

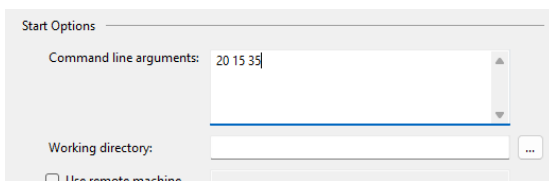
Program 1: Write a Program in C# to demonstrate Command line arguments processing for the following.

- a) To find the square root of a given number.
- b) To find the sum & average of three numbers.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Prog1
{
    class Program
    {
        static void Main(string[] args)
        {
            double n1 = double.Parse(args[0]);
            double n2 = double.Parse(args[1]);
            double n3 = double.Parse(args[2]);
            Console.WriteLine("The numbers are {0},{1},{2}", n1, n2, n3);
            Console.WriteLine("The square root of {0} is {1:0.00}", n1, Math.Sqrt(n1));
            double sum = n1 + n2 + n3;
            double avg = sum / 3.0;
            Console.WriteLine("The Sum of {0},{1},{2} is {3:0.00}", n1, n2, n3, sum);
            Console.WriteLine("The Average of {0},{1},{2} is {3:0.00}", n1, n2, n3, avg);
        }
    }
}
```

Output:



Program 2: 2. Write a Program in C# to demonstrate the following

- a) Boxing and Unboxing
- b) Invalid Unboxing.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
```

```
namespace program2
{
    class Program
    {
        static void Main(string[] args)
```

```

    {
        Console.WriteLine("Enter a Number:");
        int x = int.Parse(Console.ReadLine());
        object o = x;
        Console.WriteLine("Integer value is boxed!");
        int y = (int)o;
        Console.WriteLine("Integer value is unboxed");
        try
        {
            float z = (float)o;
        }
        catch (InvalidCastException e)
        {
            Console.WriteLine(e.Message);
        }
    }
}

```

Program 3: Write a C# Program to Add Two Complex number using Method Overloading

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Prog3
{
    class complex
    {
        float real, img;
        public complex(float real, float img)
        {
            this.real = real;
            this.img = img;
        }

        public complex()
        {
            real = 0.0f;
            img = 0.0f;
        }

        public static complex operator +(complex c1, complex c2)
        {
            complex c3 = new complex();
            c3.real = c1.real + c2.real;
            c3.img = c1.img + c2.img;
            return c3;
        }

        public void display()
        {
            if (img > 0)
            {

```

```

        Console.WriteLine("{0}+{1}i", real, img);
    }
    else
    {
        Console.WriteLine("{0}{1}i", real, img);
    }
}
}

class Program
{
    static void Main(string[] args)
    {
        complex c1 = new complex(2, -3);
        complex c2 = new complex(5, 7);
        complex c3 = new complex();
        c3 = c1 + c2;
        Console.WriteLine("Complex Number 1:");
        c1.display();
        Console.WriteLine("Complex Number 2:");
        c2.display();
        Console.WriteLine("Sum is:");
        c3.display();
    }
}
}

```

Program 4: Write a C# Program to find the sum of each row of a given jagged array of 3 inner arrays.

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Prog4
{
    class Program
    {
        static void Main(string[] args)
        {
            int[][] a = new int[3][];
            a[0] = new int[2];
            a[1] = new int[2];
            a[2] = new int[3];

            Console.WriteLine("Enter the Array Elements:");
            Console.WriteLine();
            for (int i = 0; i < 3; i++)
                for (int j = 0; j < a[i].Length; j++)
                    a[i][j] = int.Parse(Console.ReadLine());

            Console.WriteLine();
            Console.WriteLine("The Jagged Array is:");
            Console.WriteLine();
            for (int i = 0; i < 3; i++)
            {
                for (int j = 0; j < a[i].Length; j++)
                {

```

```

        Console.WriteLine(a[i][j] + " ");
    }
    Console.WriteLine();
}

Console.WriteLine();
for (int i = 0; i < 3; i++)
{
    int sum = 0;
    for (int j = 0; j < a[i].Length; j++)
    {
        sum = sum + a[i][j];
    }
    Console.WriteLine("The Sum of {0} row elements is {1}", i, sum);
}
}
}
}

```

Program 5: Write a Program in C# to demonstrate Array Out of Bound Exception using Try, Catch and Finally blocks.

