Bahria University,

Karachi Campus

A logo with text on it

Description automatically generated

LAB EXPERIMENT NO.

05

LIST OF TASKS

|  |  |
| --- | --- |
| TASK NO | OBJECTIVE |
| **01** | Design and implement an ASP.NET Core Web API with endpoints for GET (retrieve products), POST (add products), PUT (update products), and DELETE (remove products) methods to manage a product inventory system. |
| **02** | Create an ASP.NET Core Web API for managing student records, enabling CRUD operations (GET, POST, PUT, and DELETE) for adding, retrieving, updating, and deleting student information. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Submitted On:

21-03-2024

(Date: DD/MM/YYYY)

**Task No. 01**: Design and implement an ASP.NET Core Web API with endpoints for GET (retrieve products), POST (add products), PUT (update products), and DELETE (remove products) methods to manage a product inventory system.

**Solution:**

**Products.cs**

namespace LAB05Task1.Models

{

public class Product

{

public int Id { get; set; }

public string Name { get; set; }

public string Description { get; set; }

public string Price { get; set; }

}

}

**ProductsDbContext.cs**

using Microsoft.EntityFrameworkCore;

namespace LAB05Task1.Models

{

public class ProductsDbContext : DbContext

{

public ProductsDbContext(DbContextOptions options):base(options) {

}

public DbSet<Product> productss { get; set; }

}

}

**ProductssController.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using Microsoft.AspNetCore.Http;

using Microsoft.AspNetCore.Mvc;

using Microsoft.EntityFrameworkCore;

using LAB05Task1.Models;

namespace LAB05Task1.Controllers

{

[Route("api/[controller]")]

[ApiController]

public class productssController : ControllerBase

{

private readonly ProductsDbContext \_context;

public productssController(ProductsDbContext context)

{

\_context = context;

}

// GET: api/productss

[HttpGet]

public async Task<ActionResult<IEnumerable<Product>>> Getproductss()

{

if (\_context.productss == null)

{

return NotFound();

}

return await \_context.productss.ToListAsync();

}

// GET: api/productss/5

[HttpGet("{id}")]

public async Task<ActionResult<Product>> GetProduct(int id)

{

if (\_context.productss == null)

{

return NotFound();

}

var product = await \_context.productss.FindAsync(id);

if (product == null)

{

return NotFound();

}

return product;

}

// PUT: api/productss/5

// To protect from overposting attacks, see https://go.microsoft.com/fwlink/?linkid=2123754

[HttpPut("{id}")]

public async Task<IActionResult> PutProduct(int id, Product product)

{

if (id != product.Id)

{

return BadRequest();

}

\_context.Entry(product).State = EntityState.Modified;

try

{

await \_context.SaveChangesAsync();

}

catch (DbUpdateConcurrencyException)

{

if (!ProductExists(id))

{

return NotFound();

}

else

{

throw;

}

}

return NoContent();

}

// POST: api/productss

// To protect from overposting attacks, see https://go.microsoft.com/fwlink/?linkid=2123754

[HttpPost]

public async Task<ActionResult<Product>> PostProduct(Product product)

{

if (\_context.productss == null)

{

return Problem("Entity set 'productssDbContext.productss' is null.");

}

\_context.productss.Add(product);

await \_context.SaveChangesAsync();

return CreatedAtAction("GetProduct", new { id = product.Id }, product);

}

// DELETE: api/productss/5

[HttpDelete("{id}")]

public async Task<IActionResult> DeleteProduct(int id)

{

if (\_context.productss == null)

{

return NotFound();

}

var product = await \_context.productss.FindAsync(id);

if (product == null)

{

return NotFound();

}

\_context.productss.Remove(product);

await \_context.SaveChangesAsync();

return NoContent();

}

private bool ProductExists(int id)

