Ganpat University

॥ विद्यया समाजोत्कर्षः ॥

A.M. Patel Institute of Computer Studies

WEB TECHNOLOGY USING .NET (P12A2WTD)

MCA SEM-2

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20.	Implement c# program to demonstrate the use of the following methods of Hashtable Class. Add(), Remove(), ContainsKey(), ContainsValue()	16/04/2024		
21.	Implement c# program to demonstrate the use of Exception Handling. (try, catch, finally)	16/04/2024		
22.	Implement c# program to demonstrate the use of LINQ Query Syntax and LINQ Method Syntax.	18/04/2024		
23.	Implement c# program to demonstrate the use of LINQ Query Operators (select, where, OrderBy, Count, Max, Min, Sum, All, Any, Contains, etc.)	19/04/2024		
24.	Develop ASP.NET Core MVC web application to demonstrate the use of ViewData, Viewbag and TempData.	22/04/2024		
25.	Develop ASP.NET Core MVC web application to Create a Layout View in ASP.NET Core MVC.	24/04/2024		
26.	Develop ASP.NET Core MVC web application to demonstrate the use of Razor Syntax (If …else, Switch, For Loop, For each Loop, While Loop)	25/04/2024		

27.	**Create ASP.NET Core MVC registration page using Razor Syntax and Html Helper methods to register new student.** **First name (TextBox)** **Last name or initial (TextBox)** **Gender (Radio Button)** **Age (Take numeric input only)** **Existing Qualification(Dropdown List)** **Email address (Regular Expression)** **Choose a password (min. 8 characters)**	**26/04/2024**		
28.	**Develop ASP.NET core MVC web application to perform CRUD operation by using entity framework with validation on Book model.** **Book (BookId, BookTitle, AuthorName, Publication and Price)**	**29/04/2024**		
29.	**Develop ASP.NET Core MVC application to perform CRUD operation by using entity framework with validation on Student, Course and Enrollment models.**	**30/04/2024**		

1.	**Implement C# Program to Calculates the Distance Travelled by Reading Speed and Time.**
Code	

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.CompilerServices;
using System.Text;
using System.Threading.Tasks;
namespace mehtods
{
    class Program
    {
        static void Main()
        {
            double speed, time, distance;
            Console.WriteLine("Develop by Vidhey H. Detroja");
            Console.WriteLine("Enroll no. - 23034211007");
            Console.Write("Enter speed in km/h: ");
            speed = Convert.ToDouble(Console.ReadLine());
            Console.Write("Enter time in hours: ");
            time = Convert.ToDouble(Console.ReadLine());
            distance = speed * time;
            Console.WriteLine("Distance travelled: {0} kilometers", distance);
        }
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no. - 23034211007
Enter speed in km/h: 219
Enter time in hours: 4
Distance travelled: 876 kilometers
```

2.	**Implement C# Program to calculate perimeter of circle and rectangle.**
Code	

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.CompilerServices;
using System.Text;
using System.Threading.Tasks;
namespace mehtods
{
   class Program
   {
      static void Main()
      {
         Console.WriteLine("Develop by Vidhey H. Detroja");
         Console.WriteLine("Enroll no.- 2303421007");
         Console.Write("Enter the radius of the circle: ");
         double radius = Convert.ToDouble(Console.ReadLine());
         double circlePerimeter = 2 * 3.14 * radius;
         Console.WriteLine("Perimeter of the circle: {0}", circlePerimeter);
         Console.Write("\nEnter the length of the rectangle: ");
         double length = Convert.ToDouble(Console.ReadLine());
         Console.Write("Enter the width of the rectangle: ");
         double width = Convert.ToDouble(Console.ReadLine());
         double rectanglePerimeter = 2 * (length + width);
         Console.WriteLine("Perimeter of the rectangle: {0}", rectanglePerimeter);
      }
   }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Enter the radius of the circle: 11
Perimeter of the circle: 69.08

Enter the length of the rectangle: 19
Enter the width of the rectangle: 21
Perimeter of the rectangle: 80
```

3.	**Implement C# Program to check whether the entered number is even or odd.**
Code	

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.CompilerServices;
using System.Text;
using System.Threading.Tasks;
namespace mehtods
{
    class Program
    {
        static void Main()
        {
            Console.WriteLine("Develop by Vidhey H. Detroja");
            Console.WriteLine("Enroll no.- 2303421007");
            Console.Write("Enter a number: ");
            int number = Convert.ToInt32(Console.ReadLine());
            if (number % 2 == 0)
            {
                Console.WriteLine("{0} is an even number.", number);
            }
            else{
                Console.WriteLine("{0} is an odd number.", number);
            }
        }
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Enter a number: 19
19 is an odd number.
```

4.	**Implement C# Program to check whether the entered number is an Armstrong number or not.**
Code	

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.CompilerServices;
using System.Text;
using System.Threading.Tasks;
namespace mehtods
{
    class Program
    {
        static void Main()
        {
            Console.WriteLine("Develop by Vidhey H. Detroja");
            Console.WriteLine("Enroll no.- 2303421007");
            Console.Write("Enter a number: ");
            int number = Convert.ToInt32(Console.ReadLine());
            int numDigits = 0;
            int originalNumber = number;
            int sum = 0;
            while (number != 0)
            {
                numDigits++;
                number /= 10;
            }
            number = originalNumber;
            while (number != 0)
            {
                int digit = number % 10;
                sum += (int)Math.Pow(digit, numDigits);
```

```
            number /= 10;
        }
        if (sum == originalNumber)
        {
            Console.WriteLine("{0} is an Armstrong number.", originalNumber);
        }
        else
        {
            Console.WriteLine("{0} is not an Armstrong number.", originalNumber);
        }
    }
}
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Enter a number: 1119
1119 is not an Armstrong number.
```

5.	**Implement C# Program to Reads a Grade & Display the Equivalent Description.(Switch Case)**
Code	

```
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        Console.WriteLine("Enter your grade (A, B, C, D, or F):");
        char grade = Convert.ToChar(Console.ReadLine().ToUpper());
        string description;
        switch (grade)
        {
            case 'A':
                description = "Excellent";
                break;
            case 'B':
                description = "Good";
                break;
            case 'C':
                description = "Average";
                break;
            case 'D':
                description = "Below Average";
                break;
            case 'F':
                description = "Fail";
                break;
            default:
                description = "Invalid grade";
```

	break; } Console.WriteLine("Grade Description: " + description); } }
Output	Develop by Vidhey H. Detroja Enroll no.- 2303421007 Enter your grade (A, B, C, D, or F): A Grade Description: Excellent

6.	**Implement C# Program to Displays the ATM Transaction.** **Here The types of ATM transaction are** **1) Balance checking** **2) Cash withdrawal** **3) Cash deposition.** **You can opt any of the above transaction according to your need of transaction. (Switch Case)**

Code	using System;
	
	class Program
	
	{
	
	static void Main(string[] args)
	
	{
	
	Console.WriteLine("Develop by Vidhey H. Detroja");
	
	Console.WriteLine("Enroll no.- 2303421007");
	
	Console.WriteLine("Welcome to the ATM!");
	
	Console.WriteLine("Choose your transaction type:");
	
	Console.WriteLine("1) Balance checking");
	
	Console.WriteLine("2) Cash withdrawal");
	
	Console.WriteLine("3) Cash deposition");
	
	int choice = Convert.ToInt32(Console.ReadLine());
	
	switch (choice)
	
	{
	
	case 1:
	
	Console.WriteLine("You selected: Balance checking");
	
	break;
	
	case 2:
	
	Console.WriteLine("You selected: Cash withdrawal");
	
	break;
	
	case 3:
	