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApplication5
{
    class Program
    {
        static void Main(string[] args)
        {
            try
            {
                Console.WriteLine("Enter the dimensions of the matrix");
                int r = int.Parse(Console.ReadLine());
                int c = int.Parse(Console.ReadLine());

                int[,] a = new int[r,c];
                int k = 0;

                Console.WriteLine("CommandLine Arguments: ");
                for (int i = 0; i < args.Length; i++)
                {
                    Console.Write(args[i] + "\t");
                }

                Console.WriteLine();
                Console.WriteLine("Matrix form:");
                Console.WriteLine();

                for (int i = 0; i < r; i++)
                {
                    for (int j = 0; j < c; j++)
                    {
                        a[i, j] = int.Parse(args[k++]);
                    }
                }

                for (int i = 0; i < r; i++)
            }
        }
    }
}

```

```

        {
            for (int j = 0; j < c; j++)
            {
                Console.Write(a[i,j] + " ");
            }
            Console.WriteLine();
        }

    }
    catch (IndexOutOfRangeException e)
    {
        Console.WriteLine(e.Message);
        Console.WriteLine();
    }
    finally {

        Console.WriteLine("The exception handled successfully!");
        Console.WriteLine();
    }
}
}
}
}

```

Program 6: Write a Program to Demonstrate Use of Virtual and override keywords in C# with a simple program.

employee.cs

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace prog6
{
    class employee
    {
        string empno, empname, address;

        public employee()
        {
        }

        public employee(string empno, string empname, string address)
        {
            this.empno = empno;
            this.empname = empname;
            this.address = address;
        }

        public virtual void display()
        {
            Console.WriteLine("Employee no: " + empno);
            Console.WriteLine("Employee name: " + empname);
            Console.WriteLine("Employee address: " + address);
        }
    }
}

```

```
    }  
  }  
}
```

salary.cs

```
using System;  
using System.Collections.Generic;  
using System.Linq;  
using System.Text;  
  
namespace prog6  
{  
    class salary : employee  
    {  
        double bs, da, hra, gross;  
  
        public salary()  
        : base()  
        {  
            bs = 0.0f;  
            da = 0.0f;  
            hra = 0.0f;  
            gross = 0.0f;  
        }  
  
        public salary(string empno, string empname, string address, double bs)  
        : base(empno, empname, address)  
        {  
            this.bs = bs;  
        }  
  
        public void sal_calculate()  
        {  
            if (bs < 20000)  
            {  
                da = 0.070 * bs;  
                hra = 0.015 * bs;  
            }  
            else if (bs > 20000 && bs < 30000)  
            {  
                da = 0.075 * bs;  
                hra = 0.018 * bs;  
            }  
            else  
            {  
                da = 0.085 * bs;  
                hra = 0.020 * bs;  
            }  
  
            gross = bs + da + hra;  
        }  
  
        public override void display()  
        {  
            base.display();  
            Console.WriteLine("Basic Salary: " + bs);  
        }  
    }  
}
```

```

        Console.WriteLine("Gross Salary: " + gross);
        Console.WriteLine();
    }
}

```

Program.cs

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace prog6
{
    class Program
    {
        static void Main(string[] args)
        {
            String empno, empname, address;
            Double bs;

            Console.Write("Enter the employee number: ");
            empno = Console.ReadLine();

            Console.Write("Enter the employee name: ");
            empname = Console.ReadLine();

            Console.Write("Enter the employee address: ");
            address = Console.ReadLine();

            Console.Write("Enter the employee basic salary: ");
            bs = double.Parse(Console.ReadLine());

