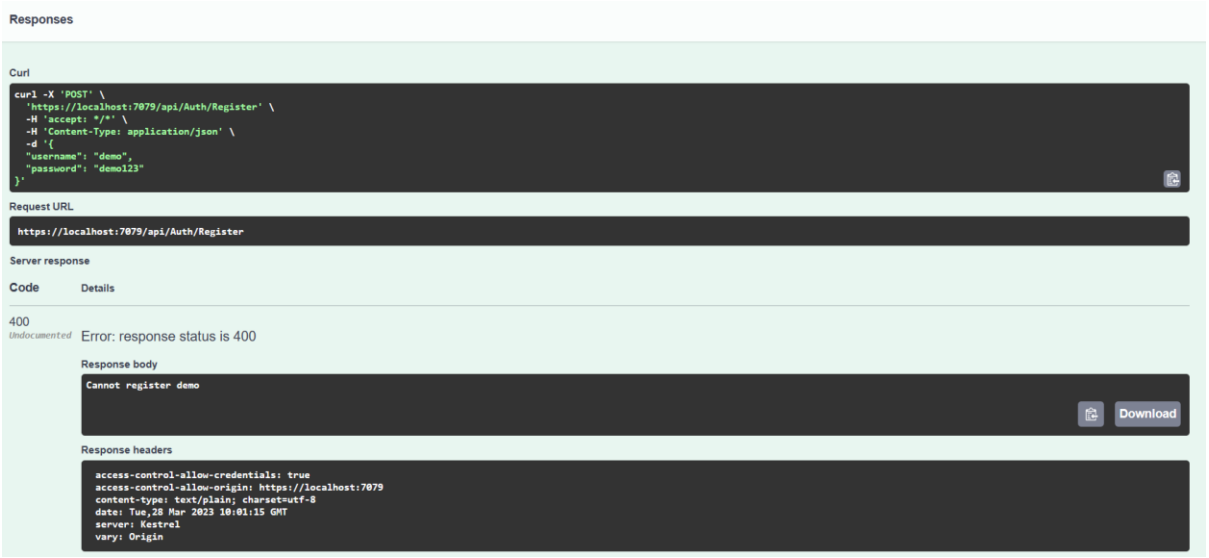
Test Case Id	Test Case Objective	Input Data	Expected Output	Actual Output	Status
TC-01	Add new User into system	Credential	User Added	User Added	Pass
TC-02	Add user with already exists username	Credential	User already exists	User already exists	Pass
TC-03	Login into System	Credential	Token	Token	Pass
TC-04	Login into System with wrong credential	Wrong Credential			Pass
TC-05	Logout from system	Logout Button	Home Screen	Home Screen	Pass
TC-06	Blog List	-	Blogs	Blogs	Pass
TC-07	Blog Detail	Select Blog	Blog Content	Blog Content	Pass
TC-08	Create Blog	Blog Details	Blog added on home screen	Blog added on home screen	Pass
TC-09	Update Blog	Blog ID along with new data	Updated Blog	Updated Blog	Pass
TC-10	Delete Blog	Blog ID	Blog removed from site	Blog removed from site	Pass