{

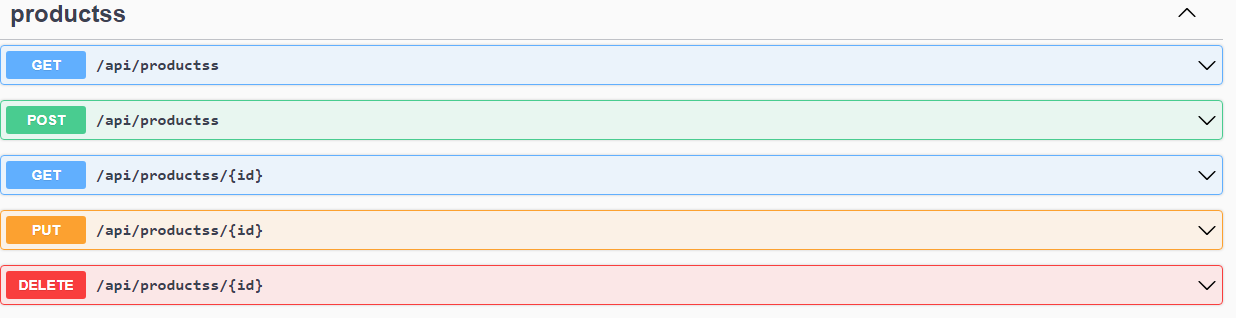
return (\_context.productss?.Any(e => e.Id == id)).GetValueOrDefault();

}

}

}

**Output:**

****

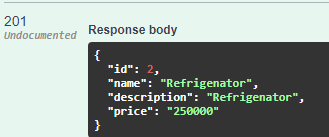
**A screen shot of a computer code

Description automatically generatedGet Request Response**

**A screenshot of a computer program

Description automatically generatedPost Request Response**

**Get Request api/productss/2**

**A screen shot of a computer code

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**Task No. 02**: Create an ASP.NET Core Web API for managing student records, enabling CRUD operations (GET, POST, PUT, and DELETE) for adding, retrieving, updating, and deleting student information.

**Solution:**

**Student.cs**

using System;

using System.Collections.Generic;

namespace CCLAB05Task2.Models

{

public partial class Student

{

public int Id { get; set; }

public string StudentName { get; set; } = null!;

public string StudentGender { get; set; } = null!;

public int Age { get; set; }

public int Standard { get; set; }

public string FatherName { get; set; } = null!;

}

}

**StudentContext.cs**

using System;

using System.Collections.Generic;

using Microsoft.EntityFrameworkCore;

using Microsoft.EntityFrameworkCore.Metadata;

namespace CCLAB05Task2.Models

{

public partial class EmployeeContext : DbContext

{

public EmployeeContext()

{

}

public EmployeeContext(DbContextOptions<EmployeeContext> options)

: base(options)

{

}

public virtual DbSet<Student> Students { get; set; } = null!;

public virtual DbSet<Teacher> Teachers { get; set; } = null!;

public virtual DbSet<UserTable> UserTables { get; set; } = null!;

protected override void OnConfiguring(DbContextOptionsBuilder optionsBuilder)

{

if (!optionsBuilder.IsConfigured)

{

#warning To protect potentially sensitive information in your connection string, you should move it out of source code. You can avoid scaffolding the connection string by using the Name= syntax to read it from configuration - see https://go.microsoft.com/fwlink/?linkid=2131148. For more guidance on storing connection strings, see http://go.microsoft.com/fwlink/?LinkId=723263.