	Console.WriteLine("You selected: Cash deposition");

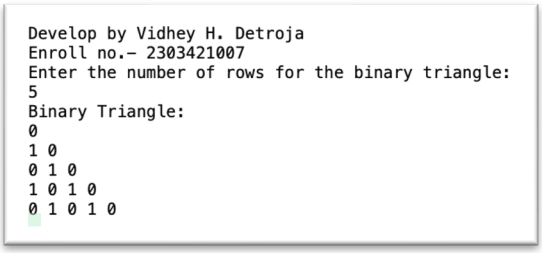
```
            break;
        default:
            Console.WriteLine("Invalid choice. Please select a valid transaction type.");
            break;
    }
  }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Welcome to the ATM!
Choose your transaction type:
1) Balance checking
2) Cash withdrawal
3) Cash deposition
1
You selected: Balance checking
```

7.	**Implement C# Program Prints a Binary Triangle.(Using For Loop)** **Problem Solution: Binary Triangle is a Triangle formed with 1's and 0's.Number of rows in the binary triangle is obtained from the user.**

Code	using System;
	
	class Program
	
	{
	
	static void Main(string[] args)
	
	{
	
	Console.WriteLine("Develop by Vidhey H. Detroja");
	
	Console.WriteLine("Enroll no.- 2303421007");
	
	Console.WriteLine("Enter the number of rows for the binary triangle:");
	
	int numRows = Convert.ToInt32(Console.ReadLine());
	
	Console.WriteLine("Binary Triangle:");
	
	for (int i = 1; i <= numRows; i++){
	
	for (int j = 1; j <= i; j++){
	
	if ((i + j) % 2 == 0){
	
	Console.Write("0 ");
	
	}else{
	
	Console.Write("1 ");
	
	}
	
	}
	
	Console.WriteLine(); // Move to the next line after printing each row
	
	}
	
	}
	
	}

Output	 Develop by Vidhey H. Detroja Enroll no.- 2303421007 Enter the number of rows for the binary triangle: 5 Binary Triangle: 0 1 0 0 1 0 1 0 1 0 0 1 0 1 0

8.	**Implement c# program to demonstrate the use of Continue and goto Statement.**
Code	

```
using System;

class Program

{

   static void Main(string[] args)

   {

      Console.WriteLine("Develop by Vidhey H. Detroja");

      Console.WriteLine("Enroll no.- 2303421007");

      Console.WriteLine("Demonstrating the use of continue statement:");

      for (int i = 1; i <= 5; i++){

         if (i == 3{

            continue;

         }

         Console.WriteLine(i);

      }

      Console.WriteLine("\nDemonstrating the use of goto statement:");

      int count = 0;

      startLoop:

      count++;

      if (count <= 5){

         Console.WriteLine(count);

         goto startLoop;

      }

   }

}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Demonstrating the use of continue statement:
1
2
4
5

Demonstrating the use of goto statement:
1
2
3
4
5
```

9.	**Implement C# Program Gets a Number and Display the Number with its Reverse.(Using While Loop)**
Code	

```
using System;

class Program

{

   static void Main(string[] args)

   {

      Console.WriteLine("Develop by Vidhey H. Detroja");

      Console.WriteLine("Enroll no.- 2303421007");

      Console.WriteLine("Enter a number:");

      int number = Convert.ToInt32(Console.ReadLine());

      int originalNumber = number;

      int reverse = 0;

      while (number > 0)

      {

         int digit = number % 10;

         reverse = reverse * 10 + digit;

         number /= 10;

      }

      Console.WriteLine("Original number: " + originalNumber);

      Console.WriteLine("Reverse number: " + reverse);

   }

}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Enter a number:
1911
Original number: 1911
Reverse number: 1191
```

10.	**Implement C# Program to reverse an array. (Using for each Loop)**
Code	

```
class Program
{
    static void Main(string[] args)
    {
        int[] array = { 1, 2, 3, 4, 5 };
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        Console.WriteLine("Original array:");
        PrintArray(array);
        ReverseArray(array);
        Console.WriteLine("\nReversed array:");
        PrintArray(array);
    }
    static void ReverseArray(int[] arr)
    {
        int[] reversedArray = new int[arr.Length];
        int index = 0;
        foreach (int element in arr)
        {
            reversedArray[arr.Length - 1 - index] = element;
            index++;
        }
        for (int i = 0; i < arr.Length; i++)
        {
            arr[i] = reversedArray[i];
        }
    }
    static void PrintArray(int[] arr)
    {
```

```
        foreach (int element in arr)
        {
            Console.Write(element + " ");
        }
        Console.WriteLine();
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Original array:
1 2 3 4 5

Reversed array:
5 4 3 2 1
```

11. **Implement C# Program to search an element in an array.**

Code

```
using System;

class Program

{

    static void Main(string[] args)

    {

        Console.WriteLine("Develop by Vidhey H. Detroja");

        Console.WriteLine("Enroll no.- 2303421007");

        int[] array = { 2, 4, 6, 8, 10, 12, 14, 16 };

        int elementToSearch = 10;

        int index = SearchElement(array, elementToSearch);

        if (index != -1){

            Console.WriteLine("Element " + elementToSearch + " found at index " + index);

        } else{

            Console.WriteLine("Element " + elementToSearch + " not found in the array.");

        }

    }

    static int SearchElement(int[] arr, int element){

        for (int i = 0; i < arr.Length; i++){

            if (arr[i] == element){

                return i; // Return the index where the element is found

            }

        }

        return -1; // Return -1 if the element is not found in the array

    }

}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Element 10 found at index 4
```

12.	**Implement C# Program to Demonstrates Jagged Arrays.**
Code	

```
using System;
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        int[][] jaggedArray = new int[3][];
        jaggedArray[0] = new int[] { 1, 2, 3 };
        jaggedArray[1] = new int[] { 4, 5 };
        jaggedArray[2] = new int[] { 6, 7, 8, 9 };
        Console.WriteLine("Jagged Array:");
        for (int i = 0; i < jaggedArray.Length; i++)
        {
            Console.Write("Row " + i + ": ");
            for (int j = 0; j < jaggedArray[i].Length; j++)
            {
                Console.Write(jaggedArray[i][j] + " ");
            }
            Console.WriteLine();
        }
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Jagged Array:
Row 0: 1 2 3
Row 1: 4 5
Row 2: 6 7 8 9
```

13.	**Implement c# program to list all substrings in a given string.**
Code	

```
using System;
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        Console.WriteLine("Enter a string:");
        string inputString = Console.ReadLine();
        Console.WriteLine("Substrings:");
        ListSubstrings(inputString);
    }
    static void ListSubstrings(string str)
    {
        int length = str.Length;
        for (int i = 0; i < length; i++)
        {
            for (int j = i + 1; j <= length; j++)
            {
                string substring = str.Substring(i, j - i);
                Console.WriteLine(substring);
            }
        }
    }
}
```