Testing our backend with Swagger

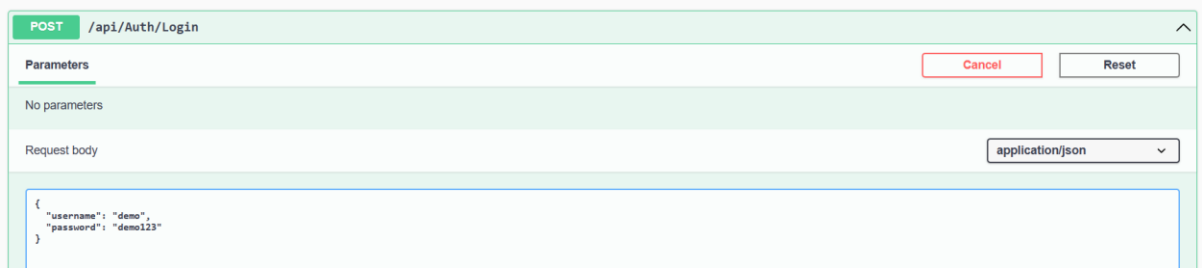
TC-01: Add new user into system

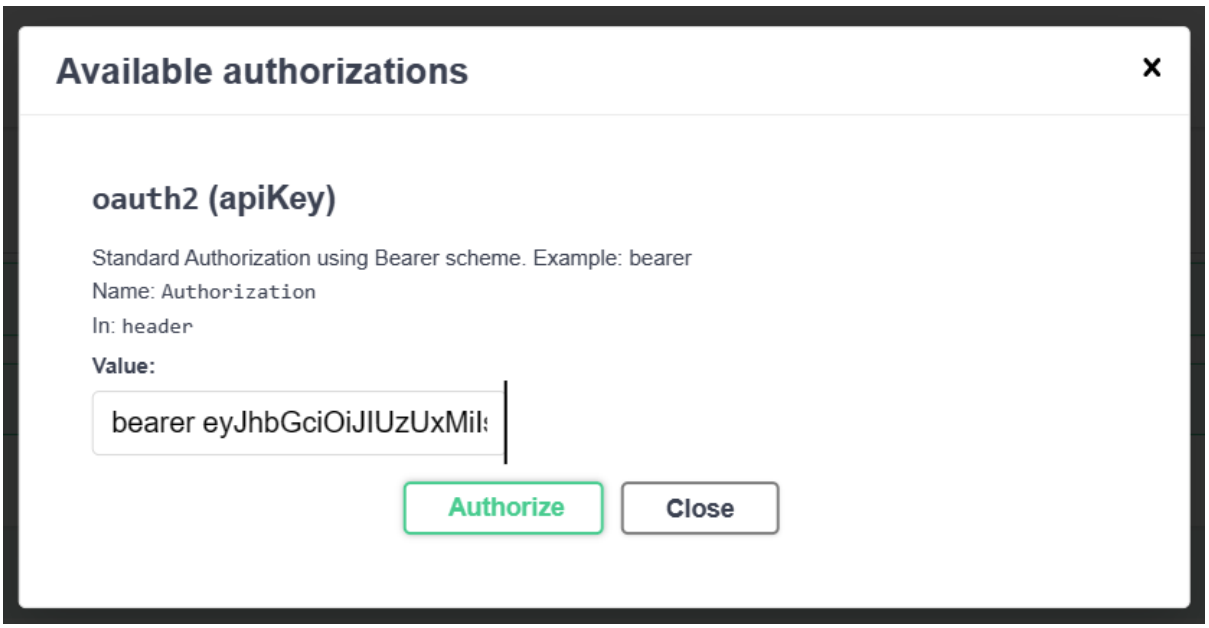


TC-02: Trying to register with already exists username

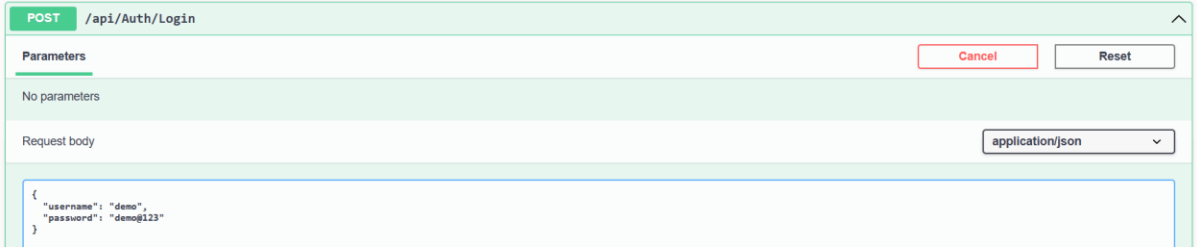


TC-03: Login into system

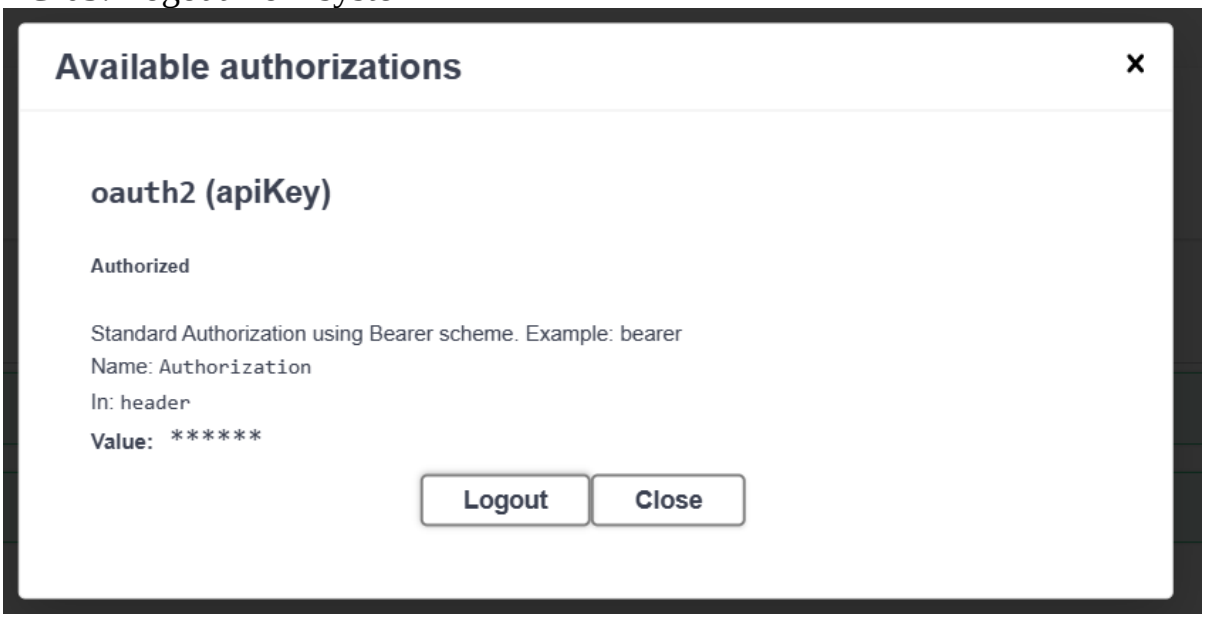




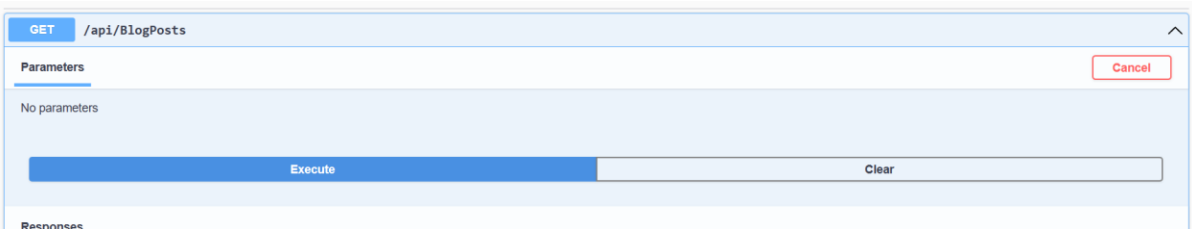
TC-04: Trying to login with wrong credentials