            Console.WriteLine();

            salary s = new salary(empno, empname, address, bs);
            s.sal_calculate();
            s.display();
        }
    }
}

```

Program 7: Write a Program in C# to create and implement a Delegate for any two arithmetic operations

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApplication7
{
    class calculate
    {
        public float add(float a, float b)
        {
            return (a + b);
        }

        public float sub(float a, float b)
        {
            return (a - b);
        }

        public float mul(float a, float b)
        {
            return (a * b);
        }

        public float quo(float a, float b)
        {
            return (a / b);
        }

        public float mod(float a, float b)
        {
            return (a % b);
        }
    }

    public delegate float calculatordelegate(float a, float b);

    class Program
    {
        static void Main(string[] args)
        {
            calculate c = new calculate();
            calculatordelegate cd = new calculatordelegate(c.add);

            Console.Write("Enter first number: ");
            float a = float.Parse(Console.ReadLine());
            Console.Write("Enter second number: ");
            float b = float.Parse(Console.ReadLine());
            Console.WriteLine();
```



```

        Console.WriteLine("The sum is: " + cd(a, b));

        cd += c.sub;
        Console.WriteLine("The difference is: " + cd(a, b));

        cd += c.mul;
        Console.WriteLine("The product is: " + cd(a, b));

        cd += c.quo;
        Console.WriteLine("The quotient is: " + cd(a, b));

        cd += c.mod;
        Console.WriteLine("The remainder is: " + cd(a, b));
    }
}
}

```

Program 8: Write a C# Program to demonstrate abstract class and abstract methods in C#.

class1.cs

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Prog8
{
    abstract class calculate
    {
        public abstract float add(float a, float b);
        public abstract float sub(float a, float b);
        public abstract float mul(float a, float b);
        public abstract float div(float a, float b);
        public abstract float mod(float a, float b);
    }
}

```

class2.cs

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Prog8
{
    class calculator : calculate
    {
        public override float add(float a, float b)
        {
            return (a + b);
        }
        public override float sub(float a, float b)

```

```

    {
        return (a - b);
    }
    public override float mul(float a, float b)
    {
        return (a * b);
    }
    public override float div(float a, float b)
    {
        return (a / b);
    }
    public override float mod(float a, float b)
    {
        return (a % b);
    }
}
}

```

Program.cs

// Write a C# Program to demonstrate abstract class and abstract methods in C#.

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Prog8
{
    class Program
    {
        static void Main(String[] args)
        {
            float a, b;
            Console.Write("Enter First Number:");
            a = float.Parse(Console.ReadLine());
            Console.Write("Enter Second Number:");
            b = float.Parse(Console.ReadLine());
            Console.WriteLine();

            calculator c = new calculator();
            Console.WriteLine("The Sum is:" + c.add(a, b));
            Console.WriteLine("The Difference is:" + c.sub(a, b));
            Console.WriteLine("The Product is:" + c.mul(a, b));
            Console.WriteLine("The Quotient is:" + c.div(a, b));
            Console.WriteLine("The Remainder is:" + c.mod(a, b));
            Console.WriteLine();
        }
    }
}

```

Program 9: Write a program to Set & Get the Name & Age of a person using Properties of C# to illustrate the use of different properties in C#

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApplication9
{
    class Person {

        string name;
        int age;

        public string NAME {
            get {return name;}
            set { name = value; }
        }
        public int AGE{
            get { return age; }
            set { age = value; }
        }
    }

    public static void display(Person[] p,int age)
    {
        Console.WriteLine("Name Age");
        for (int i = 0; i < p.Length; i++)
        {
            if (p[i].AGE > age)
            {

                Console.WriteLine(p[i].NAME+ " "+ p[i].AGE);

            }

        }

    }

}

class Program
{
    static void Main(string[] args)
    {
        Person[] p = new Person[3];

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

```

        p[i] = new Person();
        Console.Write("Enter the name:");
        p[i].NAME = Console.ReadLine();
        Console.Write("Enter the age:");
        p[i].AGE = int.Parse(Console.ReadLine());