Output	

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Enter a string:
Patel
Substrings:
P
Pa
Pat
Pate
Patel
a
at
ate
atel
t
te
tel
e
el
l
```

14.	**Implement c# program to demonstrate the use of following String Methods.** **ToUpper(), ToLOwer(), Concat(), IndexOf(), Substring()**

Code	using System;
	class Program
	{
	static void Main(string[] args)
	{
	string str1 = "Hello";
	string str2 = "World";
	Console.WriteLine("Develop by Vidhey H. Detroja");
	Console.WriteLine("Enroll no.- 2303421007");
	Console.WriteLine("ToUpper() method:");
	Console.WriteLine("str1 in uppercase: " + str1.ToUpper());
	Console.WriteLine("str2 in uppercase: " + str2.ToUpper());
	Console.WriteLine("\nToLower() method:");
	Console.WriteLine("str1 in lowercase: " + str1.ToLower());
	Console.WriteLine("str2 in lowercase: " + str2.ToLower());
	Console.WriteLine("\nConcat() method:");
	string concatenatedString = string.Concat(str1, " ", str2);
	Console.WriteLine("Concatenated string: " + concatenatedString);
	Console.WriteLine("\nIndexOf() method:");
	int index = concatenatedString.IndexOf("World");
	Console.WriteLine("Index of 'World': " + index);
	Console.WriteLine("\nSubstring() method:");
	string subString = concatenatedString.Substring(index);
	Console.WriteLine("Substring from index " + index + ": " + subString);
	}
	}

Output	

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
ToUpper() method:
str1 in uppercase: HELLO
str2 in uppercase: WORLD

ToLower() method:
str1 in lowercase: hello
str2 in lowercase: world

Concat() method:
Concatenated string: Hello World

IndexOf() method:
Index of 'World': 6

Substring() method:
Substring from index 6: World
```

15.	**Implement c# program to demonstrate the use of Access Modifiers.**
Code	

```
using System;
public class Animal
{
    public string Name;
    protected int Age;
    private string Species;
    public Animal(string name, int age, string species)
    {
        Name = name;
        Age = age;
        Species = species;
    }
    public void DisplayInfo()
    {
        Console.WriteLine($"Name: {Name}, Age: {Age}, Species: {Species}");
    }
}
public class Dog : Animal
{


    public Dog(string name, int age) : base(name, age, "Dog")
    {
    }
    public new void DisplayInfo()
    {
        Console.WriteLine($"Dog's Name: {Name}, Dog's Age: {Age}");
    }
}
class Program
```

```
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        Animal animal = new Animal("goldy", 5, "Cat");
        Console.WriteLine("Accessing public members of Animal class:");
        Console.WriteLine($"Name: {animal.Name}");
        animal.DisplayInfo();
        Console.WriteLine();
        Dog dog = new Dog("Buddy", 3);
        Console.WriteLine("Accessing public members of Dog class:");
        Console.WriteLine($"Name: {dog.Name}");
        dog.DisplayInfo();
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Accessing public members of Animal class:
Name: goldy
Name: goldy, Age: 5, Species: Cat

Accessing public members of Dog class:
Name: Buddy
Dog's Name: Buddy, Dog's Age: 3
```

16.	**Implement c# program to demonstrate the use of Constructor and Destructor.**
Code	

```
using System;
public class MyClass
{
    public MyClass()
    {
        Console.WriteLine("Constructor called.");
    }
    ~MyClass()
    {
        Console.WriteLine("Destructor called.");
    }
}
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        MyClass obj = new MyClass();
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Constructor called.
```

17.	**Implement c# program to demonstrate the use of Inheritance (Single Inheritance, Multi-Level Inheritance)**

Code	using System;
	public class Animal
	{
	public void Eat()
	{
	Console.WriteLine("Animal is eating.");
	}
	}
	public class Dog : Animal
	{
	public void Bark()
	{
	Console.WriteLine("Dog is barking.");
	}
	}
	public class Labrador : Dog
	{
	public void DisplayColor()
	{
	Console.WriteLine("Labrador is brown in color.");
	}
	}
	class Program
	{
	static void Main(string[] args)
	{
	Console.WriteLine("Develop by Vidhey H. Detroja");
	Console.WriteLine("Enroll no.- 2303421007");

```
        Console.WriteLine("Single Inheritance:");

        Dog dog = new Dog();

        dog.Eat();

        dog.Bark();

        Console.WriteLine();

        Console.WriteLine("Multi-Level Inheritance:");

        Labrador labrador = new Labrador();

        labrador.Eat();

        labrador.Bark();

        labrador.DisplayColor();

    }

}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Single Inheritance:
Animal is eating.
Dog is barking.

Multi-Level Inheritance:
Animal is eating.
Dog is barking.
Labrador is brown in color.
```

18.	**Implement c# program to demonstrate the use of Polymorphism (Method Overloading and Method Overriding)**
Code	

```
using System;
public class Shape
{
    public void Draw()
    {
        Console.WriteLine("Drawing a shape");
    }
    public virtual void CalculateArea()
    {
        Console.WriteLine("Calculating area of a shape");
    }
}
public class Circle : Shape
{
    public void Draw(int diameter)
    {
        Console.WriteLine($"Drawing a circle with diameter {diameter}");
    }
    public override void CalculateArea()
    {
        Console.WriteLine("Calculating area of a circle");
    }
}
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
```

```
        Console.WriteLine("Enroll no.- 2303421007");

        Shape shape = new Shape();

        shape.Draw();

        Circle circle = new Circle();

        circle.Draw(10);

        Console.WriteLine();

        Shape circleShape = new Circle();

        circleShape.CalculateArea();

    }

}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Drawing a shape
Drawing a circle with diameter 10

Calculating area of a circle
```

19.	**Implement c# program to demonstrate the use of the following methods of ArrayList Class.** **Add(), Insert(), Remove(), RemoveAt(), Sort(), Reverse(), Contains(), IndexOf()**

Code	using System;
	using System.Collections;
	class Program
	{
	static void Main(string[] args)
	{
	Console.WriteLine("Develop by Vidhey H. Detroja");
	Console.WriteLine("Enroll no.- 2303421007");
	ArrayList arrayList = new ArrayList();
	arrayList.Add("Apple");
	arrayList.Add("Banana");
	arrayList.Add("Orange");
	arrayList.Insert(1, "Grapes");
	Console.WriteLine("Elements in the ArrayList:");
	foreach (var item in arrayList)
	{
	Console.WriteLine(item);
	}
	Console.WriteLine();
	arrayList.Remove("Banana");
	arrayList.RemoveAt(2);
	Console.WriteLine("Elements in the ArrayList after removal:");
	foreach (var item in arrayList){
	Console.WriteLine(item);}
	Console.WriteLine();
	arrayList.Sort();
	Console.WriteLine("Elements in the ArrayList after sorting:");
	foreach (var item in arrayList) {

```
            Console.WriteLine(item);}

        Console.WriteLine();

        arrayList.Reverse();

        Console.WriteLine("Elements in the ArrayList after reversing:");

        foreach (var item in arrayList){

            Console.WriteLine(item);}

        Console.WriteLine();

        Console.WriteLine("Does the ArrayList contain 'Grapes'? " + arrayList.Contains("Grapes"));

        Console.WriteLine("Does the ArrayList contain 'Mango'? " + arrayList.Contains("Mango"));

        Console.WriteLine();

        Console.WriteLine("Index of 'Apple' in the ArrayList: " + arrayList.IndexOf("Apple"));

        Console.WriteLine("Index of 'Orange' in the ArrayList: " + arrayList.IndexOf("Orange"));

    }

}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Elements in the ArrayList:
Apple
Grapes
Banana
Orange

Elements in the ArrayList after removal:
Apple
Grapes

Elements in the ArrayList after sorting:
Apple
Grapes

Elements in the ArrayList after reversing:
Grapes
Apple

Does the ArrayList contain 'Grapes'? True
Does the ArrayList contain 'Mango'? False

Index of 'Apple' in the ArrayList: 1
Index of 'Orange' in the ArrayList: -1
```

20.	**Implement c# program to demonstrate the use of the following methods of Hashtable Class.** **Add(), Remove(), ContainsKey(), ContainsValue()**