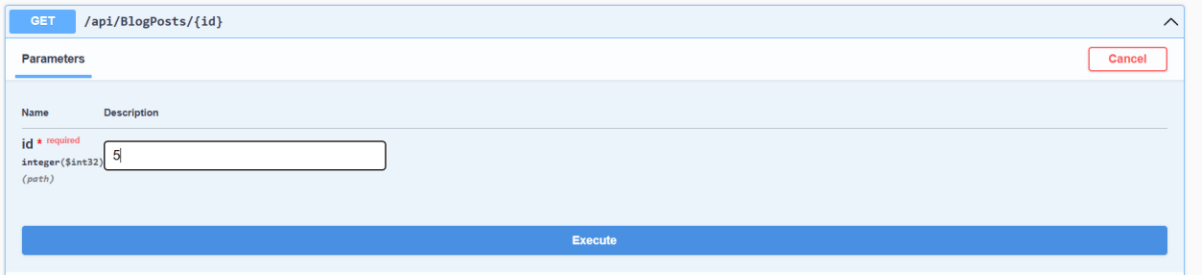
TC-05: Logout from system

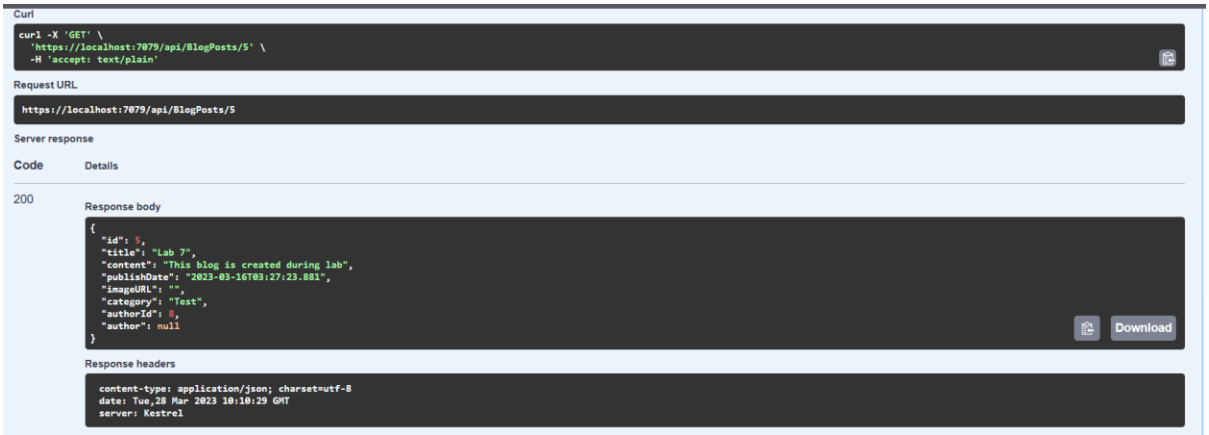


TC-06: Get all Blogs

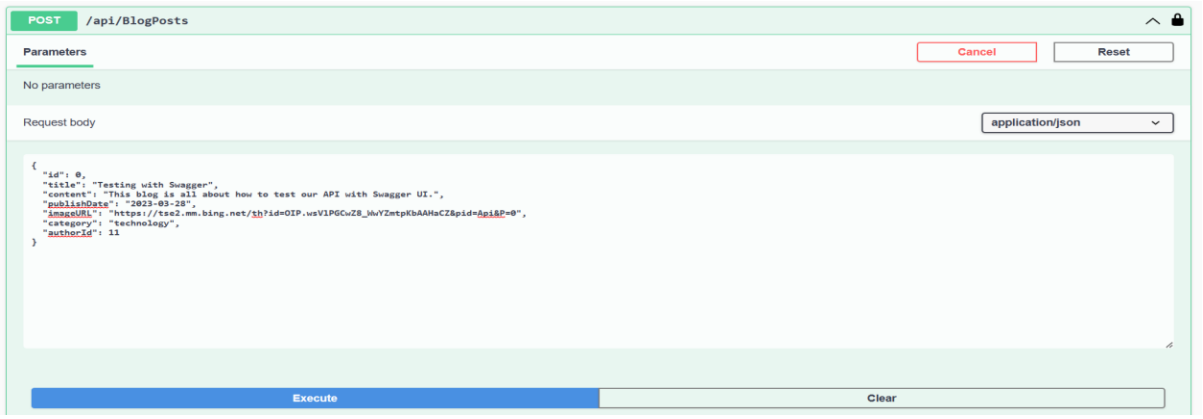


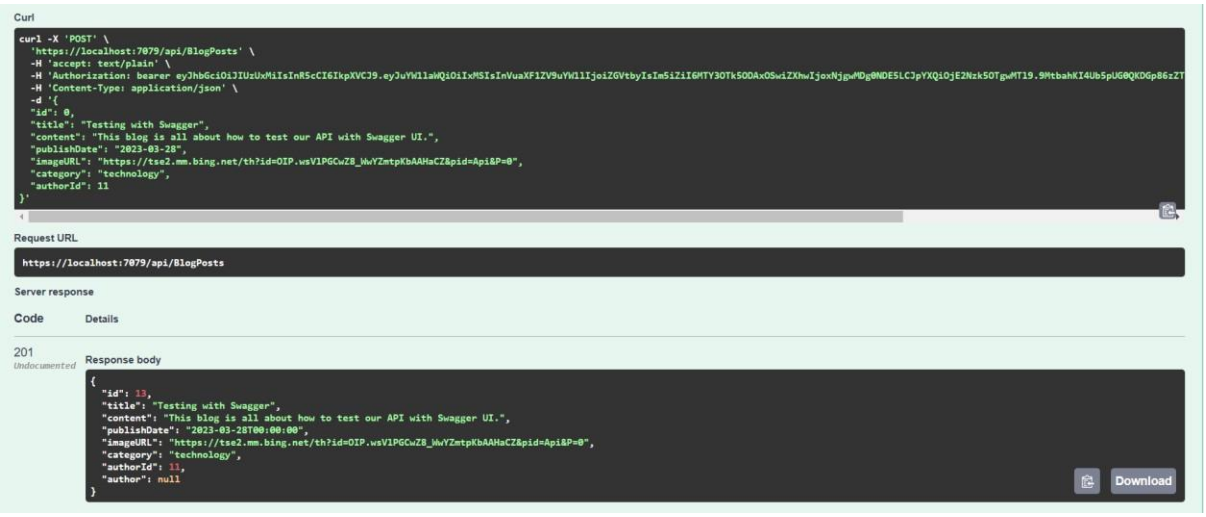