    }

    int age = 16;
    Person.display(p, age);
}
}
}

```

Program 10: Write a Program in C# Demonstrate arrays of interface types (for runtime polymorphism).

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApplication10
{
    interface shape
    {
        double cal_area();
    }

    class circle : shape
    {
        public double cal_area()
        {
            Console.WriteLine();
            Console.Write("Enter the radius: ");
            double r = double.Parse(Console.ReadLine());
            double area = 3.14 * r * r;
            return area;
        }
    }

    class triangle : shape
    {
        public double cal_area()
        {
            Console.WriteLine();
            Console.Write("Enter the three sides of triangle: ");
            double a = double.Parse(Console.ReadLine());
            double b = double.Parse(Console.ReadLine());
            double c = double.Parse(Console.ReadLine());
            double s = (a + b + c) / 2.0;
            double s1 = s * (s - a);

```

```

        double s2 = s - b;
        double s3 = s - c;
        double area = Math.Sqrt(s1 * s2 * s3);
        return area;
    }
}

class square : shape
{
    public double cal_area()
    {
        Console.WriteLine();
        Console.Write("Enter the side of a square: ");
        double a = double.Parse(Console.ReadLine());
        double area = a * a;
        return area;
    }
}

class rectangle : shape
{
    public double cal_area()
    {
        Console.WriteLine();
        Console.Write("Enter the length and breadth of a rectangle: ");
        double l = double.Parse(Console.ReadLine());
        double b = double.Parse(Console.ReadLine());
        double area = l * b;
        return area;
    }
}

class Program
{
    static void Main(string[] args)
    {
        shape[] s = new shape[4];
        s[0] = new circle();
        s[1] = new triangle();
        s[2] = new square();
        s[3] = new rectangle();

        for (int i = 0; i < s.Length; i++)
        {
            Console.WriteLine("The area is {0:0.00} ", s[i].cal_area());
        }
    }
}

```

Program 1: Consider the Database db_EMS (Employee Management System) consisting of the following tables :

tbl_Designations (IdDesignation: int, Designation: string)

tbl_EmployeeDetails (IdEmployee: int, EmployeeName: string, ContactNumber: string, IdDesignation: int, IdReportingTo: int)

Develop a suitable window application using C#.NET having following options.

1. Enter new Employee details with designation & Reporting Manager.
2. Display all the Project Leaders (In a Grid) reporting to selected Project Managers (In a Combo box).
3. Display all the Engineers (In a Grid) reporting to selected Project Leader (In a Combo box).
4. Display all the Employees (In a Grid) with their reporting Manager (No Value for PM).

NOTE: tbl_Designation is a static table containing the following Rows in it.

1 Project Manager

2 Project Leader

3 Engineer

Form1.cs

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
```

```
namespace WindowsFormsApplication1
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void Form1_Load(object sender, EventArgs e)
        {

        }

        private void button4_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form2().Show();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form3().Show();
        }
    }
}
```

```

    }

    private void button2_Click(object sender, EventArgs e)
    {
        this.Hide();
        new Form4().Show();
    }

    private void button3_Click(object sender, EventArgs e)
    {
        this.Hide();
        new Form5().Show();
    }
}
}

```

Form2.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication1
{
    public partial class Form2 : Form
    {
        public Form2()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            SqlConnection con = new SqlConnection("Data Source=mca04-176\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
            con.Open();
            SqlCommand cmd = new SqlCommand("insert into tbl_EmployeeDetails values(" + textBox1.Text + ","
+ textBox2.Text + "," + textBox3.Text + "," + textBox4.Text + "," + textBox5.Text + ")", con);
            cmd.ExecuteNonQuery();
            MessageBox.Show("Record inserted successfully!");
            con.Close();
            textBox1.Text = "";
            textBox2.Text = "";

```

```

        textBox3.Text = "";
        textBox4.Text = "";
        textBox5.Text = "";
        textBox1.Focus();

    }

    private void Form2_Load(object sender, EventArgs e)
    {

    }

    private void button2_Click(object sender, EventArgs e)
    {

        this.Hide();
        new Form1().Show();

    }
}

```

Form3.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication1
{
    public partial class Form3 : Form
    {
        public Form3()
        {
            InitializeComponent();

        }

        private void Form3_Load(object sender, EventArgs e)
        {

            SqlConnection con = new SqlConnection("Data Source=mca04-176\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
            con.Open();
            SqlDataAdapter da = new SqlDataAdapter("select EmployeeName from tbl_EmployeeDetails where
IdDesignation=1", con);
            DataTable dt = new DataTable();

```