Code	using System;
	using System.Collections;
	class Program
	{
	static void Main(string[] args)
	{
	Console.WriteLine("Develop by Vidhey H. Detroja");
	Console.WriteLine("Enroll no.- 2303421007");
	Hashtable hashtable = new Hashtable();
	hashtable.Add("John", 25);
	hashtable.Add("Alice", 30);
	hashtable.Add("Bob", 28);
	Console.WriteLine("Key-Value pairs in the Hashtable:");
	foreach (DictionaryEntry entry in hashtable)
	{
	Console.WriteLine($"Key: {entry.Key}, Value: {entry.Value}");
	}
	Console.WriteLine();
	hashtable.Remove("Alice");
	Console.WriteLine("Key-Value pairs in the Hashtable after removal:");
	foreach (DictionaryEntry entry in hashtable)
	{
	Console.WriteLine($"Key: {entry.Key}, Value: {entry.Value}");
	}
	Console.WriteLine();
	Console.WriteLine("Does the Hashtable contain key 'Alice'? " + hashtable.ContainsKey("Alice"));
	Console.WriteLine("Does the Hashtable contain key 'Bob'? " +

	hashtable.ContainsKey("Bob"));
	
	Console.WriteLine();
	
	Console.WriteLine("Does the Hashtable contain value 30? " + hashtable.ContainsValue(30));
	
	Console.WriteLine("Does the Hashtable contain value 28? " + hashtable.ContainsValue(28));
	
	}
	
	}

Output	Develop by Vidhey H. Detroja Enroll no.- 2303421007 Key-Value pairs in the Hashtable: Key: John, Value: 25 Key: Alice, Value: 30 Key: Bob, Value: 28 Key-Value pairs in the Hashtable after removal: Key: John, Value: 25 Key: Bob, Value: 28 Does the Hashtable contain key 'Alice'? False Does the Hashtable contain key 'Bob'? True Does the Hashtable contain value 30? False Does the Hashtable contain value 28? True

21.	**Implement c# program to demonstrate the use of Exception Handling. (try, catch, finally)**
Code	

```
using System;
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Develop by Vidhey H. Detroja");
        Console.WriteLine("Enroll no.- 2303421007");
        try
        {
            int[] numbers = { 1, 2, 3, 4, 5 };
            Console.WriteLine("Accessing element at index 10: " + numbers[10]);
        }
        catch (IndexOutOfRangeException ex)
        {
            Console.WriteLine("Exception caught: " + ex.Message);
        }
        finally
        {
            Console.WriteLine("Inside finally block (Example 1)");
        }
        Console.WriteLine();
        try
        {
            int x = 10;
            int y = 0;
            int result = x / y; // Division by zero will throw an exception
            Console.WriteLine("Result of division: " + result);
        }
        catch (DivideByZeroException ex)
```

```
        {
            Console.WriteLine("Exception caught: " + ex.Message);
        }
        finally
        {
            Console.WriteLine("Inside finally block (Example 2)");
        }
        Console.WriteLine();
        try
        {
            string str = null;
            Console.WriteLine("Length of string: " + str.Length);
        }
        finally
        {
            Console.WriteLine("Inside finally block (Example 3)");
        }
    }
}
```

Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Exception caught: Index was outside the bounds of the array.
Inside finally block (Example 1)

Exception caught: Attempted to divide by zero.
Inside finally block (Example 2)
```

22.	**Implement c# program to demonstrate the use of LINQ Query Syntax and LINQ Method Syntax.**
Code	

```
using System;

using System.Collections.Generic;

using System.Linq;

class Program{

    static void Main(string[] args){

        Console.WriteLine("Develop by Vidhey H. Detroja");

        Console.WriteLine("Enroll no.- 2303421007");

        List<int> numbers = new List<int> { 1, 2, 3, 4, 5 };

        var querySyntaxResult = from num in numbers

                                where num % 2 == 0

                                select num;

        Console.WriteLine("Result using LINQ Query Syntax:");

        foreach (var num in querySyntaxResult){

            Console.WriteLine(num);

        }

        Console.WriteLine();

        var methodSyntaxResult = numbers.Where(num => num % 2 == 0);

        Console.WriteLine("Result using LINQ Method Syntax:");

        foreach (var num in methodSyntaxResult){

            Console.WriteLine(num);

        }

    }

}
```

Output	`Develop by Vidhey H. Detroja`
	`Enroll no.- 2303421007`
	`Result using LINQ Query Syntax:`
	`2`
	`4`
	
	`Result using LINQ Method Syntax:`
	`2`
	`4`

23.	**Implement c# program to demonstrate the use of LINQ Query Operators (select, where, OrderBy, Count, Max, Min, Sum, All, Any, Contains, etc.)**
Code	

```
using System;
using System.Collections.Generic;
using System.Linq;
class Program
{
   static void Main(string[] args)
   {
      Console.WriteLine("Develop by Vidhey H. Detroja");
      Console.WriteLine("Enroll no.- 2303421007");
      List<int> numbers = new List<int> { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
      var evenNumbers = from num in numbers
                        where num % 2 == 0
                        select num;
      Console.WriteLine("Even numbers:");
      foreach (var num in evenNumbers)
      {
         Console.WriteLine(num);
      }
      Console.WriteLine();
      var orderedNumbers = from num in numbers
                           orderby num descending
                           select num;
      Console.WriteLine("Numbers in descending order:");
      foreach (var num in orderedNumbers)
      {
         Console.WriteLine(num);
      }
      Console.WriteLine();
```

```
        int count = numbers.Count();
        Console.WriteLine("Count of numbers: " + count);
        Console.WriteLine();
        int maxNumber = numbers.Max();
        Console.WriteLine("Maximum number: " + maxNumber);
        Console.WriteLine();
        int minNumber = numbers.Min();
        Console.WriteLine("Minimum number: " + minNumber);
        Console.WriteLine();
        int sum = numbers.Sum();
        Console.WriteLine("Sum of numbers: " + sum);
        Console.WriteLine();
        bool allEven = numbers.All(num => num % 2 == 0);
        Console.WriteLine("Are all numbers even? " + allEven);
        Console.WriteLine();
        bool anyOdd = numbers.Any(num => num % 2 != 0);
        Console.WriteLine("Are there any odd numbers? " + anyOdd);
        Console.WriteLine();
        bool containsSeven = numbers.Contains(7);
        Console.WriteLine("Does the list contain 7? " + containsSeven);
    }
}
```

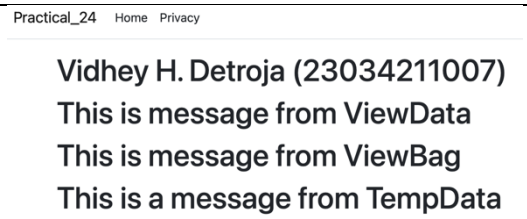
Output

```
Develop by Vidhey H. Detroja
Enroll no.- 2303421007
Even numbers:
2
4
6
8
10

Numbers in descending order:
10
9
8
7
6
5
4
3
2
1

Count of numbers: 10

Maximum number: 10

Minimum number: 1

Sum of numbers: 55

Are all numbers even? False

Are there any odd numbers? True

Does the list contain 7? True
```

24.	**Develop ASP.NET Core MVC web application to demonstrate the use of ViewData, Viewbag and TempData.**

Home Controller.cs	public IActionResult Index()
	{
	ViewData["De"] = "Vidhey H. Detroja (23034211007)";
	ViewData["Vi"] = "This is message from ViewData";
	ViewBag.Message = "This is message from ViewBag";
	TempData["Message"] = "This is a message from TempData";
	return View();
	}

Index.cshtml	@{
	ViewData["Title"] = "Home Page";
	}
	<h1>@ViewData["De"]</h1>
	<h1>@ViewData["Vi"]</h1>
	<h1>@ViewBag.Message</h1>
	<h1>@TempData["Message"]</h1>

Output	

25.	**Develop ASP.NET Core MVC web application to Create a Layout View in ASP.NET Core MVC.**

Index.cshtml	@{
	ViewData["Title"] = "Home Page";
	}
	<h1 class="display-4">Mobile Store</h1>

Layout.cshtml	<!DOCTYPE html>
	<html lang="en">
	<head>
	<meta charset="UTF-8">
	<meta http-equiv="X-UA-Compatible" content="IE=edge">
	<meta name="viewport" content="width=device-width, initial-scale=1.0">
	<title>Mobile Phone Landing Page</title>
	<style>
	/* CSS styles */
	body {
	font-family: Arial, sans-serif;
	margin: 0;
	}
	header {
	background-color: #333;
	color: #fff;
	display: flex;
	justify-content: space-between;
	align-items: center;
	padding: 10px;
	}
	.logo {
	font-size: 1.5em;