TC-07: Add new user into system



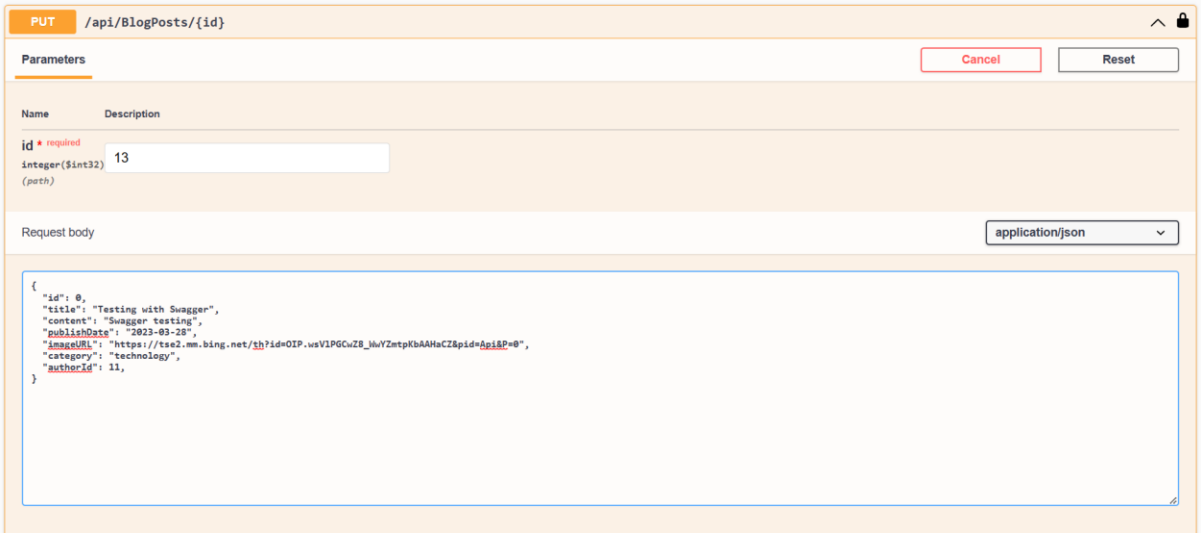


TC-08: Create new blog

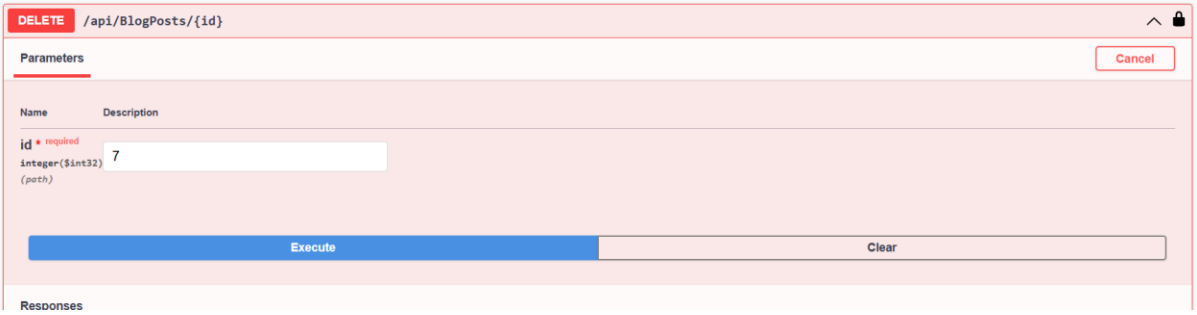




TC-09: Update existing blog

