

Assignment 3

C# Codes

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Game Development

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C# Codes

1 Question 1

1.1 Code:

```
using System;
namespace GameDevelopment_A3
{
    class Bank
    {
        String name;
        int number;
        char type;
        double amount=1000;
        public void CreateAccount(String name, int number, char type)
        {
            this.name = name;
            this.number = number;
            this.type = type;
            Console.WriteLine("Account Created Successfully!");
        }
        public void Deposit(double amount)
        {
            this.amount = this.amount+amount;
            Console.WriteLine("Amount Deposited Successfully!");
        }
        void CheckInterest()
        {
            if (this.type=='S')
            {
                double temp = (this.amount * 10) / 100;
                this.amount = temp + this.amount;
            }
        }
        void CheckPenalty()
        {
            if (this.type == 'C' && this.amount<=1000)
            {
                double temp = (this.amount * 5) / 100;
                this.amount = this.amount-temp;
            }
        }
        public void Display()
        {
            CheckInterest();
            CheckPenalty();
            if (this.type=='S')
            {
                Console.Write("Name: " + this.name
                    + "\nAccount Number: " + this.number
                    + "\nAccount Type: " + this.type
                    + "\nCurrent Ammount(Intrest Included): " + this.amount);
            }
            else
            {
                Console.Write("Name: " + this.name
```

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```
        + "\nAccount Number: " + this.number
        + "\nAccount Type: " + this.type
        + "\nCurrent Ammount: " + this.amount);
    }
}
}
class Program:Bank
{
    static void Main(string[] args)
    {
        Bank bank = new Bank();
        Console.WriteLine("Welcome to World Bank!");
        String name;
        int number;
        char type;
        double amount;
        Console.Write("Enter your name: ");
        name = Console.ReadLine();
        Console.Write("Enter your account number: ");
        number = Int32.Parse(Console.ReadLine());
        Console.Write("Enter your account type: ");
        type = Char.Parse(Console.ReadLine());
        Console.WriteLine("Creating Account...");
        bank.CreateAccount(name,number,type);
        char choice=' ';
        while(choice!=3)
        {
            Console.Write("\n\n1. Deposit\n2. Display\n3. Exit\n\nChoice: ");

            choice = Char.Parse(Console.ReadLine());
            if (choice == '1') {

                Console.Write("Enter amount: ");
                amount = Double.Parse(Console.ReadLine());
                bank.Deposit(amount);
            }
            else if (choice == '2')
            {
                bank.Display();
            }
            else
            {
                Console.Write("\nGood Bye");
            }
        }

        Console.ReadKey();
    }
}
}
```

1.2 Output:

```
C:\> Select C:\Program Files\dotnet\dotnet.exe

Welcome to World Bank!
Enter your name: Usama Sarwar
Enter your account number: 090
Enter your account type: S
Creating Account...
Account Created Successfully!

1. Deposit
2. Display
3. Exit

Choice: 1
Enter amount: 2000
Amount Deposited Successfully!

