FileSystem.cs


```
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


```
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


```
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
```

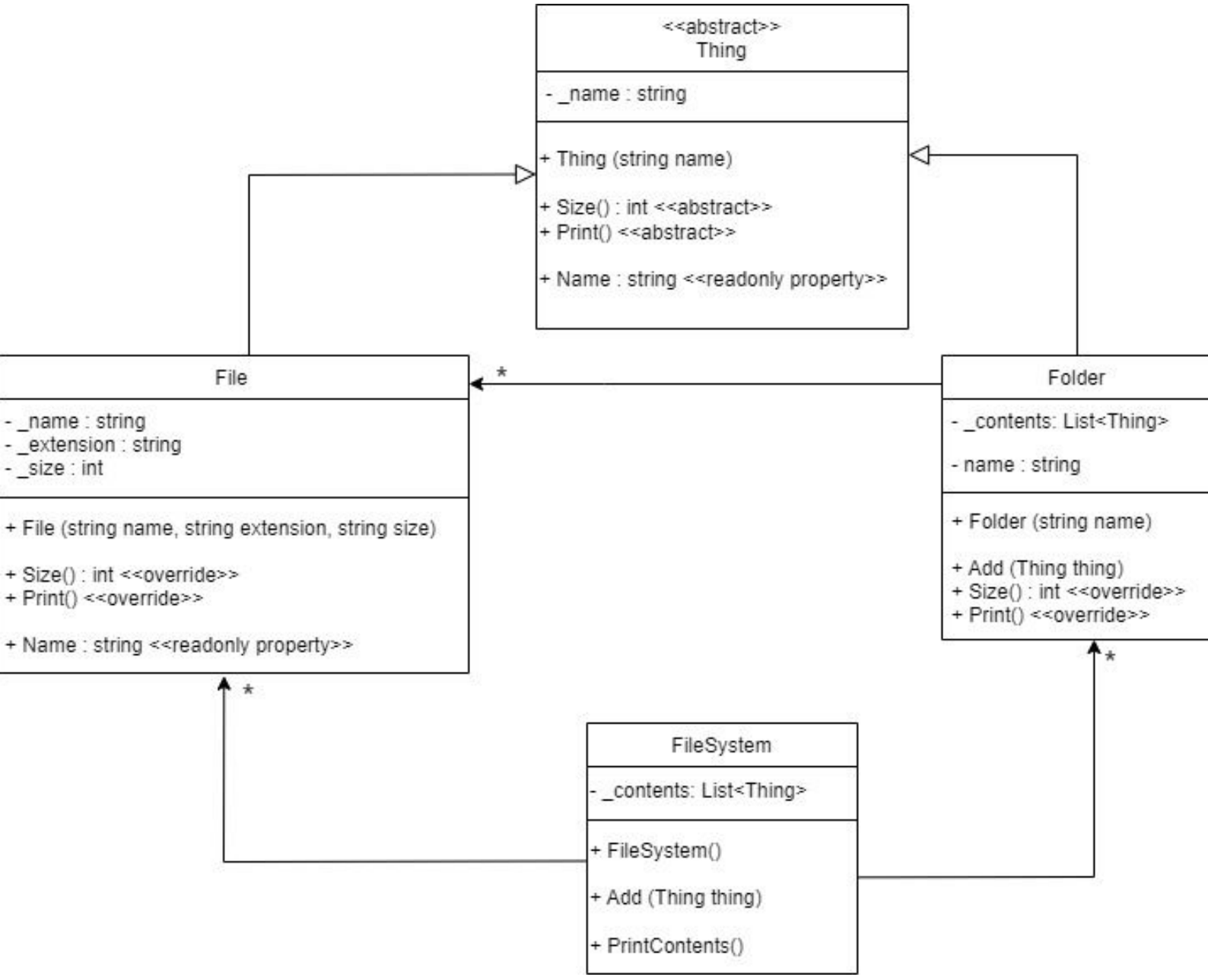
File.cs


```
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


```
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