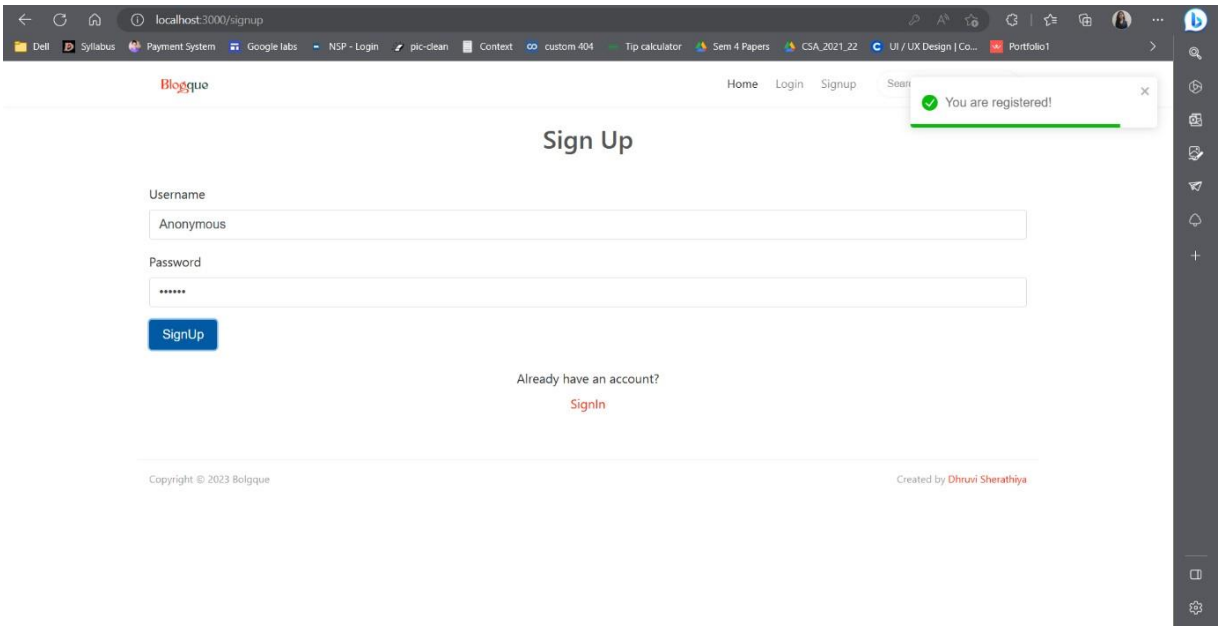


TC-10: Delete a blog

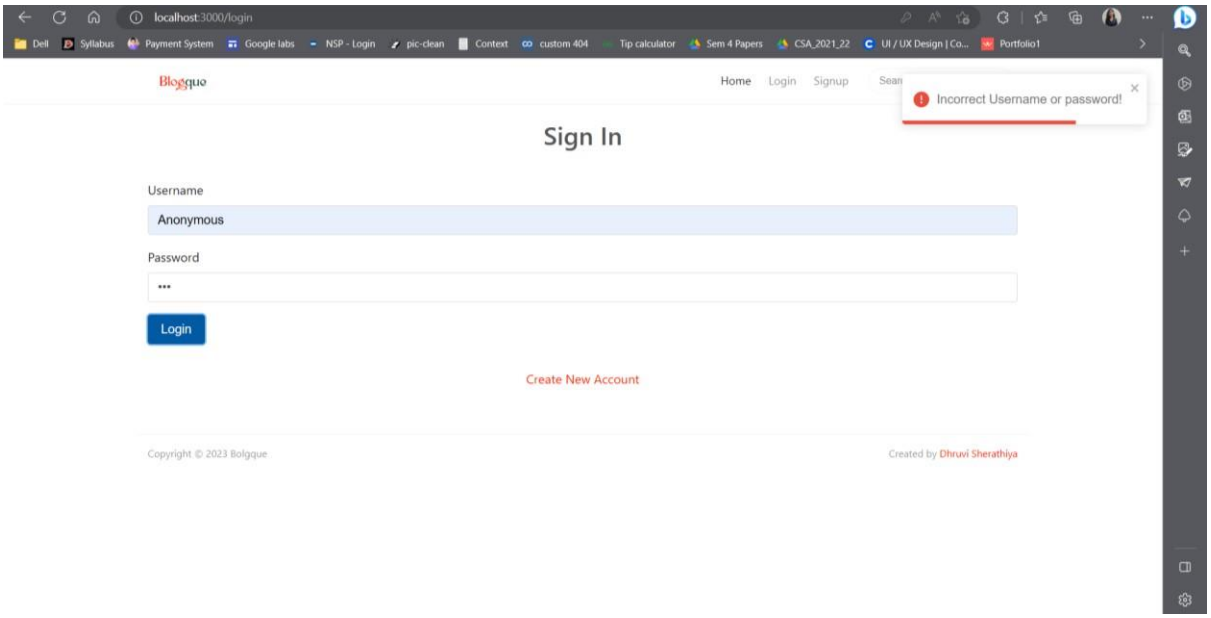


Screenshots

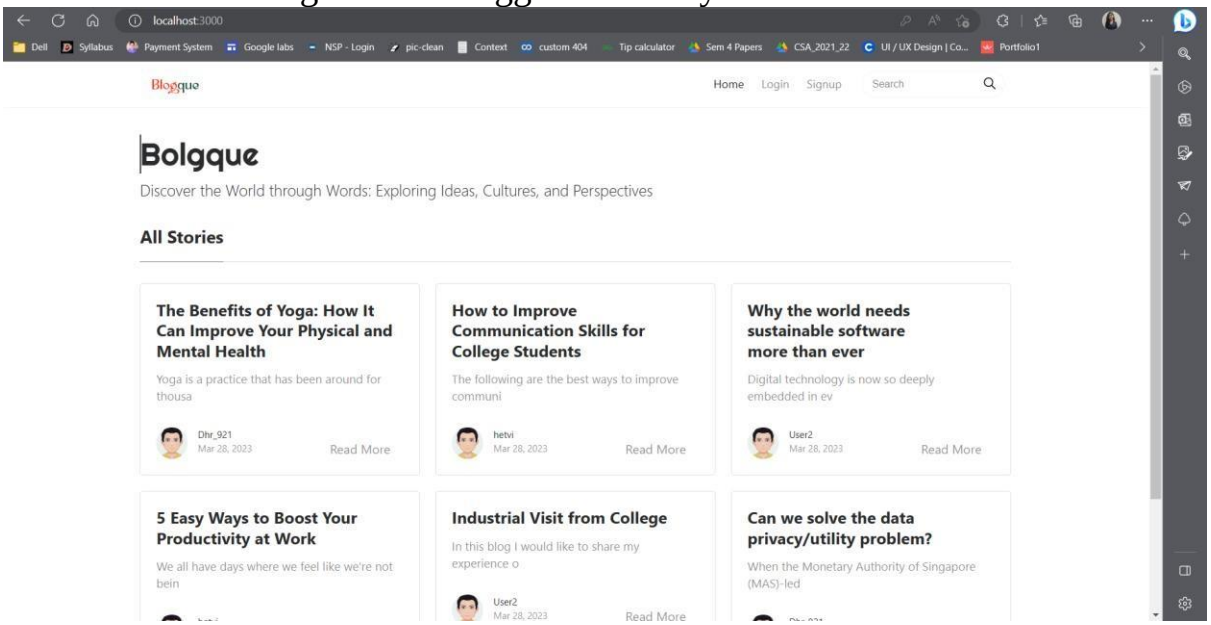
TC-01: Register new user into site