```

        da.Fill(dt);
        comboBox1.DataSource = dt;
        comboBox1.DisplayMember = "EmployeeName";
        comboBox1.ValueMember = "EmployeeName";
        con.Close();
    }

    private void comboBox1_SelectedIndexChanged(object sender, EventArgs e)
    {
        SqlConnection con = new SqlConnection("Data Source=mca04-176\\sqlexpress;Initial
        Catalog=sush;Integrated Security=True;Pooling=False");
        con.Open();
        SqlDataAdapter da = new SqlDataAdapter("select * from tbl_EmployeeDetails where
        IdReportingTo=(select IdEmployee from tbl_EmployeeDetails where EmployeeName='" +
        comboBox1.SelectedValue.ToString() + "'", con);
        DataTable dt = new DataTable();
        da.Fill(dt);
        dataGridView1.DataSource = dt;
        //this.Hide();
        // new Form1().Show();
        con.Close();
    }

    private void dataGridView1_CellContentClick(object sender, DataGridViewCellEventArgs e)
    {
    }

    private void Button1_Click(object sender, EventArgs e)
    {
        this.Hide();
        new Form1().Show();
    }
}
}

```

Form4.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication1
{

```

```

public partial class Form4 : Form
{
    public Form4()
    {
        InitializeComponent();
    }

    private void Form4_Load(object sender, EventArgs e)
    {
        SqlConnection con = new SqlConnection("Data Source=mca04-176\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
        con.Open();
        SqlDataAdapter da = new SqlDataAdapter("select EmployeeName from tbl_EmployeeDetails where
IdDesignation=2", con);
        DataTable dt = new DataTable();
        da.Fill(dt);
        comboBox1.DataSource = dt;
        comboBox1.DisplayMember = "EmployeeName";
        comboBox1.ValueMember = "EmployeeName";
        con.Close();
    }

    private void comboBox1_SelectedIndexChanged(object sender, EventArgs e)
    {
        SqlConnection con = new SqlConnection("Data Source=mca04-176\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
        con.Open();
        SqlDataAdapter da = new SqlDataAdapter("select * from tbl_EmployeeDetails where
IdReportingTo=(select IdEmployee from tbl_EmployeeDetails where EmployeeName='" +
comboBox1.SelectedValue.ToString() + "')", con);
        DataTable dt = new DataTable();
        da.Fill(dt);
        dataGridView1.DataSource = dt;
        //this.Hide();
        // new Form1().Show();
        con.Close();
    }

    private void button1_Click(object sender, EventArgs e)
    {
        this.Hide();
        new Form1().Show();
    }

    private void dataGridView1_CellContentClick(object sender, DataGridViewCellEventArgs e)
    {
    }
}

```

Form5.cs

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication1
{
    public partial class Form5 : Form
    {
        public Form5()
        {
            InitializeComponent();

            private void button1_Click(object sender, EventArgs e)
            {
                SqlConnection con = new SqlConnection("Data Source=mca04-176\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
                con.Open();
                SqlDataAdapter da = new SqlDataAdapter("select
a.IdEmployee,a.EmployeeName,a.ContactNumber,a.IdDesignation,a.IdReportingTo,b.EmployeeName from
tbl_EmployeeDetails a,tbl_EmployeeDetails b where a.IdReportingTo=b.IdEmployee", con);
                DataTable dt = new DataTable();
                da.Fill(dt);

                dataGridView1.DataSource = dt;