```
}
nav ul {
    list-style: none;
    margin: 0;
    padding: 0;
    display: flex;
}
nav ul li {
    margin: 0 10px;
}
nav ul li a {
    color: #fff;
    text-decoration: none;
}
#menu-button {
    display: none;
    font-size: 1.5em;
    background-color: #333;
    color: #fff;
    border: none;
}
.hero {
    padding: 20px;
    text-align: center;
    background-color: #f4f4f4;
}
.hero img {
    width: 80%;
```

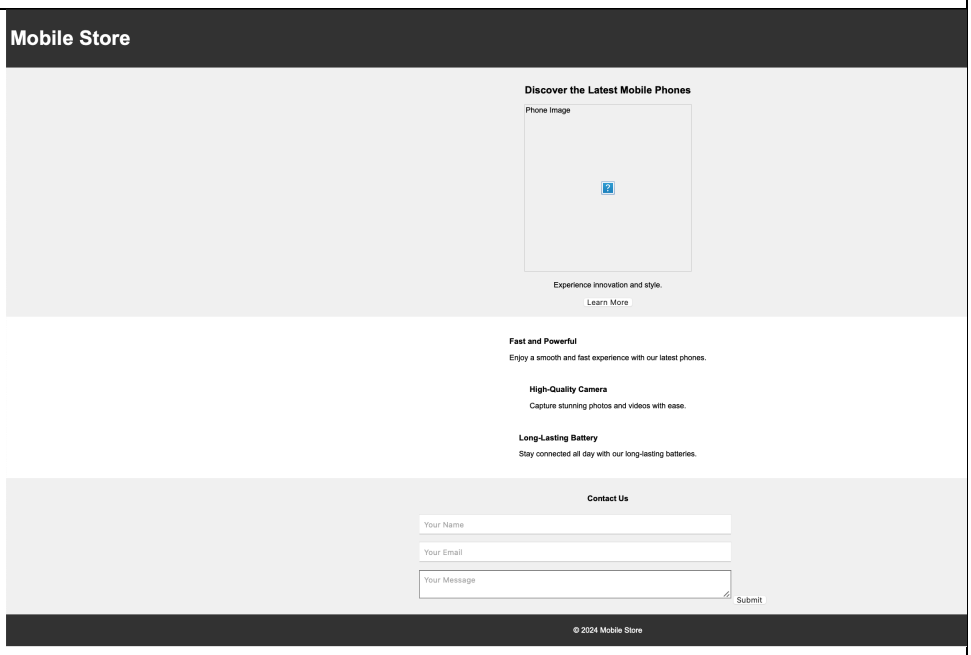
```
    max-width: 400px;
}
.features {
    padding: 20px;
    display: flex;
    flex-direction: column;
    align-items: center;
    background-color: #fff;
}
.features div {
    margin: 10px 0;
}

footer {
    background-color: #333;
    color: #fff;
    text-align: center;
    padding: 10px;
}
.contact-form {
    display: flex;
    flex-direction: column;
    align-items: center;
    padding: 20px;
    background-color: #f4f4f4;
}
.contact-form input,
.contact-form textarea {
```

```
            width: 80%;
            margin: 10px 0;
            padding: 10px;
        }
    </style>
</head>
<body>
    <header>
        <div class="logo">
            @RenderBody()
        </div>
        <nav id="nav-bar">
            <ul>
                <li><a href="#">Home</a></li>
                <li><a href="#">Phones</a></li>
                <li><a href="#">Contact</a></li>
            </ul>
        </nav>
        <button id="menu-button" onclick="toggleMenu()">☰</button>
    </header>
    <main>
        <section class="hero">
            <h2>Discover the Latest Mobile Phones</h2>
            <img src="M/Users/apple/Desktop/V/Classroom/MCA Sem-
2/Practical/WTD/Practical 25/Practical 25/Views/Shared/peakpx.jpg"
alt="Phone Image">
            <p>Experience innovation and style.</p>
            <button onclick="showDetails()">Learn More</button>
        </section>
```

```
        <section class="features">
            <div>
                <h3>Fast and Powerful</h3>
                <p>Enjoy a smooth and fast experience with our latest phones.</p>
            </div>
            <div>
                <h3>High-Quality Camera</h3>
                <p>Capture stunning photos and videos with ease.</p>
            </div>
            <div>
                <h3>Long-Lasting Battery</h3>
                <p>Stay connected all day with our long-lasting batteries.</p>
            </div>
        </section>
        <section class="contact-form">
            <h3>Contact Us</h3>
            <form>
                <input type="text" name="name" placeholder="Your Name"
required>
                <input type="email" name="email" placeholder="Your Email"
required>
                <textarea name="message" placeholder="Your Message"
required></textarea>
                <button type="submit">Submit</button>
            </form>
        </section>
    </main>
    <footer>
        <p>&copy; 2024 Mobile Store</p>
```

```
    </footer>
    <script>function toggleMenu() {
        const navBar = document.getElementById('nav-bar');
        navBar.classList.toggle('show');
    }
    function showDetails() {
        alert('Discover more about our phones on our website!');
    }
    document.querySelector('.contact-form form').addEventListener('submit',
function (event) {
        event.preventDefault();
        alert('Form submitted successfully!');
    });</script>
</body>
</html>
```

Output



26.	**Develop ASP.NET Core MVC web application to demonstrate the use of Razor Syntax (If …else, Switch, For Loop, For each Loop, While Loop)**
Index.cshtml	

```
@{
   Layout = null;
 }
      <center><h1>IF...ELSE</h1></center>
      <center><h1>--------------------</h1></center>
      @{
         int num1 = 10, num2 = 3;
         String num3;
         if (num1 % num2 == 0)
         {
            num3 = "The number is Even!";
         }
         else
         {
            num3 = "The number is Odd!";
         }
      }
      <center><h1>Th<b>@num1</b> divide by <b>@num2</b>
<b>@num3</b></h1></center>


      <center><h1>FOR LOOP</h1></center>
      <center><h1>--------------------</h1></center>
         @for (int i = 0; i <= 2; i++)
         {
            <center><li><h1>@i</h1></li></center>
         }
      <center><h1>WHILE LOOP</h1></center>
```

```
<center><h1>--------------------</h1></center>
<ul>
   @{
      var n = 0;
      while (n < 2)
      {
         n += 1;
         <center><p><h1>Line @n</h1></p></center>
      }
   }
</ul>
<center><h1>FOREACH</h1></center>
<center><h1>--------------------</h1></center>
@{
   string[] members = { "Apple", "Banana", "Grapes" };
   foreach (var person in members)
   {
      <center><p><h1>@person</h1></p></center>
   }
}
<center><h1>SWITCH CASE</h1></center>
<center><h1>--------------------</h1></center>
@switch (DateTime.Now.DayOfWeek)
{
   case DayOfWeek.Monday:
      <center><h1>Uh-oh...</h1></center>
      break;
   case DayOfWeek.Friday:
```