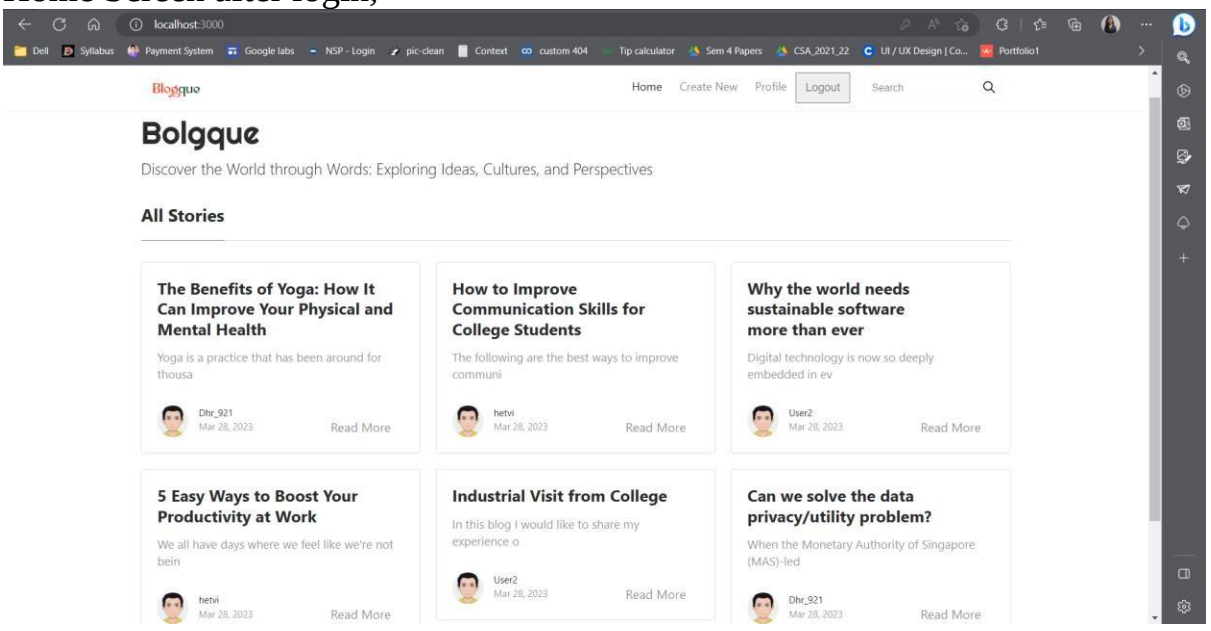
TC-04: Trying to login into system with wrong credentials



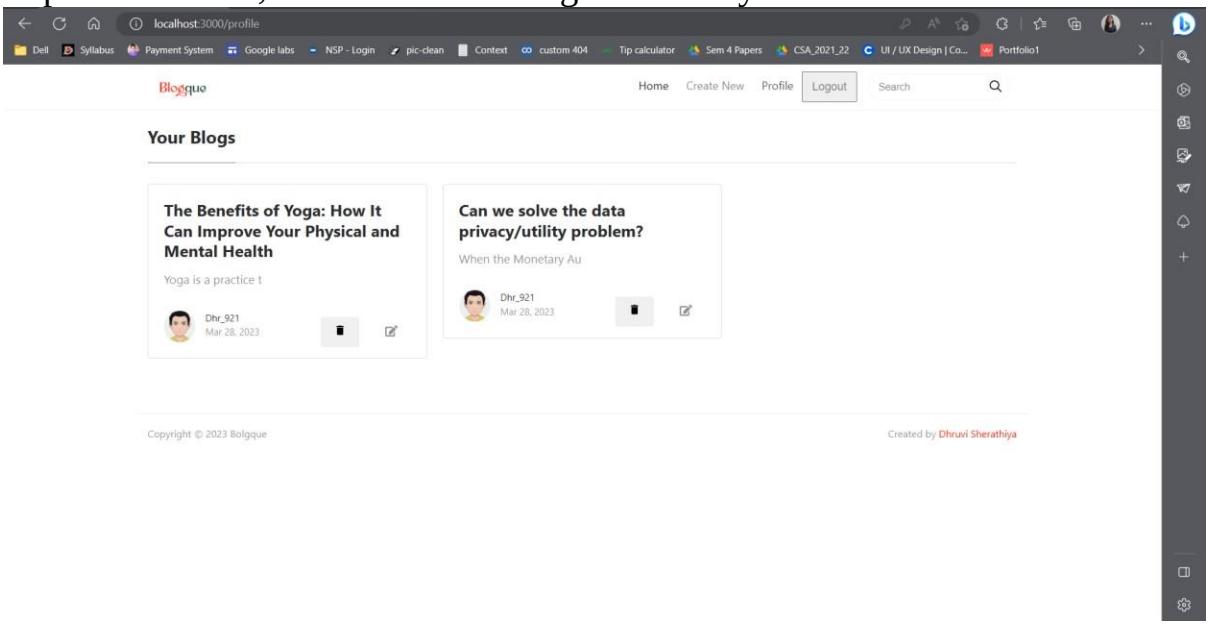
TC-06: Read all blogs without logged-in into system.