}

}

protected override void OnModelCreating(ModelBuilder modelBuilder)

{

modelBuilder.Entity<Student>(entity =>

{

entity.ToTable("Student");

entity.Property(e => e.Id).HasColumnName("ID");

entity.Property(e => e.FatherName)

.HasMaxLength(50)

.IsUnicode(false);

entity.Property(e => e.StudentGender)

.HasMaxLength(50)

.IsUnicode(false);

entity.Property(e => e.StudentName)

.HasMaxLength(50)

.IsUnicode(false);

});

modelBuilder.Entity<Teacher>(entity =>

{

entity.ToTable("Teacher");

entity.Property(e => e.Id).HasColumnName("ID");

entity.Property(e => e.Name)

.HasMaxLength(50)

.IsUnicode(false);

entity.Property(e => e.Qualification)

.HasMaxLength(50)

.IsUnicode(false);

});

modelBuilder.Entity<UserTable>(entity =>

{

entity.ToTable("UserTable");

entity.Property(e => e.Email)

.HasMaxLength(50)

.IsUnicode(false);

entity.Property(e => e.Gender)

.HasMaxLength(50)

.IsUnicode(false);

entity.Property(e => e.Name)

.HasMaxLength(50)

.IsUnicode(false);

entity.Property(e => e.Password)

.HasMaxLength(10)

.IsFixedLength();

});

OnModelCreatingPartial(modelBuilder);

}

partial void OnModelCreatingPartial(ModelBuilder modelBuilder);

}

}

**StudentsController.cs**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using Microsoft.AspNetCore.Http;

using Microsoft.AspNetCore.Mvc;

using Microsoft.EntityFrameworkCore;

using CCLAB05Task2.Models;

namespace CCLAB05Task2.Controllers

{

[Route("api/[controller]")]

[ApiController]

public class StudentsController : ControllerBase

{

private readonly EmployeeContext \_context;

public StudentsController(EmployeeContext context)

{

\_context = context;

}

// GET: api/Students

[HttpGet]

public async Task<ActionResult<IEnumerable<Student>>> GetStudents()

{

if (\_context.Students == null)

{

return NotFound();

}

return await \_context.Students.ToListAsync();

}

// GET: api/Students/5

[HttpGet("{id}")]

public async Task<ActionResult<Student>> GetStudent(int id)

{

if (\_context.Students == null)

{

return NotFound();

}

var student = await \_context.Students.FindAsync(id);

if (student == null)

{

return NotFound();

}

return student;

}

// PUT: api/Students/5

// To protect from overposting attacks, see https://go.microsoft.com/fwlink/?linkid=2123754

[HttpPut("{id}")]

public async Task<IActionResult> PutStudent(int id, Student student)

{

if (id != student.Id)

{

return BadRequest();

}

\_context.Entry(student).State = EntityState.Modified;

try

{

await \_context.SaveChangesAsync();

}

catch (DbUpdateConcurrencyException)

{

if (!StudentExists(id))

{

return NotFound();

}

else

{

throw;

}

}

return NoContent();

}

// POST: api/Students

// To protect from overposting attacks, see https://go.microsoft.com/fwlink/?linkid=2123754

[HttpPost]

public async Task<ActionResult<Student>> PostStudent(Student student)

{

if (\_context.Students == null)

{

return Problem("Entity set 'EmployeeContext.Students' is null.");

}

\_context.Students.Add(student);

await \_context.SaveChangesAsync();

return CreatedAtAction("GetStudent", new { id = student.Id }, student);

}

// DELETE: api/Students/5

[HttpDelete("{id}")]

public async Task<IActionResult> DeleteStudent(int id)

{

if (\_context.Students == null)

{

return NotFound();

}

var student = await \_context.Students.FindAsync(id);

if (student == null)

{

return NotFound();

}

\_context.Students.Remove(student);

await \_context.SaveChangesAsync();

return NoContent();

}

private bool StudentExists(int id)

{

return (\_context.Students?.Any(e => e.Id == id)).GetValueOrDefault();

}

}

}

**Output:**

**A group of colorful rectangular objects

Description automatically generated with medium confidence**

**A computer screen shot of a computer code

Description automatically generatedGet Request Response Post Request Response**

**A screenshot of a computer code

Description automatically generated**

**Get Request api/Students/2**

**A screen shot of a computer code

Description automatically generatedA screen shot of a computer code

Description automatically generated**

**A screenshot of a computer

Description automatically generated**