```
            <center><h1>Weekend coming up!</h1></center>
            break;
        case DayOfWeek.Saturday:
            <center><h1>Saturday AA Gaya!</h1></center>
            break;
        case DayOfWeek.Sunday:
            <center><h1>Finally weekend</h1></center>
            break;
        default:
            <center><h1><span>Nothing special about this day...</span></h1></center>
            break;
    }
```

Output

Vidhey H. Detroja

IF...ELSE

Th10 divide by 3 The number is Odd!
FOR LOOP

. 0
. 1
. 2
WHILE LOOP

Line 1
Line 2
FOREACH

Apple
Banana
Grapes
SWITCH CASE

Nothing special about this day...

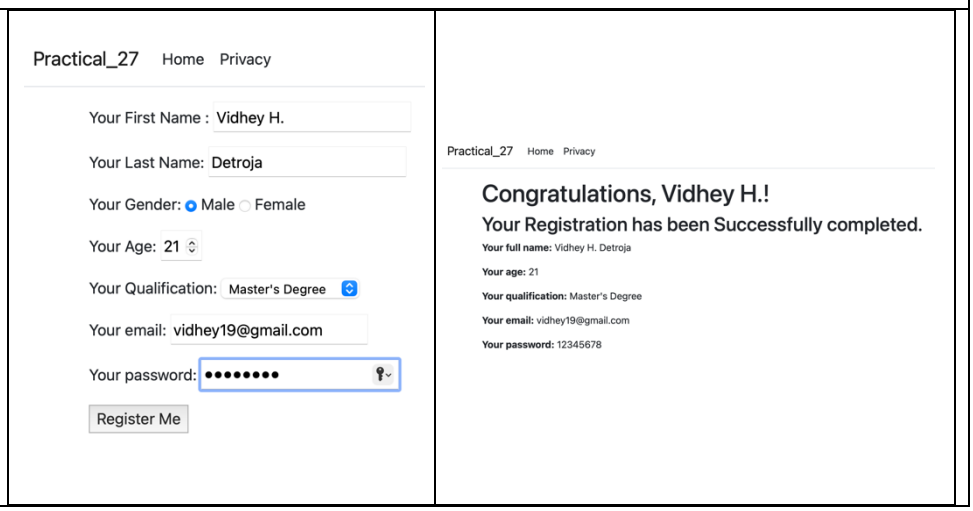
27.	**Create ASP.NET Core MVC registration page using Razor Syntax and Html Helper methods to register new student.** **First name (TextBox)** **Last name or initial (TextBox)** **Gender (Radio Button)** **Age (Take numeric input only)** **Existing Qualification(Dropdown List)** **Email address (Regular Expression)** **Choose a password (min. 8 characters)**

Vidhey.cs	using System;
	
	namespace Practical_27.Models
	
	{
	
	public class Vidhey
	
	{
	
	public string FirstName { get; set; }
	
	public string LastName { get; set; }
	
	public string Gender { get; set; }
	
	public int Age { get; set; }
	
	public string Qualification { get; set; }
	
	public string Email { get; set; }
	
	public string Password { get; set; }
	
	}
	
	}

Home Controller.cs	[HttpGet]
	
	public IActionResult Index()
	
	{
	
	return View();
	
	}
	
	[HttpPost]

	public IActionResult Index(Vidhey registration)
	{
	return View("MyView", registration);
	}

Index.cshtml	@model Practical_27.Models.Vidhey; @using (Html.BeginForm("Index", "Home", FormMethod.Post, new { onsubmit = "return validateForm();" })) { Your First Name : @Html.TextBoxFor(x => x.FirstName, new { id = "FirstName" }) Your Last Name: @Html.TextBoxFor(x => x.LastName, new { id = "LastName" }) Your Gender: @Html.RadioButtonFor(x => x.Gender, "Male", new { id = "GenderMale" }) Male @Html.RadioButtonFor(x => x.Gender, "Female", new { id = "GenderFemale" }) Female Your Age: @Html.TextBoxFor(x => x.Age, new { id = "Age", type = "number", min = "11", max = "24" }) Your Qualification: @Html.DropDownListFor(x => x.Qualification, new SelectList(new List<string> { "High School", "College", "Bachelor's Degree", "Master's Degree", "PhD" }), "Select", new { id = "Qualification" })

	   Your email: @Html.TextBoxFor(x => x.Email, new { id = "Email", type = "email" }) Your password: @Html.PasswordFor(x => x.Password, new { id = "Password", minlength = "3", maxlength = "8" }) <input type="submit" value="Register Me" /> }
MyView.cshtml	@model Practical_27.Models.Vidhey; <h1>Congratulations, @Model.FirstName!</h1> <h2>Your Registration has been Successfully completed.</h2> > Your full name: @Model.FirstName @Model.LastName Your age: @Model.Age Your qualification: @Model.Qualification Your email: @Model.Email Your password: @Model.Password
Output	

28.	**Develop ASP.NET core MVC web application to perform CRUD operation by using entity framework with validation on Book model.** **Book (BookId, BookTitle, AuthorName, Publication and Price)**

Book.cs	using System.ComponentModel.DataAnnotations;
	
	namespace Program28.Models
	
	{
	
	public class Book
	
	{
	
	[Key]
	
	public int BookId { get; set; }
	
	[Required(ErrorMessage = "Title is required")]
	
	public string BookTitle { get; set; }
	
	[Required(ErrorMessage = "Author name is required")]
	
	public string AuthorName { get; set; }
	
	[Required(ErrorMessage = "Publication is required")]
	
	public string Publication { get; set; }
	
	[Required(ErrorMessage = "Price is required")]
	
	[Range(0, double.MaxValue, ErrorMessage = "Price must be a positive number")]
	
	public decimal Price { get; set; }
	
	}
	
	}

BookControl.cs	using System; using System.Collections.Generic; using System.Linq; using System.Threading.Tasks; using Microsoft.AspNetCore.Mvc; using Microsoft.AspNetCore.Mvc.Rendering; using Microsoft.EntityFrameworkCore;

```
using Program28.Data;
using Program28.Models;
namespace Program28.Controllers
{
    public class BooksController : Controller
    {
        private readonly Program28Context _context;

        public BooksController(Program28Context context)
        {
            _context = context;
        }
        public async Task<IActionResult> Index()
        {
            return View(await _context.Book.ToListAsync());
        }
        public async Task<IActionResult> Details(int? id)
        {
            if (id == null)
            {
                return NotFound();
            }
            var book = await _context.Book
                .FirstOrDefaultAsync(m => m.BookId == id);
            if (book == null)
            {
                return NotFound();
            }
```

```
            return View(book);
        }
        public IActionResult Create()
        {
            return View();
        }
http://go.microsoft.com/fwlink/?LinkId=317598.
        [HttpPost]
        [ValidateAntiForgeryToken]
        public async Task<IActionResult>
Create([Bind("BookId,BookTitle,AuthorName,Publication,Price")] Book
book)
        {
            if (ModelState.IsValid)
            {
                _context.Add(book);
                await _context.SaveChangesAsync();
                return RedirectToAction(nameof(Index));
            }
            return View(book);
        }
        public async Task<IActionResult> Edit(int? id)
        {
            if (id == null)
            {
                return NotFound();
            }
            var book = await _context.Book.FindAsync(id);
            if (book == null)
```