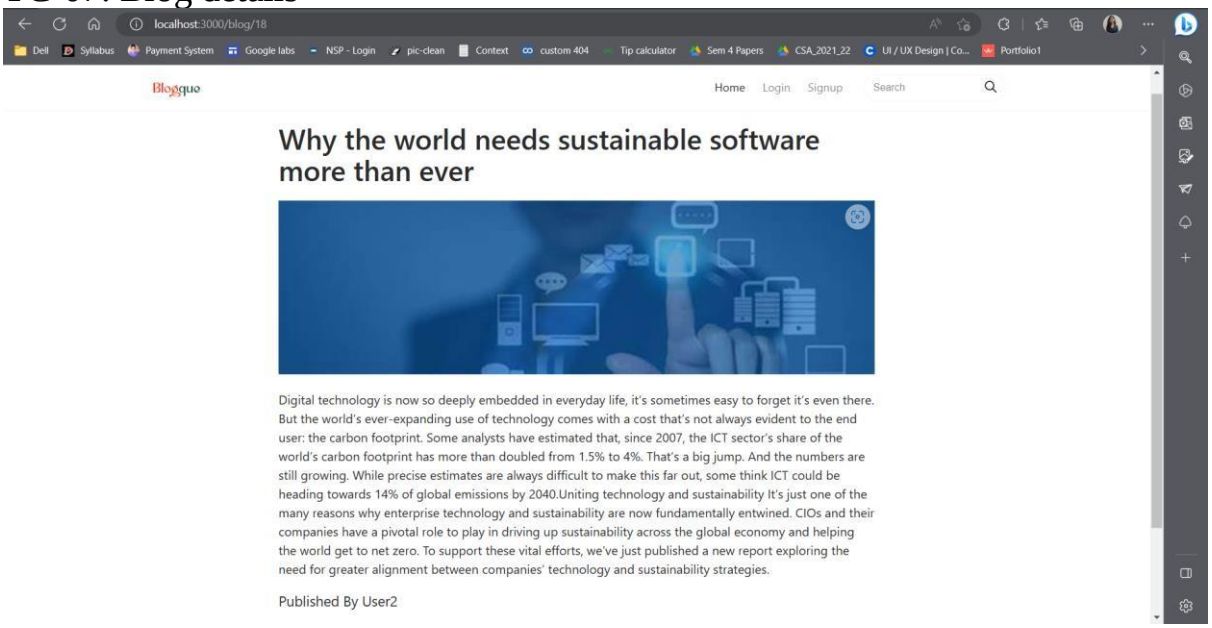
Home Screen after login,



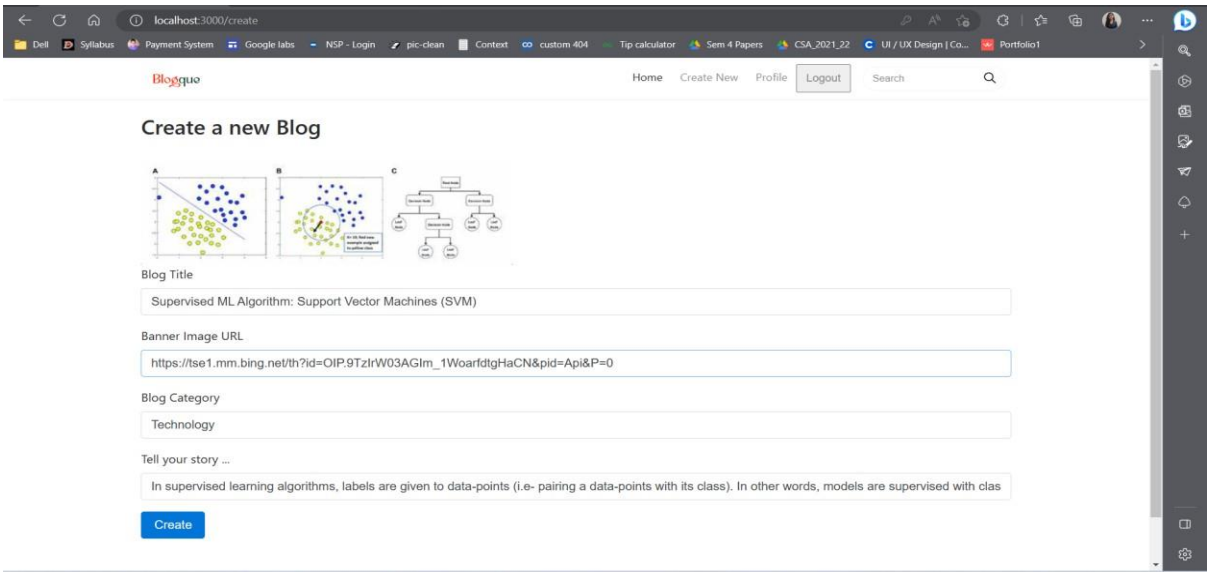
In profile section, user can see all blogs created by him/her.