1. Deposit
2. Display
3. Exit

Choice: 2
Name: Usama Sarwar
Account Number: 90
Account Type: S
Current Ammount(Intrest Included): 3300
```

2 Question 2

2.1 Code:

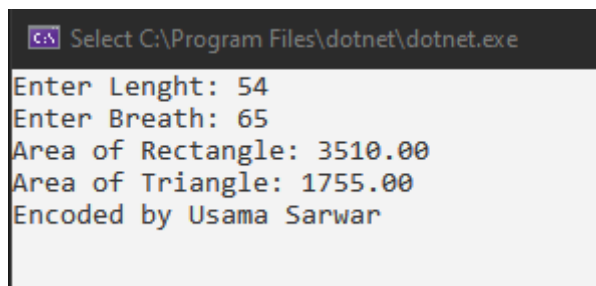
```
using System;
namespace Question2
{
    public class Shape
    {
        public double lenght, breath, area;
        public void get(double Length, double Width)
        {
            lenght = Length;
            breath = Width;
        }
        public void Set()
        {
            Console.WriteLine("Lenght: {0}", lenght);
            Console.WriteLine("Breath: {0}", breath);
        }
        public virtual void dis_area()
        {
            // Area Virtual Function
        }
    }
}
```

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```
class Rectangle : Shape
{
    public override void dis_area()
    {
        area = lenght * breath;
        Console.WriteLine("Area of Rectangle: {0:F2}", area);
    }
}
class Triangle : Shape
{
    public override void dis_area()
    {
        area = (lenght * breath) / 2;
        Console.WriteLine("Area of Triangle: {0:F2}", area);
    }
}
class Program
{
    static void Main(string[] args)
    {
        double Length, Width;
        Console.Write("Enter Lenght: ");
        Length = Convert.ToDouble(Console.ReadLine());
        Console.Write("Enter Breath: ");

        Width = Convert.ToDouble(Console.ReadLine());
        Shape rec = new Rectangle();
        Shape tri = new Triangle();
        rec.get(Length, Width);
        tri.get(Length, Width);
        rec.dis_area();
        tri.dis_area();
        Console.WriteLine("Encoded by Usama Sarwar");
        Console.ReadLine();
    }
}
```

2.2 Output:



```
Select C:\Program Files\dotnet\dotnet.exe
Enter Lenght: 54
Enter Breath: 65
Area of Rectangle: 3510.00
Area of Triangle: 1755.00
Encoded by Usama Sarwar
```

3 Question 3

3.1 Code:

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

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```
using System.Threading.Tasks;