                con.Close();
            }

            private void Form5_Load(object sender, EventArgs e)
            {
            }

            private void button2_Click(object sender, EventArgs e)
            {
                this.Hide();
                new Form1().Show();
            }
        }
    }
}
```

Program 2: Consider the Database db_LSA (**Lecturer Subject Allocation**) consisting of the following tables:

tbl_Subjects(IdSubject: int, SubjectCode: string, SubjectName: string)

tbl_Lecturers(IdLecturer: int, LecturerName: string, ContactNumber: string)

tbl_LecturerSubjects(IdSubject: int, SubjectCode: string, IdLecturer: int)

Develop a suitable window application using C#.NET having following options.

1. Enter new Subject Details.
2. Enter New Lecturer Details.
3. Subject Allocation with Lecturer Name in a Combo box and subjects to be allocated in Grid with checkbox Column.
4. Display all the subjects allocated (In a Grid) to the selected Lecturer (In a Combo Box).

Form1.cs

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;

namespace WindowsFormsApplication2
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void Form1_Load(object sender, EventArgs e)
        {
        }

        private void button1_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form2().Show();
        }

        private void button2_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form3().Show();
        }

        private void button3_Click(object sender, EventArgs e)
```

```

    {
        this.Hide();
        new Form4().Show();
    }

    private void button4_Click(object sender, EventArgs e)
    {
        this.Hide();
        new Form5().Show();
    }

    private void button5_Click(object sender, EventArgs e)
    {
        {
            Application.Exit();
        }
    }
}
}

```

Form2.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

```

```

namespace WindowsFormsApplication2
{
    public partial class Form2 : Form
    {
        public Form2()
        {
            InitializeComponent();
        }

        private void button2_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form1().Show();
        }
    }
}

```

```

private void button1_Click(object sender, EventArgs e)
{
    SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
    con.Open();
    SqlCommand cmd = new SqlCommand("insert into tbl_subjects values(" + textBox1.Text + "," +
textBox2.Text + "," + textBox3.Text + ")", con);
    cmd.ExecuteNonQuery();
    MessageBox.Show("Record inserted successfully!");
    con.Close();
    textBox1.Text = "";
    textBox2.Text = "";
    textBox3.Text = "";
    textBox1.Focus();
}
}
}

```

Form3.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication2
{
    public partial class Form3 : Form
    {
        public Form3()
        {
            InitializeComponent();
        }

        private void button2_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form1().Show();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");

```

```

        con.Open();
        SqlCommand cmd = new SqlCommand("insert into tbl_lecturers values(" + textBox1.Text + "," +
textBox2.Text + "," + textBox3.Text + ")", con);
        cmd.ExecuteNonQuery();
        MessageBox.Show("Record inserted successfully!");
        con.Close();
        textBox1.Text = "";
        textBox2.Text = "";
        textBox3.Text = "";
        textBox1.Focus();
    }
}
}

```

Form4.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

```

```

namespace WindowsFormsApplication2

```

```

{
    public partial class Form4 : Form
    {
        DataGridViewCheckBoxColumn c;

        public Form4()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form1().Show();
        }

        private void Form4_Load(object sender, EventArgs e)
        {
            SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
            con.Open();
            SqlDataAdapter da = new SqlDataAdapter("select LecturerName from tbl_Lecturers", con);

```

```

        DataTable dt = new DataTable();
        da.Fill(dt);
        comboBox1.DataSource = dt;
        comboBox1.DisplayMember = "LecturerName";
        comboBox1.ValueMember = "LecturerName";

        da = new SqlDataAdapter("select * from tbl_Subjects", con);
        dt = new DataTable();
        da.Fill(dt);
        dataGridView1.DataSource = dt;

        c = new DataGridViewCheckBoxColumn();
        c.Name = "check";
        c.Width = 50;
        dataGridView1.Columns.Insert(0, c);
        con.Close();
    }

    private void button2_Click(object sender, EventArgs e)
    {
        SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
        Catalog=sush;Integrated Security=True;Pooling=False");
        con.Open();

        SqlDataAdapter da = new SqlDataAdapter("select IdLecturer from tbl_Lecturers where
        LecturerName='" + comboBox1.SelectedValue.ToString() + "'", con);
        DataTable dt = new DataTable();
        da.Fill(dt);

        foreach(DataGridViewRow r in dataGridView1.Rows)
        {
            if(Convert.ToBoolean(r.Cells["check"].Value))
            {
                SqlCommand cmd=new SqlCommand("insert into tbl_LecturerSubjects
                values(@sid,@scode,@lid)",con);
                cmd.Parameters.AddWithValue("@sid", r.Cells["IdSubject"].Value);
                cmd.Parameters.AddWithValue("@scode", r.Cells["SubjectCode"].Value);
                cmd.Parameters.AddWithValue("@lid", int.Parse(dt.Rows[0][0].ToString()));
                cmd.ExecuteNonQuery();

                c.FalseValue = true;
            }
        }
        MessageBox.Show("Subject allocated successfully!");
        con.Close();
    }

    private void dgvsbub_CellContentClick(object sender, DataGridViewCellEventArgs e)
    {

```



