

# Assignment – 1

- 1) Create a console application using C#.NET Core to demonstrate multi-level inheritance using implementation of access modifiers, properties, methods and constructors. Provide menu to the user to select type of data to store in a Generic List. Use dynamic polymorphism to create Generic List.

The screenshot shows a Microsoft Visual Studio interface. The code editor displays C# code for a class named Content. The Solution Explorer on the right shows a solution named 'Assignment-1' containing a project with files like App.config, Assignment-1.cs, Courses.cs, Program.cs, and Q-1 through Q-3. The Output window at the bottom shows the execution of 'Assignment-1.exe'.

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

namespace Assignment_1
{
    public class Content
    {
        protected int Id;
        public string Title { get; set; }

        public Content(int id, string title)
        {
            Id = id;
            Title = title;
        }

        public virtual void Show()
        {
            Console.WriteLine($"{Id} - {Title}");
        }
    }
}
```

Output window content:

```
Show output from: Debug
'Assignment-1.exe' [CLR v4.0.30319; DefaultDomain]: Loaded 'C:\Windows\Microsoft.NET\assembly\GAC_32\mscorlib\v4.0.0.0_b77a5c561934e089\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug info is invalid.
'Assignment-1.exe' [CLR v4.0.30319; DefaultDomain]: Loaded 'D:\IC72_95\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[11604] Assignment-1.exe' has exited with code 0 (0x0).
```

Assignment-1

```
1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Text;
5 using System.Threading.Tasks;
6
7 namespace Assignment_1
8 {
9     public class Course : Content
10    {
11        public int Duration { get; set; }
12
13        public Course(int id, string title, int duration)
14        {
15            base(id, title)
16            Duration = duration;
17        }
18
19        public override void Show()
20        {
21            Console.WriteLine($"ID - {Title} - {Duration} hrs");
22        }
23    }
24 }
```

No issues found

Output

```
Show output from: Debug
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'C:\Windows\Microsoft.NET\Assembly\GAC_32\mscorlib\v4.0_4.0.0_b77a5c561934e089\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug symbol file wasn't found.
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'D:\ICT2_05\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[13604] Assignment-1.exe' has exited with code 0 (0x0).
```

Error List Output

Properties Solution Explorer Git Changes

Ready 21°C Sunny 11:32 23-01-2026

Assignment-1

```
1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Text;
5 using System.Threading.Tasks;
6
7 namespace Assignment_1
8 {
9     public class LiveCourse : Course
10    {
11        public int LiveStudents { get; set; }
12
13        public LiveCourse(int id, string title, int duration, int students)
14        {
15            base(id, title, duration)
16            LiveStudents = students;
17        }
18
19        public override void Show()
20        {
21            Console.WriteLine($"{ID} - {Title} - Live: {LiveStudents}");
22        }
23    }
24 }
```

No issues found

Output

```
Show output from: Debug
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'C:\Windows\Microsoft.NET\Assembly\GAC_32\mscorlib\v4.0_4.0.0_b77a5c561934e089\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug symbol file wasn't found.
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'D:\ICT2_05\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[13604] Assignment-1.exe' has exited with code 0 (0x0).
```

Error List Output

Properties Solution Explorer Git Changes

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```

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

namespace Assignment_1
{
    class Program
    {
        static void Main(string[] args)
        {
            List<Content> list = new List<Content>();
            int choice;
            do
            {
                Console.WriteLine("\n1. Add Course");
                Console.WriteLine("2. Add Live Course");
                Console.WriteLine("3. Display All");
                Console.WriteLine("4. Exit");
                Console.Write("Enter choice : ");
                choice = Convert.ToInt32(Console.ReadLine());
                switch (choice)
                {
                    case 1:
                        Console.WriteLine("Enter Course ID: ");
                        int cid = Convert.ToInt32(Console.ReadLine());
                        Console.WriteLine("Enter Course Title: ");
                        string title = Console.ReadLine();
                        Console.WriteLine("Enter Duration (hrs) : ");
                        float duration = float.Parse(Console.ReadLine());
                        Console.WriteLine("Enter Fees (Rs) : ");
                        long fees = long.Parse(Console.ReadLine());
                        list.Add(new Course(cid, title, duration, fees));
                        Console.WriteLine("Course Added");
                        break;
                    case 2:
                        Console.WriteLine("Enter Course ID: ");
                        int lid = Convert.ToInt32(Console.ReadLine());
                        Console.WriteLine("Enter Course Title: ");
                        string little = Console.ReadLine();
                        Console.WriteLine("Enter Duration (hrs) : ");
                        float lduration = float.Parse(Console.ReadLine());
                        Console.WriteLine("Enter Live Students : ");
                        long lstudents = long.Parse(Console.ReadLine());
                        list.Add(new LiveCourse(lid, little, lduration, lstudents));
                        Console.WriteLine("Live Course Added");
                        break;
                    case 3:
                        Console.WriteLine("----- Stored Courses -----");
                        foreach (Content c in list)
                        {
                            c.Show();
                        }
                        break;
                    case 4:
                        Console.WriteLine("Exit");
                        break;
                    default:
                        Console.WriteLine("Invalid Choice");
                }
            } while (choice != 4);
        }
    }
}

```

## Q-1 Program.cs :-

```

using Assignment_1.Q_2;
using Assignment_1.Q_3;
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Assignment_1
{
    class Program
    {
        static void Main(string[] args)
        {
            List<Content> list = new List<Content>();
            int choice;

            do
            {
                Console.WriteLine("\n1. Add Course");
                Console.WriteLine("2. Add Live Course");
                Console.WriteLine("3. Display All");

```

```

Console.WriteLine("4. Exit");
Console.Write("Enter choice: ");
choice = Convert.ToInt32(Console.ReadLine());

switch (choice)
{
    case 1:
        Console.Write("Enter Course ID: ");
        int cid = Convert.ToInt32(Console.ReadLine());
        Console.Write("Enter Title: ");
        string ctitle = Console.ReadLine();
        Console.Write("Enter Duration (hrs): ");
        int dur = Convert.ToInt32(Console.ReadLine());

        list.Add(new Course(cid, ctitle, dur));
        Console.WriteLine("Course Added");
        break;

    case 2:
        Console.Write("Enter Course ID: ");
        int lid = Convert.ToInt32(Console.ReadLine());
        Console.Write("Enter Title: ");
        string ltitle = Console.ReadLine();
        Console.Write("Enter Duration (hrs): ");
        int ldur = Convert.ToInt32(Console.ReadLine());
        Console.Write("Enter Live Students: ");
        int students = Convert.ToInt32(Console.ReadLine());

        list.Add(new LiveCourse(lid, ltitle, ldur, students));
        Console.WriteLine("Live Course Added");
        break;

    case 3:
        Console.WriteLine("\n--- Stored Courses ---");
        foreach (Content c in list)
        {
            c.Show();
        }
        break;

    case 4:
        Console.WriteLine("Exit");
        break;
}

```

```

        default:
            Console.WriteLine("Invalid Choice");
            break;
    }

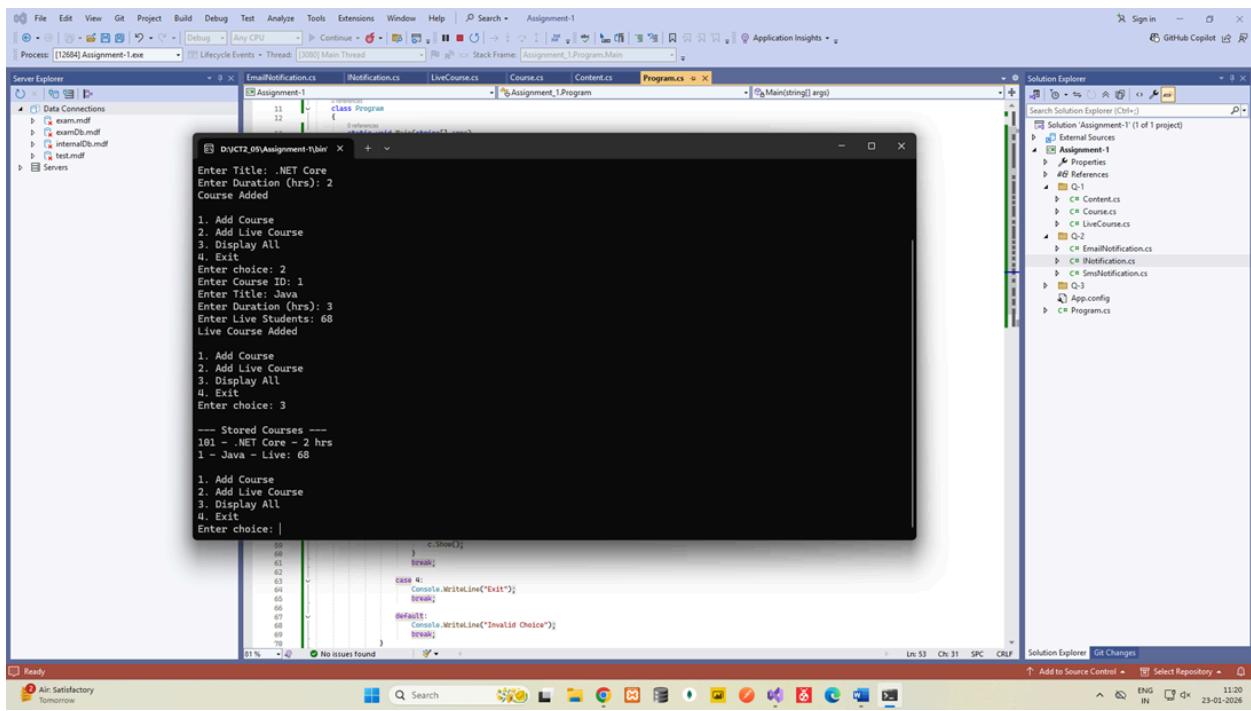
} while (choice != 4);
}

}

```

The screenshot shows the Visual Studio IDE with the following details:

- Solution Explorer:** Shows the solution "Assignment-1" with files: Assignment-1.csproj, Properties, O-1, Content.cs, Course.cs, LiveCourse.cs, O-2, EmailNotification.cs, INotification.cs, SmnNotification.cs, App.config, and Program.cs.
- Toolbars:** Standard Visual Studio toolbars for File, Edit, View, Git, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, Help, and Search.
- Status Bar:** Shows "Ready", "TCS +10%", "Search", "File Explorer", "Task List", "Properties", "Toolbox", "Toolbars", "Status Bar", "Ln: 53 Ch: 31 SPC CRLF", "Add to Source Control", "Select Repository", "ENG IN", "11:19", and "23-01-2026".
- Terminal Window:** Displays the output of the program execution. The program menu includes:
  - 1. Add Course
  - 2. Add Live Course
  - 3. Display All
  - 4. Exit
 Subsequent interactions show:
  - Enter choice: 1  
Enter Course ID: 101  
Enter Title: .NET Core  
Enter Duration (hrs): 2  
Course Added
  - Enter choice: 2  
Enter Course ID: 1  
Enter Title: Java  
Enter Duration (hrs): 3  
Enter Live Students: 68  
Live Course Added
  - Enter choice: 3
  - Stored Courses ---  
101 - .NET Core - 2 hrs



- 2) Create a C#.NET Core console application to demonstrate dynamic polymorphism using Interface type implementation.

Screenshot of Microsoft Visual Studio showing the code editor, Solution Explorer, and Output window.

**Code Editor:**

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

namespace Assignment_1.Q_2
{
    interface INotification
    {
        void Send();
    }
}
```

**Solution Explorer:**

- Assignment-1
- Properties
- Q-1
  - Content.cs
  - Course.cs
  - LiveCourse.cs
- Q-2
  - EmailNotification.cs
  - Notification.cs
  - SendNotification.cs
- Q-3
- App.config
- Program.cs

**Output Window:**

```
Show output from: Debug
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'C:\Windows\Microsoft.NET\Assembly\GAC_32\mscorlib\v4.0_4.0.0.0_b77a5c561934e009\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug symbol file could not be found.
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'D:\ICT2_05\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[20924] Assignment-1.exe' has exited with code 0 (0x0).
```

Screenshot of Microsoft Visual Studio showing the code editor, Solution Explorer, and Output window.

**Code Editor:**

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

namespace Assignment_1.Q_2
{
    class EmailNotification : INotification
    {
        public void Send()
        {
            Console.WriteLine("Email Sent");
        }
    }
}
```

**Solution Explorer:**

- Assignment-1
- Properties
- Q-1
  - Content.cs
  - Course.cs
  - LiveCourse.cs
- Q-2
  - EmailNotification.cs
  - Notification.cs
  - SendNotification.cs
- Q-3
- App.config
- Program.cs

**Output Window:**

```
Show output from: Debug
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'C:\Windows\Microsoft.NET\Assembly\GAC_32\mscorlib\v4.0_4.0.0.0_b77a5c561934e009\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug symbol file could not be found.
'Assignment-1.exe' (CLR v4.0.30319: DefaultDomain): Loaded 'D:\ICT2_05\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[20924] Assignment-1.exe' has exited with code 0 (0x0).
```

Screenshot of Microsoft Visual Studio showing the code editor, Solution Explorer, and Output window.

**Code Editor:**

```
Assignment-1.cs
1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Text;
5 using System.Threading.Tasks;
6
7 namespace Assignment_1.Q_2
8 {
9     interface
10    {
11        class SmsNotification : INotification
12        {
13            public void Send()
14            {
15                Console.WriteLine("SMS Sent");
16            }
17        }
18    }
}
```

**Solution Explorer:**

- Assignment-1
- Properties
- #B References
  - Q-1
    - C# Content.cs
    - C# Course.cs
    - C# LiveCourse.cs
  - Q-2
    - C# EmailNotification.cs
    - C# INotification.cs
    - C# SmsNotification.cs
  - Q-3
    - App.config
    - C# Program.cs

**Output Window:**

```
Assignment-1.exe' [CLR v4.0.30819; DefaultDomain]: Loaded 'C:\windows\Microsoft.NET\assembly\GAC_32\mscorlib\v4.0_4.0.0.0_b77a5c561934e089\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug symbol file was not found.
'Assignment-1.exe' [CLR v4.0.30819; DefaultDomain]: Loaded 'D:\JCT2_05\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[21468] Assignment-1.exe' has exited with code 0 (0x0).
```

Screenshot of Microsoft Visual Studio showing the code editor, Solution Explorer, and Output window.

**Code Editor:**

```
Assignment-1.cs
1 using Assignment_1.Q_3;
2 using System;
3 using System.Collections.Generic;
4 using System.Linq;
5 using System.Text;
6 using System.Threading.Tasks;
7
8 namespace Assignment_1
9 {
10     class Program
11     {
12         static void Main(string[] args)
13         {
14             INotification notify;
15             notify = new EmailNotification();
16             notify.Send();
17
18             notify = new SmsNotification();
19             notify.Send();
20         }
21     }
22 }
23
24 }
```

**Solution Explorer:**

- Assignment-1
- Properties
- #B References
  - Q-1
    - C# Content.cs
    - C# Course.cs
    - C# LiveCourse.cs
  - Q-2
    - C# EmailNotification.cs
    - C# INotification.cs
    - C# SmsNotification.cs
  - Q-3
    - App.config
    - C# Program.cs

**Output Window:**

```
Assignment-1.exe' [CLR v4.0.30819; DefaultDomain]: Loaded 'C:\windows\Microsoft.NET\assembly\GAC_32\mscorlib\v4.0_4.0.0.0_b77a5c561934e089\mscorlib.dll'. Skipped loading symbols. Module is optimized and the debug symbol file was not found.
'Assignment-1.exe' [CLR v4.0.30819; DefaultDomain]: Loaded 'D:\JCT2_05\Assignment-1\bin\Debug\Assignment-1.exe'. Symbols loaded.
The program '[21468] Assignment-1.exe' has exited with code 0 (0x0).
```

## **Q-2 Program.cs :-**

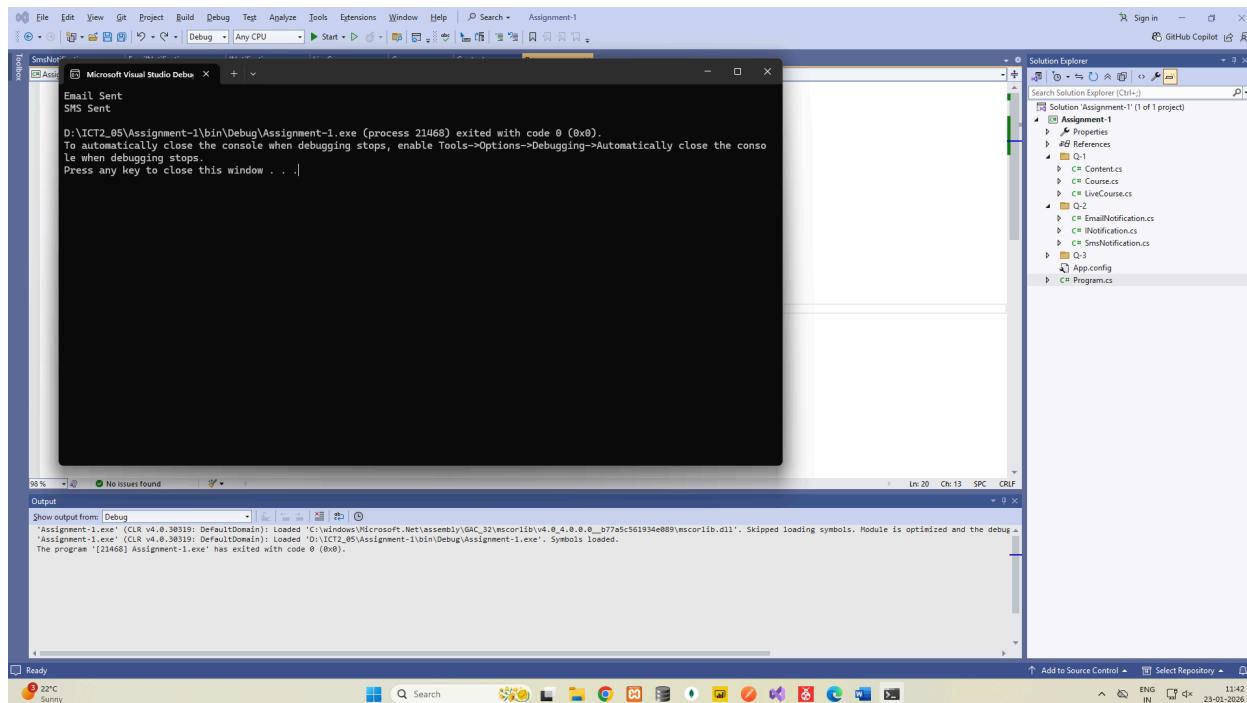
```
using Assignment_1.Q_2;
using Assignment_1.Q_3;
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Assignment_1
{
    class Program
    {

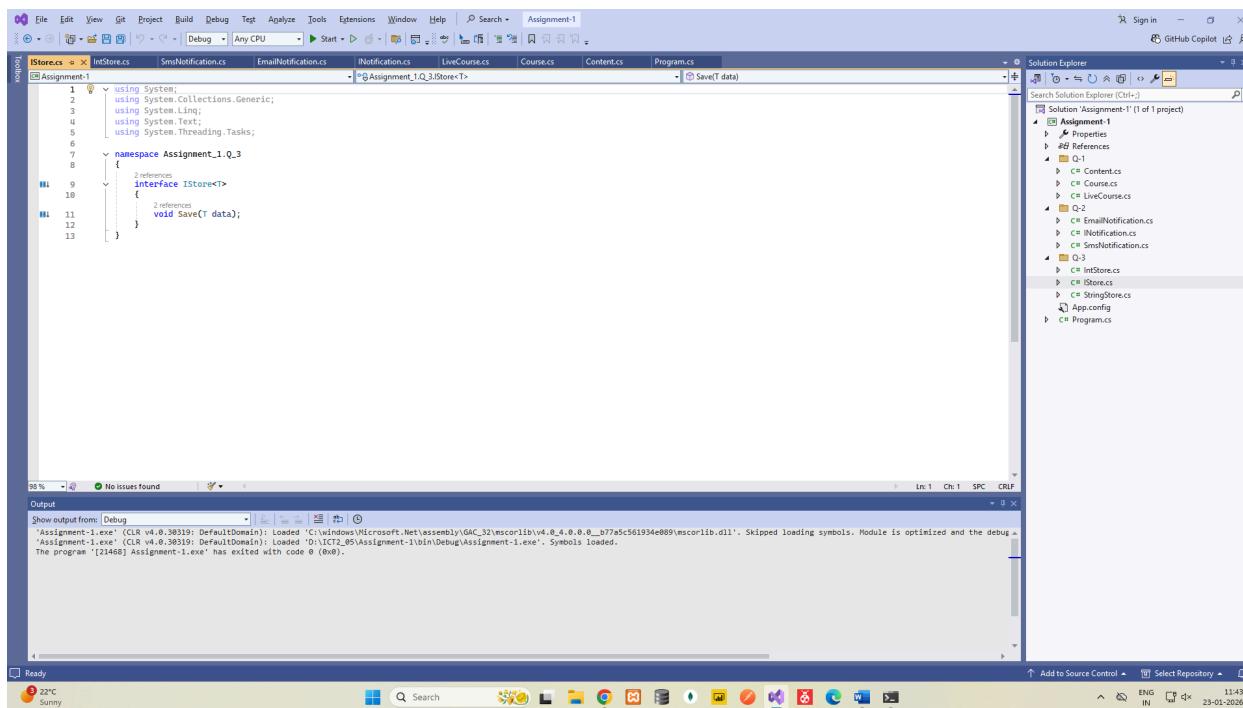
        static void Main(string[] args)
        {
            INotification notify;

            notify = new EmailNotification();
            notify.Send();

            notify = new SmsNotification();
            notify.Send();
        }
    }
}
```



### 3) Create a C#.NET Core console application to demonstrate dynamic polymorphism using Generic Interface type implementation.



Screenshot of Microsoft Visual Studio showing the IntStore.cs file in the code editor and the Solution Explorer on the right.

**IntStore.cs**

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace Assignment_1.Q_3
8  {
9      public interface IStore<T>
10     {
11         void Save(T data);
12     }
13
14     class IntStore : IStore<int>
15     {
16         public void Save(int data)
17         {
18             Console.WriteLine($"Int: {data}");
19         }
20     }
21 }
```

**Solution Explorer**

- Assignment-1 (1 of 1 project)
  - Properties
  - #B References
    - Q-1
      - C# Content.cs
      - C# Course.cs
      - C# LiveCourse.cs
    - Q-2
      - C# EmailNotification.cs
      - C# INotification.cs
      - C# SmsNotification.cs
    - Q-3
      - C# IntStore.cs
      - C# IStore.cs
      - C# StringStore.cs
  - App.config
  - Program.cs

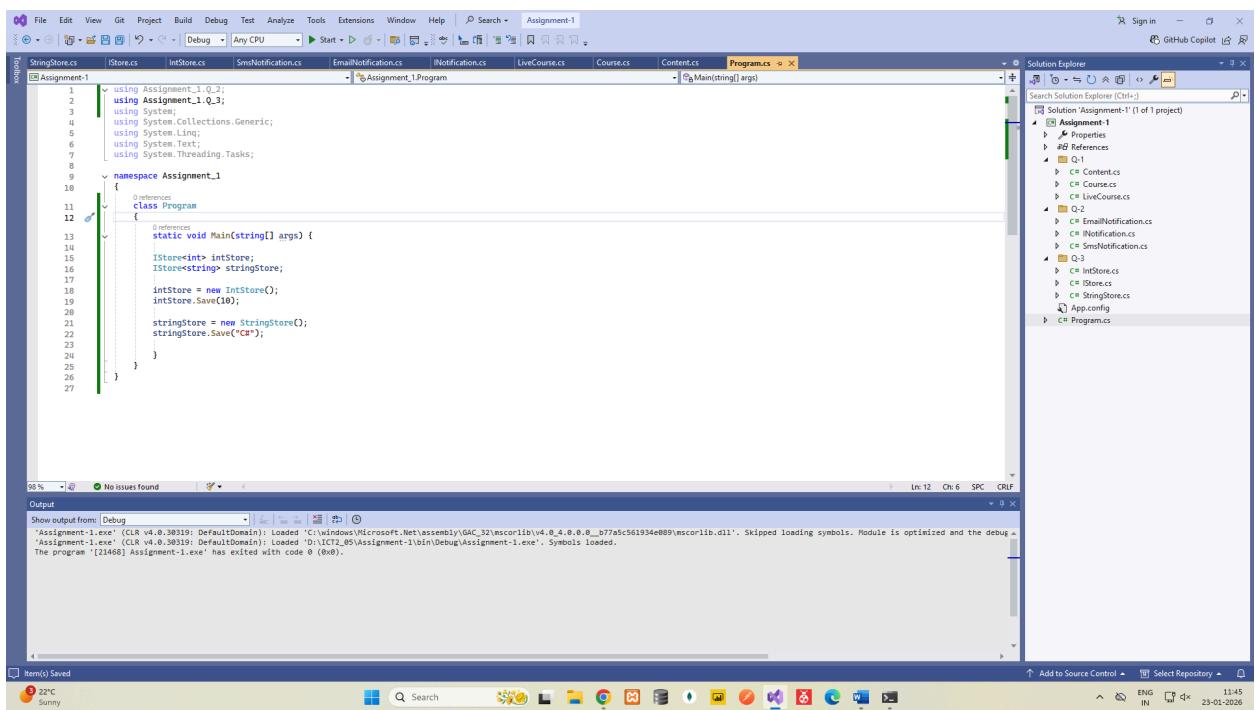
Screenshot of Microsoft Visual Studio showing the StringStore.cs file in the code editor and the Solution Explorer on the right.

**StringStore.cs**

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace Assignment_1.Q_3
8  {
9      public interface IStore<T>
10     {
11         void Save(T data);
12     }
13
14     class StringStore : IStore<string>
15     {
16         public void Save(string data)
17         {
18             Console.WriteLine($"String: {data}");
19         }
20     }
21 }
```

**Solution Explorer**

- Assignment-1 (1 of 1 project)
  - Properties
  - #B References
    - Q-1
      - C# Content.cs
      - C# Course.cs
      - C# LiveCourse.cs
    - Q-2
      - C# EmailNotification.cs
      - C# INotification.cs
      - C# SmsNotification.cs
    - Q-3
      - C# IntStore.cs
      - C# IStore.cs
      - C# StringStore.cs
  - App.config
  - Program.cs



## Q-3 Program.cs :-

```

using Assignment_1.Q_2;
using Assignment_1.Q_3;
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

```

```

namespace Assignment_1
{
    class Program
    {
        static void Main(string[] args)

        IStore<int> intStore;
        IStore<string> stringStore;

        intStore = new IntStore();
        intStore.Save(10);

        stringStore = new StringStore();
    }
}

```

```
        stringStore.Save("C#");

    }

}

}
```