namespace Question3
{
    class RNumber
    {
        public int Numentor, Dumentor;
        RNumber(int number) { }
        RNumber()
        {
            Console.Write("Numentor: ");
            Numentor = Convert.ToInt32(Console.ReadLine());
            Console.Write("Dumentor: ");
            Dumentor = Convert.ToInt32(Console.ReadLine());
            if (Dumentor < 1)
            {
                Console.WriteLine("Dumentor Should Be Greater Than 0.\nEnter
Again");
                Dumentor = Convert.ToInt32(Console.ReadLine());
            }
            for (int x = 1; x <= Numentor; x++)
            {
                if (Numentor % x == 0 && Dumentor % x == 0)
                {
                    Numentor = Numentor / x;
                    Dumentor = Dumentor / x;
                    x = 1;
                }
            }
        }
        public static RNumber operator +(RNumber r1, RNumber r2)
        {
            RNumber r3 = new RNumber(5);
            r3.Numentor = (r1.Numentor * r2.Dumentor) + (r2.Numentor *
r1.Dumentor);
            r3.Dumentor = r1.Dumentor * r2.Dumentor;
            for (int x = 1; x <= r3.Numentor; x++)
            {
                if (r3.Numentor % x == 0 && r3.Dumentor % x == 0)
                {
                    r3.Dumentor = r3.Dumentor / x;
                    r3.Numentor = r3.Numentor / x;
                    x = 1;
                }
            }
            return r3;
        }
        public static RNumber operator -(RNumber r1, RNumber r2)
        {
            RNumber r3 = new RNumber(5);
            r3.Numentor = (r1.Numentor * r2.Dumentor) - (r2.Numentor *
r1.Dumentor);
            r3.Dumentor = r1.Dumentor * r2.Dumentor;
            for (int x = 1; x <= r3.Numentor; x++)
            {
                if (r3.Numentor % x == 0 && r3.Dumentor % x == 0)
```

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```
        {
            r3.Dumentor = r3.Dumentor / x;
            r3.Numentor = r3.Numentor / x;
            x = 1;
        }
    }
    return r3;
}

public static RNumber operator *(RNumber r1, RNumber r2)
{
    RNumber r3 = new RNumber(5);
    r3.Numentor = (r1.Numentor * r2.Numentor);
    r3.Dumentor = r1.Dumentor * r2.Dumentor;
    for (int x = 1; x <= r3.Numentor; x++)
    {
        if (r3.Numentor % x == 0 && r3.Dumentor % x == 0)
        {
            r3.Dumentor = r3.Dumentor / x;
            r3.Numentor = r3.Numentor / x;
            x = 1;
        }
    }
    return r3;
}

public static RNumber operator /(RNumber r1, RNumber r2)
{
    RNumber r3 = new RNumber(5);
    r3.Numentor = (r1.Numentor * r2.Dumentor);
    r3.Dumentor = r1.Dumentor * r2.Numentor;
    for (int x = 1; x <= r3.Numentor; x++)
    {
        if (r3.Numentor % x == 0 && r3.Dumentor % x == 0)
        {
            r3.Dumentor = r3.Dumentor / x;
            r3.Numentor = r3.Numentor / x;
            x = 1;
        }
    }
    return r3;
}

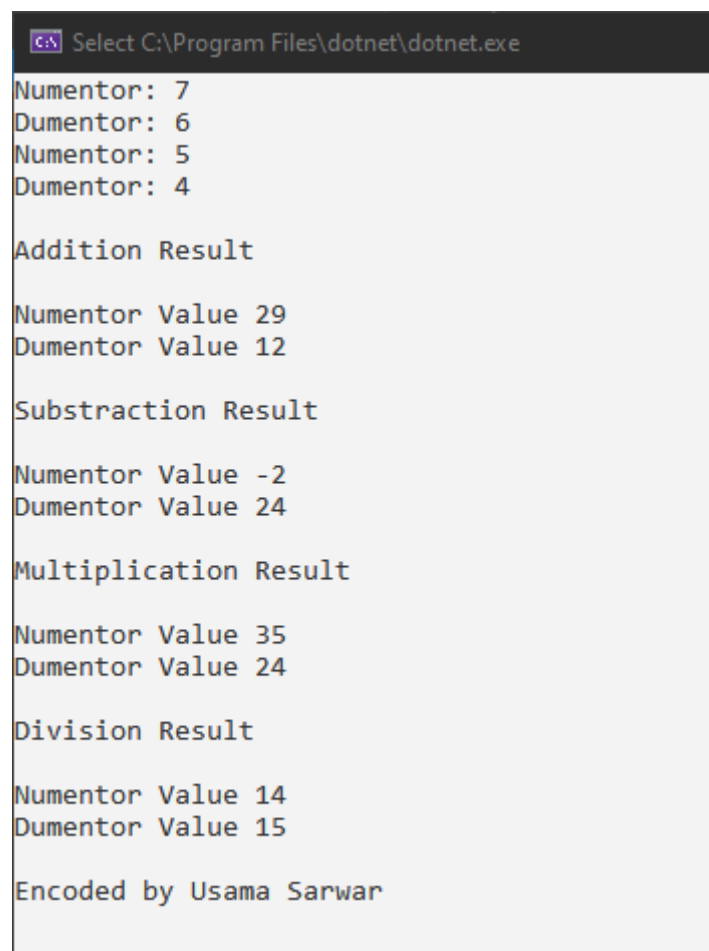
public void display()
{
    Console.WriteLine("\nNumentor Value {0}", Numentor);
    Console.WriteLine("\nDumentor Value {0}", Dumentor+"\n");
}

class Program
{
    static void Main(string[] args)
    {
        RNumber r1 = new RNumber();
        RNumber r2 = new RNumber();
        RNumber r3 = new RNumber(5);
        Console.WriteLine("\nAddition Result");
        r3 = r1 + r2;
        r3.display();
        Console.WriteLine("\nSubstraction Result");
        r3 = r1 - r2;
        r3.display();
    }
}
```

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```
        Console.WriteLine("\nMultiplication Result");
        r3 = r1 * r2;
        r3.display();
        Console.WriteLine("\nDivision Result");
        r3 = r1 / r2;
        r3.display();
        Console.WriteLine("\nEncoded by Usama Sarwar");
        Console.ReadLine();
    }
}
}
```

3.2 Output:



```
C:\> Select C:\Program Files\dotnet\dotnet.exe

Numentor: 7
Dumentor: 6
Numentor: 5
Dumentor: 4

Addition Result

Numentor Value 29
Dumentor Value 12

Substraction Result

Numentor Value -2
Dumentor Value 24

Multiplication Result

Numentor Value 35
Dumentor Value 24

Division Result

Numentor Value 14
Dumentor Value 15

Encoded by Usama Sarwar
```

4 Question 4

4.1 Code:

```
using System;
using System.Collections.Generic;
```


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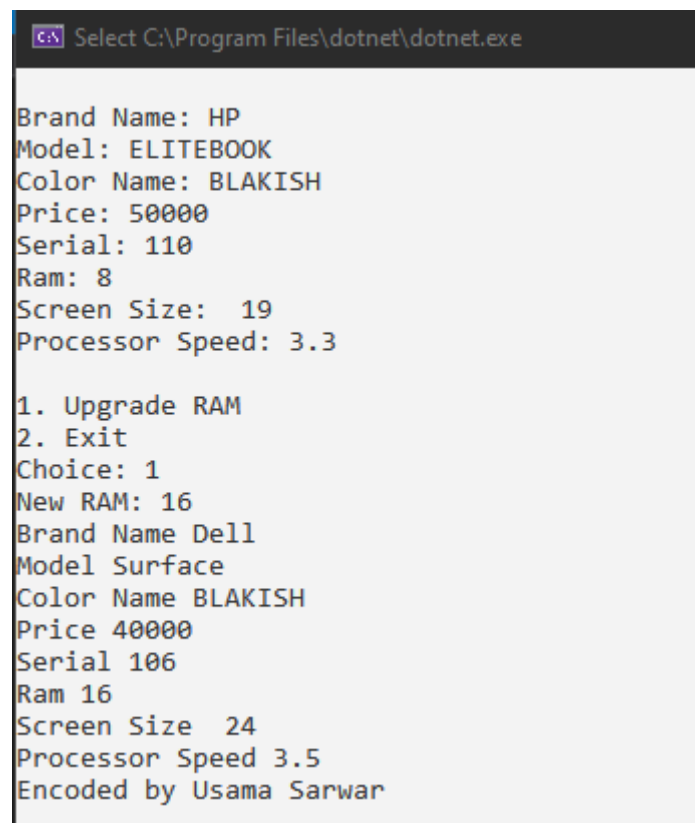
```
using System.Linq;
using System.Text;
using System.Threading.Tasks;
namespace Question4
{
    class laptop
    {
        public string brand, color, model;
        public int serial, ram;
        public double pspeed, price, SizeScreen;
        public laptop()
        {
            brand = "HP";
            color = "BLAKISH";
            model = "ELITEBOOK";
            serial = 840;
            ram = 8;
            pspeed = 3.24;
            price = 45000;
            SizeScreen = 19;
        }
        public laptop(string brands, string colors, string models, int serials,
int rams, double ps, double prices, double ssizes)
        {
            brand = brands; color = colors; model = models; serial = serials; ram
= rams;
            pspeed = ps; price = prices; SizeScreen = ssizes;
            Console.WriteLine("\nBrand Name: {0} ", brand);
            Console.WriteLine("Model: {0} ", model);
            Console.WriteLine("Color Name: {0} ", color);
            Console.WriteLine("Price: {0}", price);
            Console.WriteLine("Serial: {0} ", serial);
            Console.WriteLine("Ram: {0} ", ram);
            Console.WriteLine("Screen Size: {0} ", SizeScreen);
            Console.WriteLine("Processor Speed: {0} ", pspeed);
        }
        public void getbrand()
        {
            brand = "Dell";
        }
        public void getcolor()
        {
            color = "White";
        }
        public void getmodel()
        {
            model = "Surface";
        }
        public void getserial()
        {
            serial = 106;
        }
        public void getsram()
        {
            ram = 16; int x;
            Console.Write("\n1. Upgrade RAM\n2. Exit\nChoice: ");
            x = Convert.ToInt32(Console.ReadLine());
            if (x == 1)
            {
```

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```
        Console.WriteLine("New RAM: ");
        ram = Convert.ToInt32(Console.ReadLine());
    }
    else
    {
        Console.WriteLine("Okay");
    }
}
public void getspeed()
{
    pspeed = 3.5;
}
public void getprice()
{
    price = 40000;
}
public void getsize()
{
    SizeScreen = 24;
}
public void display()
{
    Console.WriteLine("Brand Name {0} ", brand);
    Console.WriteLine("Model {0} ", model);
    Console.WriteLine("Color Name {0} ", color);
    Console.WriteLine("Price {0}", price);
    Console.WriteLine("Serial {0} ", serial);
    Console.WriteLine("Ram {0} ", ram);
    Console.WriteLine("Screen Size {0} ", SizeScreen);
    Console.WriteLine("Processor Speed {0} ", pspeed);
}
}

class Program
{
    static void Main(string[] args)
    {
        laptop Laptop_ = new laptop();
        laptop lap = new laptop("HP", "BLAKISH", "ELITEBOOK", 110, 8, 3.30,
50000, 19);
        Laptop_.getbrand();
        Laptop_.getbrand();
        Laptop_.getmodel();
        Laptop_.getserial();
        Laptop_.getsram();
        Laptop_.getspeed();
        Laptop_.getprice();
        Laptop_.getsize();
        Laptop_.display();
        Console.WriteLine("Encoded by Usama Sarwar");
        Console.ReadKey();
    }
}
}
```

