Programming C# .Net
Asynchronous Callbacks

1. Create windows console application with the following folder name: mol.

2. Your application will need the following code:

Universe.cs

```
using System;

namespace MOL
{
      public delegate void WorkStarted();
      public delegate void WorkProgressing();
      public delegate int WorkCompleted();

      class Universe
      {
            static void WorkerStartedWork()
            {
                  Console.WriteLine("Universe notices worker starting work");
            }

            static int WorkerCompletedWork()
            {
                  System.Threading.Thread.Sleep(4000);
                  Console.WriteLine("Universe is pleased with worker's work");
                  return 42;
            }

            static void Main()
            {
                  Worker peter = new Worker();
                  Boss boss = new Boss();
                  peter.completed += new WorkCompleted(boss.WorkCompleted);
                  peter.started += new WorkStarted(Universe.WorkerStartedWork);
                  peter.completed += new WorkCompleted(Universe.WorkerCompletedWork);
                  peter.DoWork();

                  Console.WriteLine("Main: worker completed work");
                  Console.ReadLine();
            }
      }
}
```

Worker.cs

```
using System;

namespace MOL
{
```

```
	public class Worker
	{
		public event WorkStarted started;
		public event WorkProgressing progressing;
		public event WorkCompleted completed;

		public void DoWork()
		{
			Console.WriteLine("Worker: work started");
			if( started != null ) started();

			Console.WriteLine("Worker: work progressing");
			if( progressing != null ) progressing();

			Console.WriteLine("Worker: work completed");
			if( completed != null )
			{
				foreach( WorkCompleted wc in completed.GetInvocationList() )
				{
					wc.BeginInvoke(new AsyncCallback(WorkGraded), wc);
				}
			}
		}

		void WorkGraded(IAsyncResult res)
		{
			WorkCompleted wc = (WorkCompleted)res.AsyncState;
			int grade = wc.EndInvoke(res);
			Console.WriteLine("Worker grade= " + grade);
		}
	}
}
```

Boss.cs

```
using System;

namespace MOL
{
	/// <summary>
	/// Summary description for ComputerSeer.
	/// </summary>
	class Boss
	{
		public int WorkCompleted()
		{
			System.Threading.Thread.Sleep(3000);
			Console.WriteLine("Better...");
			return 6;
		}
	}
}
```

3. Test and save your work.