C# CODE

Game Development

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Question#01

Bank Account

Solution:

```
using System;
namespace Question1
{
   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
                + "\nAccount Number: " + this.number
                + "\nAccount Type: " + this.type
                + "\nCurrent Ammount: " + this.amount);
        }
    }
}
public class Program
{
    public static void Main(string[] args)
    {
        Bank bank = new 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");
        }
        }
    }
  }
}
```

Output:

```
Enter your name: Alina Raza
Enter your account number: 072
Enter your account type: S
Creating Account...
Account Created Successfully!


1. Deposit
2. Display
3. Exit

Choice: 1
Enter amount: 78698
Amount Deposited Successfully!
```

Question#02

Area Finding

Solution:

```
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
    }
}
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);
    }
}


public class Program
{
    public static void Main(string[] args)
    {
        double Length, Width;
        Console.Write("Lenght: ");
        Length = Convert.ToDouble(Console.ReadLine());
        Console.Write("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("Code by Alina Raza");
```

```
            Console.ReadLine();

        }
    }
}
```

Outline:

```
Lenght: 66
Breath: 44
Area of Rectangle: 2904.00
Area of Triangle: 1452.00
Code by Alina Raza
>
```

Question#03

Rational Number

```
using System;

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

public class Program
{
   public 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();
      Console.WriteLine("\nMultiplication Result");
      r3 = r1 * r2;
      r3.display();
      Console.WriteLine("\nDivision Result");
      r3 = r1 / r2;
      r3.display();
     Console.WriteLine("Code by Alina Raza");

   }
}    }
```

Output:

```
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
```

Question#04

Laptop

Solution:

```
using System;
using System.Collections.Generic;
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)
    {
        Console.Write("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);
    }
}

public class Program
```

```
{
    public 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("Code by Alina Raza");


    }   }}
```

Output:

```
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: 20
Brand Name Dell
Model Surface
Color Name BLAKISH
Price 40000
Serial 106
Ram 20
Screen Size  24
Processor Speed 3.5
Code by Alina Raza
```

Question#05

Factorial

Solution:

```
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)
            {
               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("Code by Alina Raza");
            Console.ReadLine();

        }
    }
}
```

Output

```
Enter Number: 76
Entered Number is Whole Number...
Entered Number Is a Positive Number....
So, Factorial is Possible...
Factorial: -2147483648
Code by Alina Raza
```