4.2 Output



```
Select C:\Program Files\dotnet\dotnet.exe

Brand Name: HP
Model: ELITEBOOK
Color Name: BLAKISH
Price: 50000
Serial: 110
Ram: 8
Screen Size: 19
Processor Speed: 3.3

1. Upgrade RAM
2. Exit
Choice: 1
New RAM: 16
Brand Name Dell
Model Surface
Color Name BLAKISH
Price 40000
Serial 106
Ram 16
Screen Size 24
Processor Speed 3.5
Encoded by Usama Sarwar
```

5 Question 5

5.1 Code:

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

namespace Question5
{
    class number
    {
        public double num; public int result;
        public void get()
        {
            Console.Write("Enter Number: ");
            num = Convert.ToDouble(Console.ReadLine());
        }
        public void verify()
        {
            if (num >= 0)
            {
                Console.WriteLine("Entered Number is Whole Number...");
                if (num > 0)
                {

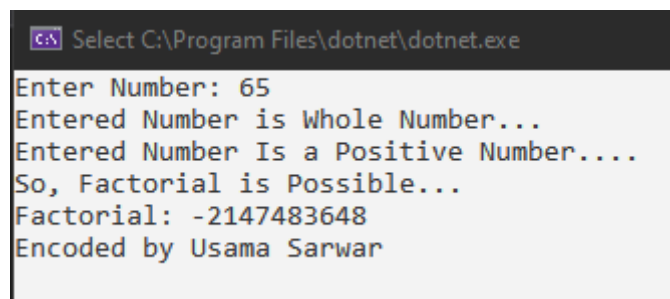
```

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```
        Console.WriteLine("Entered Number Is a Positive
Number....\nSo, Factorial is Possible...");
        for (double x = num - 1; x > 0; x--)
        {
            num = num * x;
        }
        result = (int)num;
        Console.WriteLine("Factorial: {0}", result);
    }
}
else
{
    Console.WriteLine("Given Number is Not a Whole Number and Also Not
+ve");
}
}
}

class Program
{
    static void Main(string[] args)
    {
        number n = new number();
        n.get();
        n.verify();
        Console.WriteLine("Encoded by Usama Sarwar");
        Console.ReadLine();
    }
}
}
```

5.2 Output



```
Enter Number: 65
Entered Number is Whole Number...
Entered Number Is a Positive Number....
So, Factorial is Possible...
Factorial: -2147483648
Encoded by Usama Sarwar
```