```
            {
                return NotFound();
            }
            return View(book);
        }
http://go.microsoft.com/fwlink/?LinkId=317598.
        [HttpPost]
        [ValidateAntiForgeryToken]
        public async Task<IActionResult> Edit(int id,
[Bind("BookId,BookTitle,AuthorName,Publication,Price")] Book book)
        {
            if (id != book.BookId)
            {
                return NotFound();
            }
            if (ModelState.IsValid)
            {
                try
                {
                    _context.Update(book);
                    await _context.SaveChangesAsync();
                }
                catch (DbUpdateConcurrencyException)
                {
                    if (!BookExists(book.BookId))
                    {
                        return NotFound();
                    }
```

```
                else
                {
                    throw;
                }
            }
            return RedirectToAction(nameof(Index));
        }
        return View(book);
    }
    public async Task<IActionResult> Delete(int? id)
    {
        if (id == null)
        {
            return NotFound();
        }
        var book = await _context.Book
            .FirstOrDefaultAsync(m => m.BookId == id);
        if (book == null)
        {
            return NotFound();
        }

        return View(book);
    }
    [HttpPost, ActionName("Delete")]
    [ValidateAntiForgeryToken]
    public async Task<IActionResult> DeleteConfirmed(int id)
    {
```

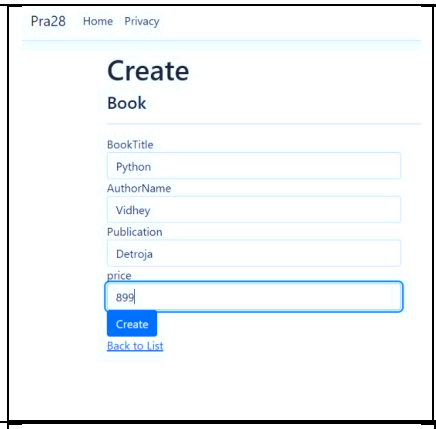
	var book = await _context.Book.FindAsync(id);
	if (book != null)
	{
	_context.Book.Remove(book);
	}
	await _context.SaveChangesAsync();
	return RedirectToAction(nameof(Index));
	}
	private bool BookExists(int id)
	{
	return _context.Book.Any(e => e.BookId == id);
	}
	}
	}

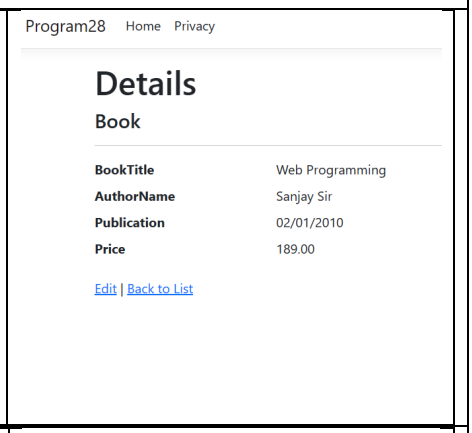
Program28Context.cs	using System; using System.Collections.Generic; using System.Linq; using System.Threading.Tasks; using Microsoft.EntityFrameworkCore; using Program28.Models; namespace Program28.Data { public class Program28Context : DbContext { public Program28Context (DbContextOptions<Program28Context> options) : base(options) {

```
        }

        public DbSet<Program28.Models.Book> Book { get; set; } =
default!;