```

    }
}
}

```

Form5.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication2
{
    public partial class Form5 : Form
    {
        public Form5()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form1().Show();
        }

        private void Form5_Load(object sender, EventArgs e)
        {
            SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
            con.Open();
            SqlDataAdapter da = new SqlDataAdapter("select LecturerName from tbl_Lecturers", con);
            DataTable dt = new DataTable();
            da.Fill(dt);
            comboBox1.DataSource = dt;
            comboBox1.DisplayMember = "LecturerName";
            comboBox1.ValueMember = "LecturerName";
            con.Close();
        }

        private void comboBox1_SelectedIndexChanged(object sender, EventArgs e)
        {
            SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sush;Integrated Security=True;Pooling=False");
            con.Open();

```

```

        SqlDataAdapter da = new SqlDataAdapter("select a.IdSubject,a.SubjectCode,a.SubjectName from
tbl_Subjects a, tbl_Lecturers b,tbl_LecturerSubjects c where a.SubjectCode=c.SubjectCode AND
b.IdLecturer=c.IdLecturer AND b.LecturerName='" + comboBox1.SelectedValue.ToString() + "'", con);
        DataTable dt = new DataTable();
        da.Fill(dt);
        dataGridView1.DataSource = dt;

        con.Close();
    }
}
}

```

Program 3: Consider the database db_VSS (Vehicle Service Station) consisting of the following tables:

tbl_VehicleTypes(IdVehicleType: int, VehicleType: string, ServiceCharge: int)

tbl_ServiceDetails(IdService: int, VehicleNumber: string, ServiceDetails: string, IdVehicleType: int)

Develop a suitable window application using C#.NET having following options.

1. Enter new Service Details for the Selected Vehicle Type (In a Combo Box).
2. Update the Existing Service Charges to Database.
3. Total Service Charges Collected for the Selected Vehicle (In a Combo box) with total amount displayed in a text box.

NOTE: tbl_VehicleType is a static table containing the following Rows in it.

1 Two Wheeler 500

2 Four Wheeler 1000

3 Three Wheeler 700

Form1.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;

namespace WindowsFormsApplication3
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form2().Show();
        }
    }
}

```

```

private void button2_Click(object sender, EventArgs e)
{
    this.Hide();
    new Form3().Show();

}

private void button3_Click(object sender, EventArgs e)
{
    this.Hide();
    new Form4().Show();

}

private void button4_Click(object sender, EventArgs e)
{
    Application.Exit();

}

private void Form1_Load(object sender, EventArgs e)
{

}
}
}

```

Form2.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

```

```

namespace WindowsFormsApplication3
{
    public partial class Form2 : Form
    {
        public Form2()
        {
            InitializeComponent();
        }

        private void Form2_Load(object sender, EventArgs e)
        {

```

```

        SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sushmi;Integrated Security=True");
        con.Open();
        SqlDataAdapter da = new SqlDataAdapter("select VehicleType from tbl_VehicleTypes", con);
        DataTable dt = new DataTable();
        da.Fill(dt);
        comboBox1.DataSource = dt;
        comboBox1.DisplayMember = "VehicleType";
        comboBox1.ValueMember = "VehicleType";
        con.Close();

    }

    private void button1_Click(object sender, EventArgs e)
    {
        SqlConnection con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial
Catalog=sushmi;Integrated Security=True");
        con.Open();

        SqlDataAdapter da = new SqlDataAdapter("select IdVehicleType from tbl_VehicleTypes where
VehicleType='" + comboBox1.SelectedValue.ToString() + "'", con);
        DataTable dt = new DataTable();
        da.Fill(dt);

        SqlCommand cmd = new SqlCommand("insert into tbl_ServiceDetails values(" + textBox1.Text + "," +
textBox2.Text + "," + comboBox3.Text + "," + int.Parse((dt.Rows[0][0]).ToString()) + ")", con);
        cmd.ExecuteNonQuery();

        MessageBox.Show("Record inserted successfully!");
        con.Close();
        textBox1.Text = "";
        textBox2.Text = "";
        textBox3.Text = "";
        textBox1.Focus();

    }

    private void button2_Click(object sender, EventArgs e)
    {
        this.Hide();
        new Form1().Show();

    }

    private void comboBox1_SelectedIndexChanged(object sender, EventArgs e)
    {

    }

}

```

```
}
```

Form3.cs

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.SqlClient;

namespace WindowsFormsApplication3
{
    public partial class Form3 : Form
    {
        SqlConnection con;
        SqlDataAdapter da;
        DataTable dt;
        public Form3()
        {
            InitializeComponent();
        }
        private void button2_Click(object sender, EventArgs e)
        {
            this.Hide();
            new Form1().Show();
        }

        private void Form3_Load(object sender, EventArgs e)
        {
            con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial Catalog=sushmi;Integrated Security=True");
            con.Open();
            da = new SqlDataAdapter("select * from tbl_VehicleTypes", con);
            dt = new DataTable();
            da.Fill(dt);
            dataGridView1.DataSource = dt;
        }

        private void button1_Click(object sender, EventArgs e)
        {
            SqlCommandBuilder cmd = new SqlCommandBuilder(da);
            da.Update(dt);
            MessageBox.Show("Record updated!");
        }
    }
}
```

```
}  
}
```

Form4.cs

```
using System;  
using System.Collections.Generic;  
using System.ComponentModel;  
using System.Data;  
using System.Drawing;  
using System.Linq;  
using System.Text;  
using System.Windows.Forms;  
using System.Data.SqlClient;  
  
namespace WindowsFormsApplication3  
{  
    public partial class Form4 : Form  
    {  
        public SqlConnection con;  
        public SqlDataAdapter da;  
        public DataTable dt;  
  
        public Form4()  
        {  
            InitializeComponent();  
        }  
  
        private void Form4_Load(object sender, EventArgs e)  
        {  
            con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial Catalog=sushmi;Integrated  
Security=True");  
            con.Open();  
            da = new SqlDataAdapter("select VehicleType from tbl_VehicleTypes", con);  
            dt = new DataTable();  
            da.Fill(dt);  
            comboBox1.DataSource = dt;  
            comboBox1.DisplayMember = "VehicleType";  
            comboBox1.ValueMember = "VehicleType";  
            con.Close();  
        }  
  
        private void button2_Click(object sender, EventArgs e)  
        {  
            this.Hide();  
            new Form1().Show();  
        }  
  
        private void comboBox1_SelectedIndexChanged(object sender, EventArgs e)  
        {  

```

```

        con = new SqlConnection("Data Source=mca01-37\\sqlexpress;Initial Catalog=sushmi;Integrated
Security=True");
        con.Open();
        da = new SqlDataAdapter("select IdVehicleType,ServiceCharge from tbl_VehicleTypes where
VehicleType='" + comboBox1.SelectedValue.ToString() + "'", con);
        dt = new DataTable();
        da.Fill(dt);

        int id=0, amt=0;
        foreach (DataRow r in dt.Rows)
        {
            id = int.Parse(r[0].ToString());
            amt = int.Parse(r[1].ToString());

        }

        da = new SqlDataAdapter("select IdVehicleType,count(*) from tbl_ServiceDetails group by
IdVehicleType", con);
        dt = new DataTable();
        da.Fill(dt);

        int total_service = 0;
        foreach (DataRow r in dt.Rows)
        {
            if (int.Parse(r[0].ToString()) == id)
                total_service = int.Parse(r[1].ToString()) * amt;

        }
        textBox1.Text = total_service.ToString();

        con.Close();

    }
}
}

```