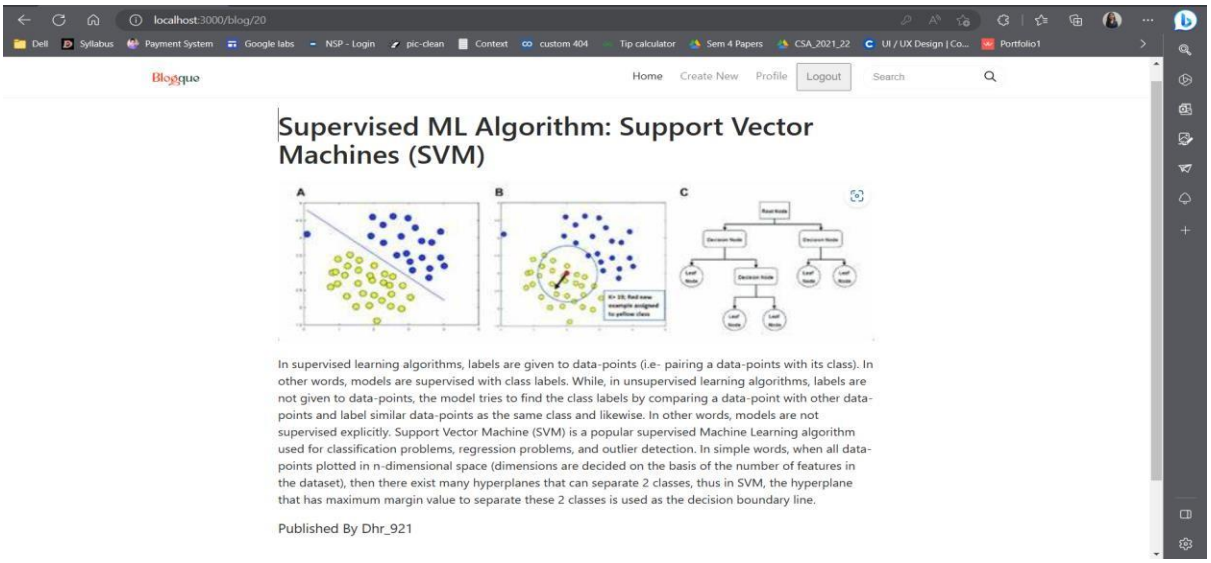


TC-07: Blog details

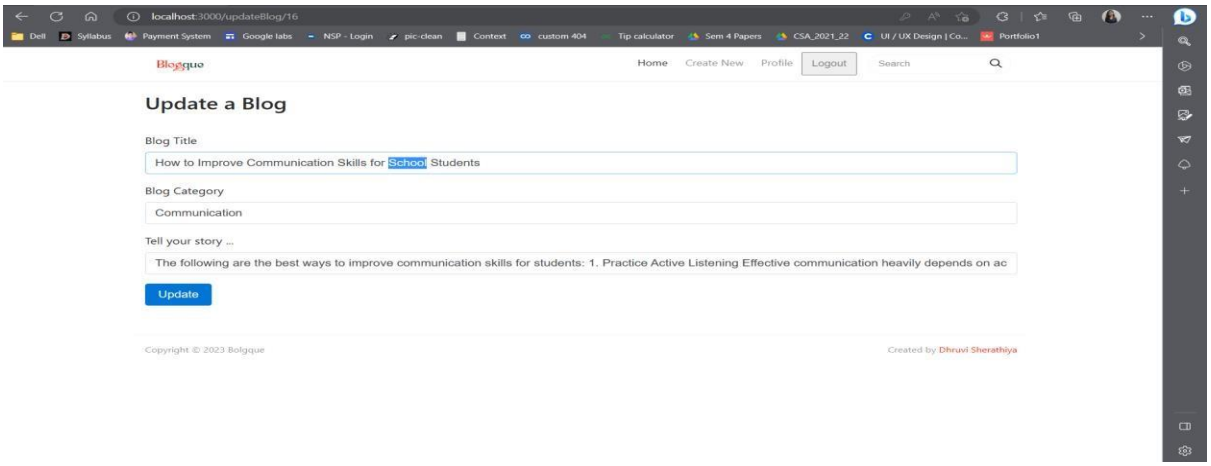


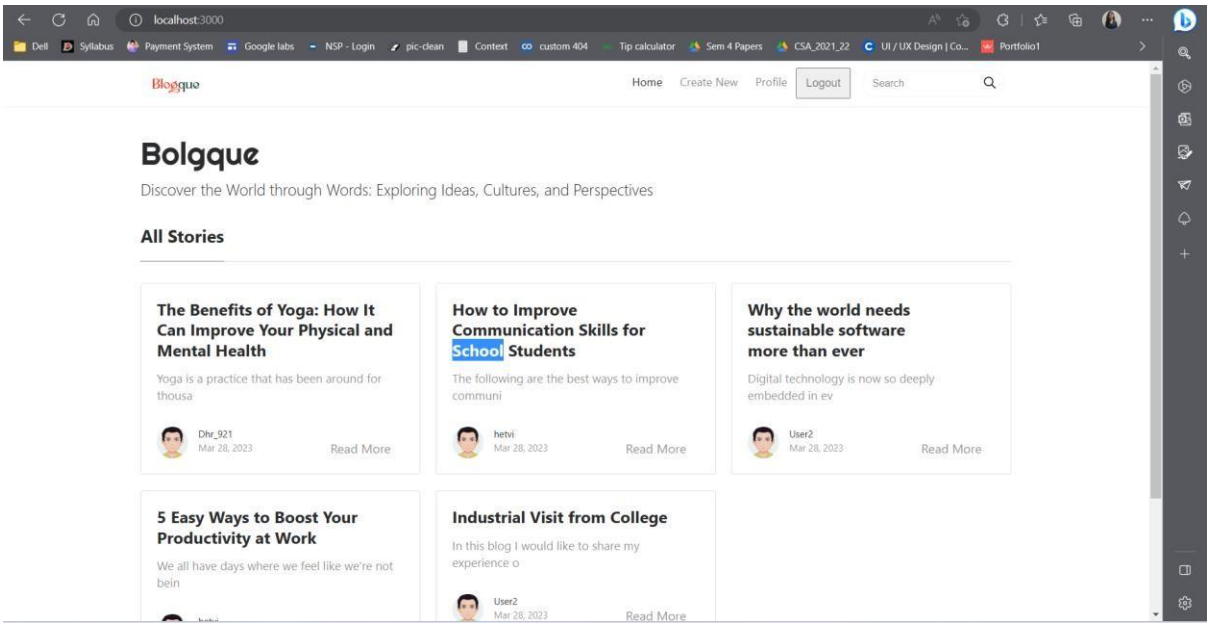
TC-08: Create a Blog



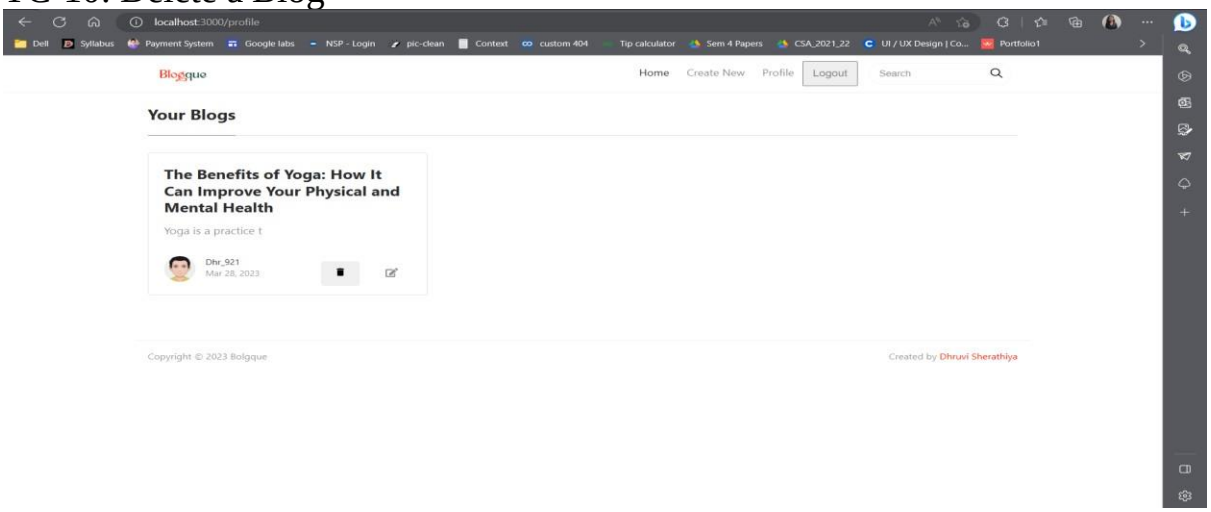


TC-09: Update a blog





TC-10: Delete a Blog



Conclusion

The functionalities are implemented in system after understanding allthe system modules according to the requirements. Functionalities that are successfully implemented in the system are:

- User Registration
- User Login / Logout
- Read all blogs
- Create new blog
- Update blog
- Delete a blog
- Read full blog

Future Enhancement

Below are some future extensions to this project in order to improvethe project.

- Commenting System
- Image Integration
- Category Filtering
- Search Functionality

References

Following links and websites were referred during the development ofthis project.

- Stack overflow
- Microsoft Documentation
- React
- Bootstrap