    }

}
```

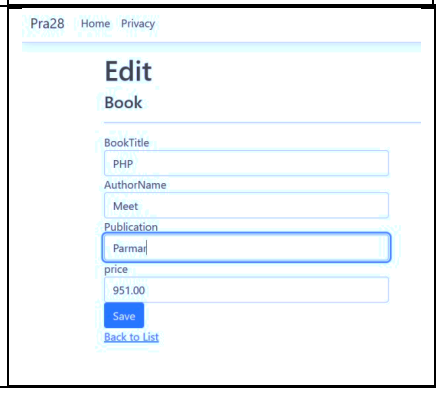
Output

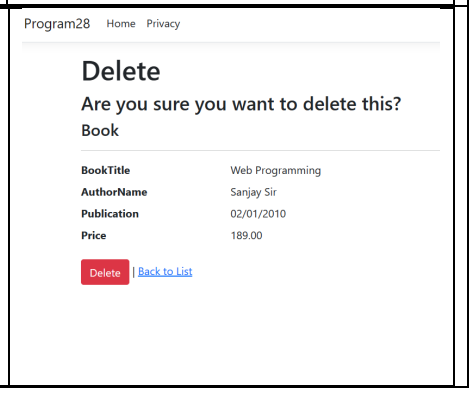
Output





Output





29.	**Develop ASP.NET Core MVC application to perform CRUD operation by using entity framework with validation on Student, Course and Enrollment models.**

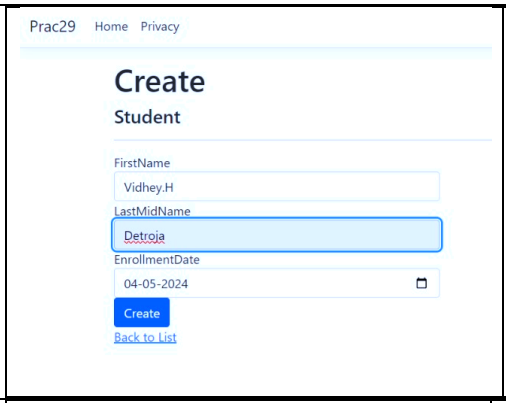
Student.cs	using System;
	using System.Collections.Generic;
	using System.ComponentModel.DataAnnotations;
	namespace CRUD.Models
	{
	public class Student
	{
	[Key]
	public int StudentID { get; set; }
	[Required(ErrorMessage = "First Name is required")]
	[StringLength(50)]
	public string FirstName { get; set; }
	[Required(ErrorMessage = "Last Name is required")]
	[StringLength(50)]
	public string LastMidName { get; set; }
	[DataType(DataType.Date)]
	[DisplayFormat(DataFormatString = "{0:yyyy-MM-dd}",
	ApplyFormatInEditMode = true)]
	public DateTime EnrollmentDate { get; set; }
	public ICollection<Enrollment> Enrollments { get; set; }
	public Student()
	{
	Enrollments = new List<Enrollment>();
	}
	}
	}

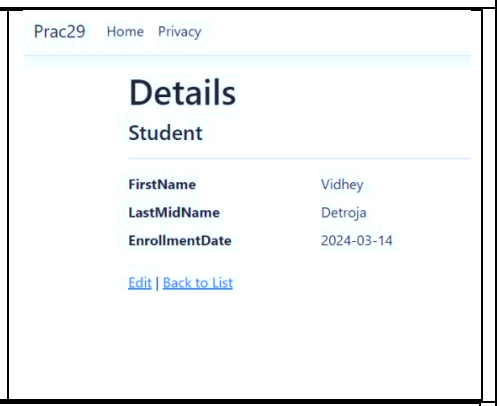
Course.cs	using System.Collections.Generic; using System.ComponentModel.DataAnnotations; namespace CRUD.Models { public class Course { [Key] public int CourseID { get; set; } [Required(ErrorMessage = "Course Title is required")] [StringLength(100, ErrorMessage = "Title cannot exceed 100 characters")] public string CourseTitle { get; set; } [Required(ErrorMessage = "Credits are required")] [Range(1, int.MaxValue, ErrorMessage = "Credits must be a positive number")] public int CourseCredits { get; set; } public ICollection<Enrollment> Enrollments { get; set; } public Course() { Enrollments = new List<Enrollment>(); } }}
Enrollment.c	using System.ComponentModel.DataAnnotations.Schema;

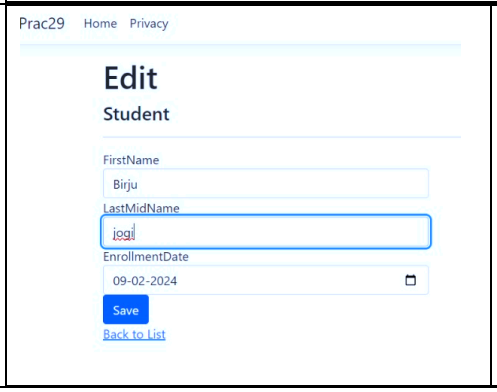
s

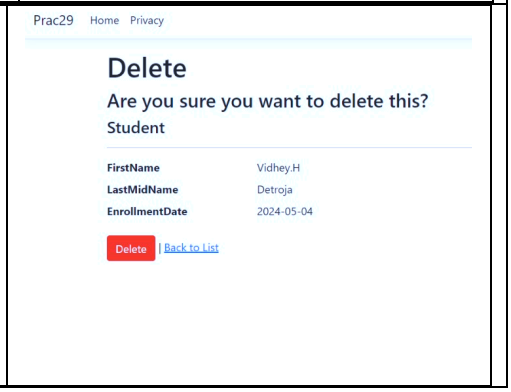
```
using System.ComponentModel.DataAnnotations;
namespace CRUD.Models
{
   public class Enrollment
   {
      [Key]
      public int EnrollmentID { get; set; }
      [Required(ErrorMessage = "CourseID is required")]
      public int CourseID { get; set; }
      [Required(ErrorMessage = "StudentID is required")]
      public int StudentID { get; set; }
      [DataType(DataType.Date)]
      [DisplayFormat(DataFormatString = "{0:yyyy-MM-dd}",
ApplyFormatInEditMode = true)]
      public DateTime EnrollmentDate { get; set; }
      [ForeignKey("CourseID")]
      public Course? Course { get; set; }
      [ForeignKey("StudentID")]
      public Student? Student { get; set; }
   }}
```

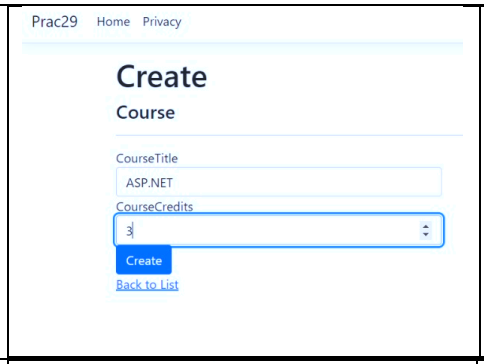
Output







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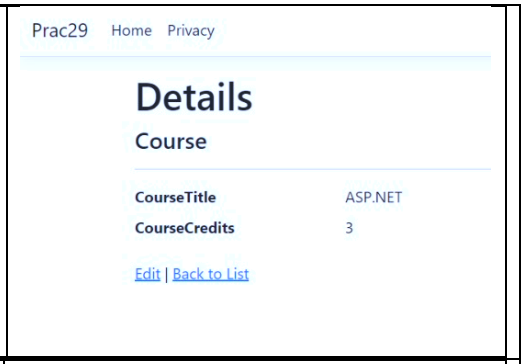
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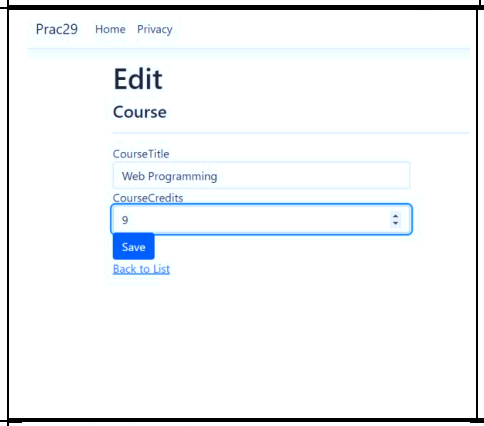
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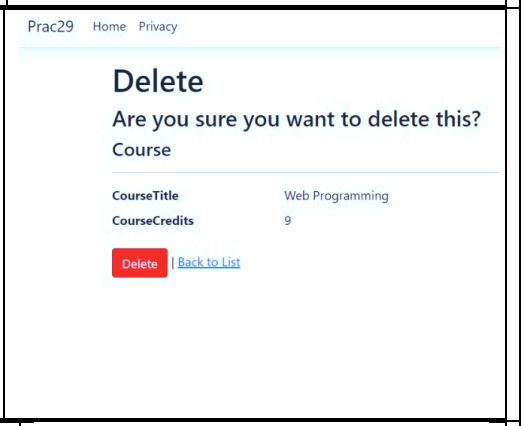
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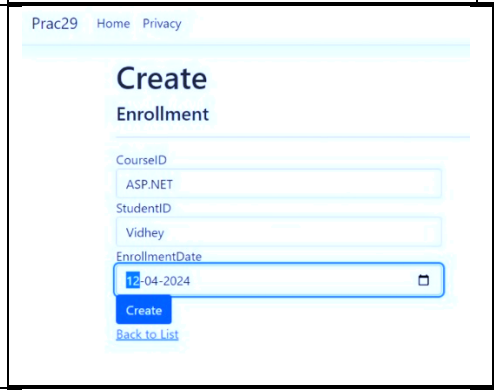
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Vidhey
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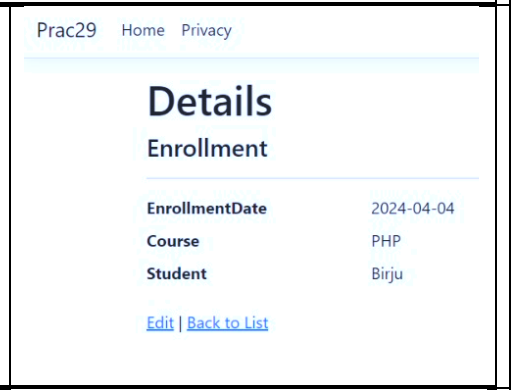
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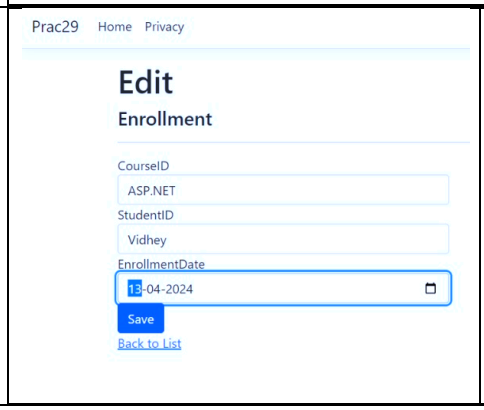
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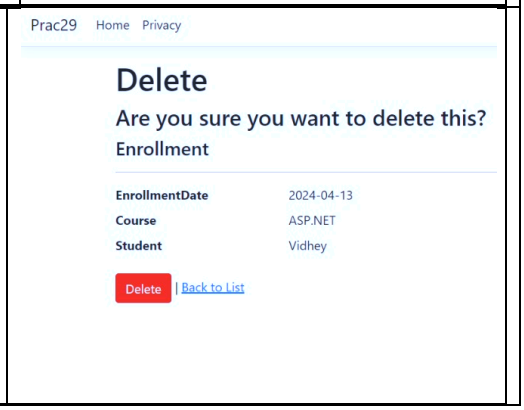
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Course ASP.NET
Student Vidhey
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Software Testing	5	Edit | Details | Delete
ASP.NET	3	Edit | Details | Delete
PHP	6	Edit | Details | Delete
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Mihir	Moghariya	2024-02-01	Edit | Details | Delete
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