COS20007 - Object Oriented Programming

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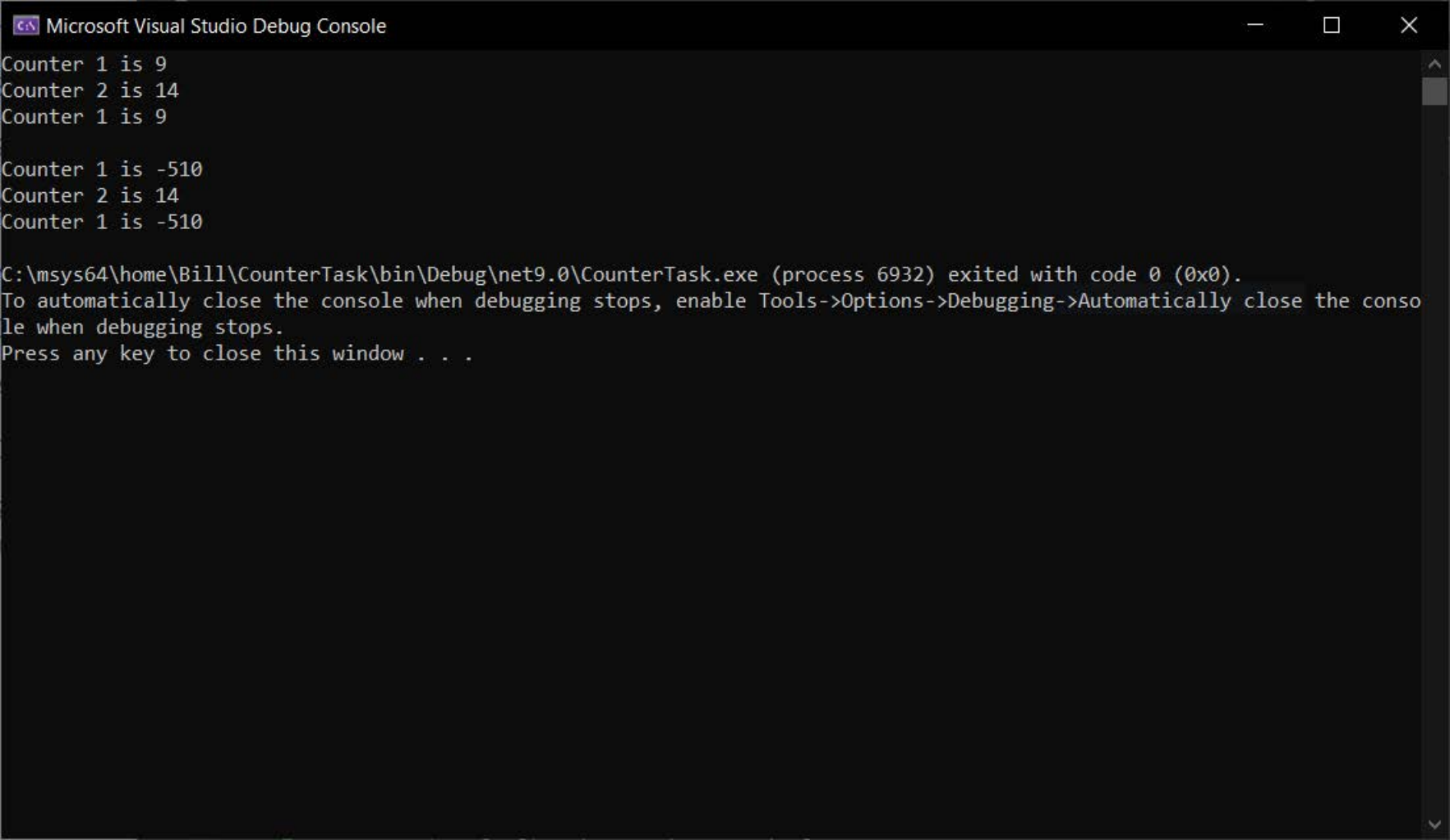
2.2P - Counter Class and Arithmetic Overflow-checking

```
using System;
using SplashKitSDK;

namespace CounterTask
{
    public class Program
    {
        private static void PrintCounters(Counter[] counters)
        {
            foreach(Counter c in counters)
            {
                Console.WriteLine("{0} is {1}", c.Name, c.Ticks);
            }
        }
        public static void Main(string[] arg)
        {
            Counter[] myCounters = new Counter[3];
            myCounters[0] = new Counter("Counter 1");
            myCounters[1] = new Counter("Counter 2");
            myCounters[2] = myCounters[0];

            for(int i = 1; i <= 9; i++)
            {
                myCounters[0].Increment();
            }
            for(int i = 1; i <= 14; i++)
            {
                myCounters[1].Increment();
            }
            PrintCounters(myCounters);
            Console.ReadLine();
            myCounters[2].ResetByDefault();
            myCounters[2].Increment();
            //It has error because it's a "long" number and not the "int" type.
            //Therefore, we'll face arithmetric overflow.
            //When I use "uncheck" statement, it will pass the debug
            //but the value will not be preserved as I wanted
            PrintCounters(myCounters);
        }
    }
}
```

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

namespace CounterTask
{
    public class Counter
    {
        // fields
        int _count;
        string _name;

        public Counter(string name) //Constructor
        {
            _name = name;
            _count = 0;
        }

        //methods
        public void Increment()
        {
            _count++;
        }

        public void Reset()
        {
            _count = 0;
        }

        public void ResetByDefault()
        {
            unchecked
            {
                _count = (int)2147483647489; //105547489
            }
        }

        //properties
        public string Name
        {
            get
            {
                return _name;
            }
            set
            {
```

```
                _name = value;
            }
        }

        public int Ticks
        {
            get
            {
                return _count;
            }
        }
    }
}
```


Microsoft Visual Studio Debug Console
Counter 1 is 9
Counter 2 is 14
Counter 1 is 9
Counter 1 is -510
Counter 2 is 14
Counter 1 is -510
C:\msys64\home\Bill\CounterTask\bin\Debug\net9.0\CounterTask.exe (process 6932) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .