

FileSystem.cs

...07\Semester Test\SemesterTest_104848770\FileSystem.cs

1

```
1 namespace SemesterTest_104848770
2 {
3     public class FileSystem
4     {
5         private List<Thing> _contents;
6
7         public FileSystem()
8         {
9             _contents = new List<Thing>();
10        }
11
12        public void Add(Thing thing)
13        {
14            _contents.Add(thing);
15        }
16
17        public void PrintContents()
18        {
19            Console.WriteLine("This file system contains:\n");
20            foreach (Thing thing in _contents)
21            {
22                thing.Print();
23            }
24        }
25    }
26 }
27
```

Thing.cs

...OS20007\Semester Test\SemesterTest_104848770\Thing.cs

1

```
1 namespace SemesterTest_104848770
2 {
3     public abstract class Thing
4     {
5         private string _name;
6
7         public Thing(string name)
8         {
9             _name = name;
10        }
11
12        public abstract int Size();
13
14        public abstract void Print();
15
16        public string Name
17        {
18            get => _name;
19        }
20    }
21 }
22
```

Folder.cs

...S20007\Semester Test\SemesterTest_104848770\Folder.cs

1

```
1 namespace SemesterTest_104848770
2 {
3     public class Folder : Thing
4     {
5         private List<Thing> _contents;
6         private string _name;
7
8         public Folder(string name) : base(name)
9         {
10             _contents = new List<Thing>();
11             _name = name;
12         }
13
14         public void Add(Thing thing)
15         {
16             _contents.Add(thing);
17         }
18
19         public override int Size()
20         {
21             int size = 0;
22             foreach (Thing thing in _contents)
23             {
24                 size += thing.Size();
25             }
26             return size;
27         }
28
29         public override void Print()
30         {
31             if (Size() == 0)
32             {
33                 Console.WriteLine($"The folder '{Name}' is empty!");
34             }
35             else
36             {
37                 Console.WriteLine($"The folder '{Name}' contains {Size()} bytes in total:\n");
38                 foreach (Thing thing in _contents)
39                 {
40                     thing.Print();
41                 }
42             }
43         }
44     }
45 }
46
```

File.cs

...COS20007\Semester Test\SemesterTest_104848770\File.cs

1

```
1 namespace SemesterTest_104848770
2 {
3     public class File : Thing
4     {
5         private string _name;
6         private string _extension;
7         private int _size;
8
9         public File(string name, string extension, int size) : base(name)
10        {
11            _name = name;
12            _extension = extension;
13            _size = size;
14        }
15
16        public override int Size()
17        {
18            return _size;
19        }
20
21        public override void Print()
22        {
23            Console.WriteLine($"File '{Name}' -- {Size()} bytes\n");
24        }
25
26        public string Name
27        {
28            get => _name + _extension;
29        }
30    }
31 }
32
```

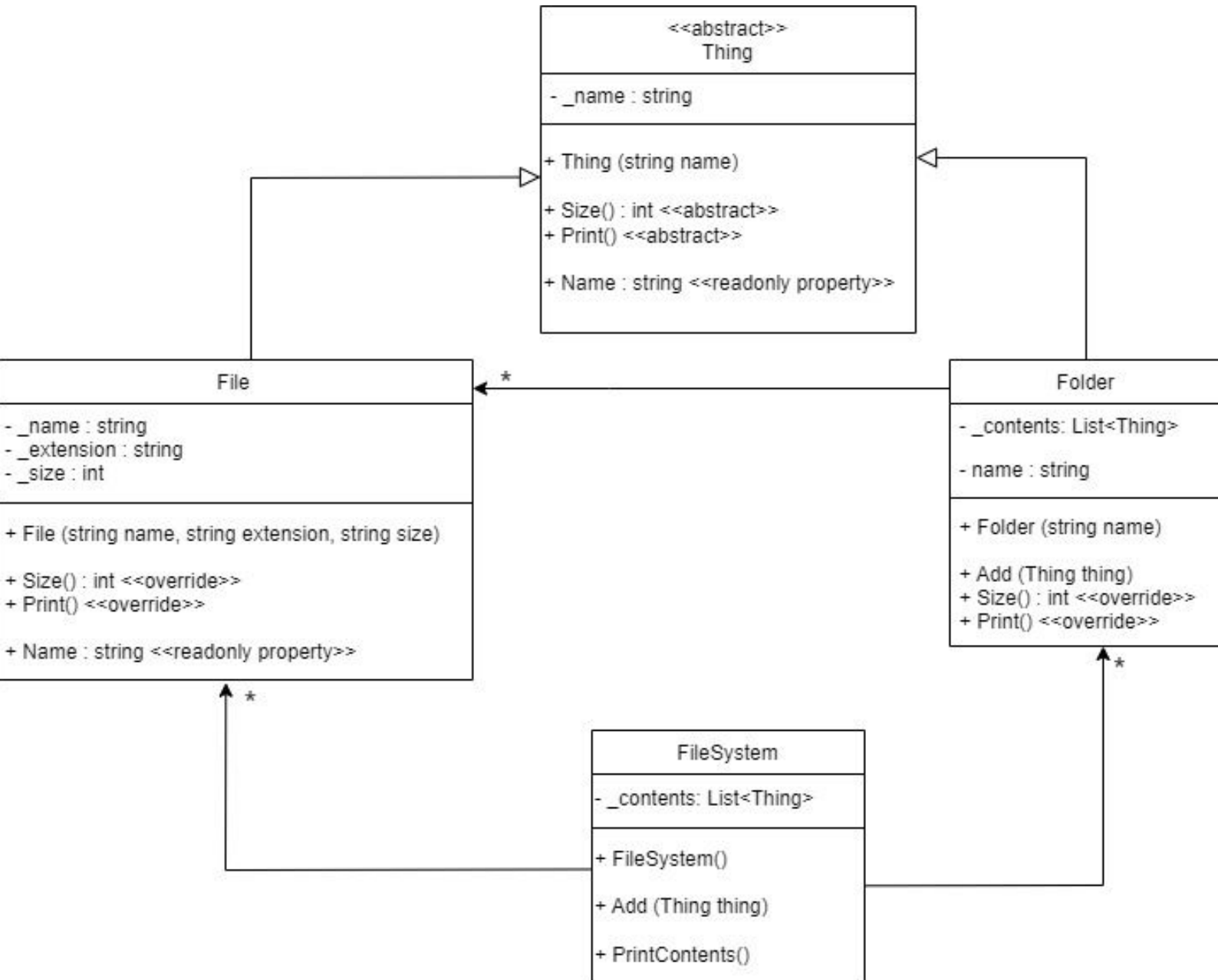
Program.cs

...20007\Semester Test\SemesterTest_104848770\Program.cs

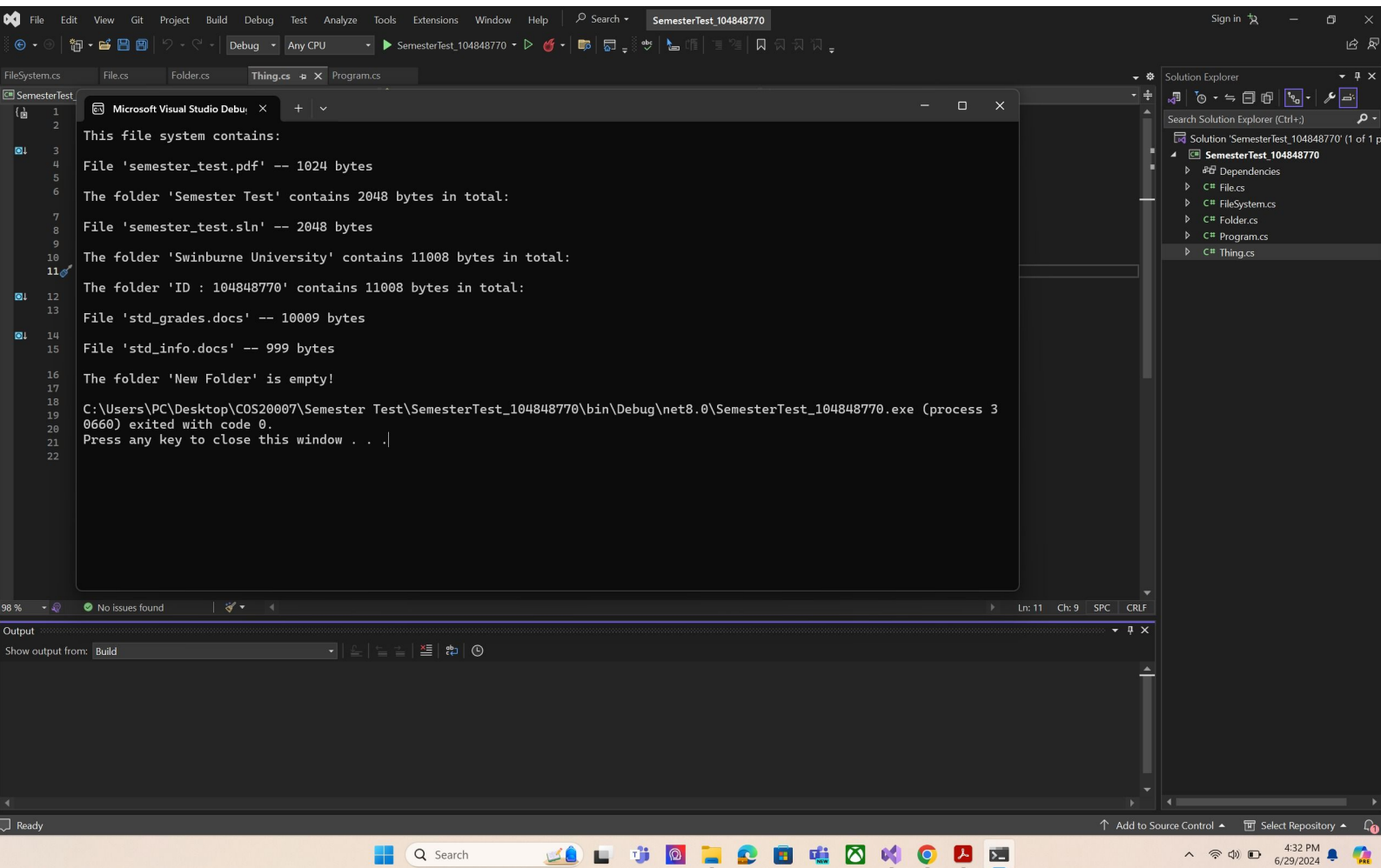
1

```
1 namespace SemesterTest_104848770
2 {
3     internal class Program
4     {
5         static void Main(string[] args)
6         {
7             FileSystem filesystem = new FileSystem();
8
9             File file_1 = new File("semester_test", ".pdf", 1024);
10            filesystem.Add(file_1);
11
12            Folder folder_1 = new Folder("Semester Test");
13            File file_2 = new File("semester_test", ".sln", 2048);
14            folder_1.Add(file_2);
15            filesystem.Add(folder_1);
16
17            Folder folder_3 = new Folder("Swinburne University");
18            Folder folder_2 = new Folder("ID : 104848770");
19            File file_3 = new File("std_info", ".docs", 999);
20            File file_4 = new File("std_grades", ".docs", 10009);
21            folder_2.Add(file_4);
22            folder_2.Add(file_3);
23            folder_3.Add(folder_2);
24            filesystem.Add(folder_3);
25
26            Folder empty_folder = new Folder("New Folder");
27            filesystem.Add(empty_folder);
28
29            filesystem.PrintContents();
30        }
31    }
32 }
33
```

UML Class Diagram



Output Screenshot



The screenshot displays the Visual Studio IDE interface. The main window shows a code editor with a file named 'Thing.cs'. The 'Debug Console' window is open, displaying the following output:

```
1 This file system contains:  
2  
3 File 'semester_test.pdf' -- 1024 bytes  
4  
5 The folder 'Semester Test' contains 2048 bytes in total:  
6  
7 File 'semester_test.sln' -- 2048 bytes  
8  
9 The folder 'Swinburne University' contains 11008 bytes in total:  
10  
11 The folder 'ID : 104848770' contains 11008 bytes in total:  
12  
13 File 'std_grades.docs' -- 10009 bytes  
14  
15 File 'std_info.docs' -- 999 bytes  
16  
17 The folder 'New Folder' is empty!  
18  
19 C:\Users\PC\Desktop\COS20007\Semester Test\SemesterTest_104848770\bin\Debug\net8.0\SemesterTest_104848770.exe (process 3  
20 0660) exited with code 0.  
21 Press any key to close this window . . .  
22
```

The 'Output' window at the bottom shows the 'Build' output, indicating 'No issues found'. The 'Solution Explorer' on the right shows the project structure for 'SemesterTest_104848770', including files like 'File.cs', 'FileSystem.cs', 'Folder.cs', 'Program.cs', and 'Thing.cs'.