COS20007 - Object Oriented Programming

T1 - Semester Test

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```
1  namespace HurdleTest
2  {
3      public class File : Thing
4      {
5          readonly string _extension;
6          readonly int _size;
7
8          public File(string name, string extension, int size) : base(name)
9          {
10             _extension = extension;
11             _size = size;
12         }
13
14         public override int Size()
15         {
16             return _size;
17         }
18
19         public override void Print()
20         {
21             Console.WriteLine($"File '{Name}{_extension}' Size: {_size}
                 bytes");
22         }
23     }
24 }
25
```

```
1  namespace HurdleTest
2  {
3      public class FileSystem
4      {
5          readonly List<Thing> _contents = [];
6
7          public void Add(Thing content)
8          {
9              _contents.Add(content);
10         }
11
12         public void PrintContents()
13         {
14             Console.WriteLine("This File System contains:");
15             foreach (var thing in _contents)
16             {
17                 thing.Print();
18             }
19         }
20     }
21 }
22
```

```
1  namespace HurdleTest
2  {
3      public class Folder : Thing
4      {
5          private readonly List<Thing> _contents = [];
6
7          public Folder(string name) : base(name)
8          { }
9
10         public void Add(Thing toAdd)
11         {
12             _contents.Add(toAdd);
13         }
14
15         public override int Size()
16         {
17             int folderSize = 0;
18
19             for (int i = 0; i < _contents.Count; i++)
20             {
21                 folderSize += _contents[i].Size();
22             }
23             return folderSize;
24         }
25
26         public override void Print()
27         {
28             int folderCount = 0;
29             int fileCount = 0;
30
31             foreach (Thing toAdd in _contents)
32             {
33                 if (toAdd is Folder folder)
34                 {
35                     folderCount++;
36                 }
37                 else if (toAdd is File file)
38                 {
39                     fileCount++;
40                 }
41             }
42
43             string folderText = folderCount.ToString();
44             string fileText = fileCount.ToString();
45
46             Console.WriteLine($"The Folder: '{Name}' contains {folderText}
                 folder(s) and {fileText} file(s) totalling {Size()} bytes:");
47             if (folderCount == 0)
48             {
```

```
49                  foreach (var thing in _contents)
50                  {
51                      thing.Print();
52                  }
53              }
54              else if (folderCount != 0)
55                  foreach (var thing in _contents)
56                  {
57                      Console.WriteLine($"The Folder: '{thing.Name}' Size:
                          {thing.Size()} bytes");
58                  }
59              Console.WriteLine("");
60          }
61
62      }
63  }
64
```

```
1  namespace HurdleTest
2  {
3      internal class Program
4      {
5          //A = 2,3,5,7,11,13,17,19,23,29
6          //B = "7489"
7          //=> B = 19,11,23,29
8
9          static void Main(string[] args)
10         {
11             Console.WriteLine("OOP Hurdle Test");
12             FileSystem fileSystem = new();
13
14             for (int i = 0; i <= 19; i++)
15             {
16                 if (i < 10)
17                 {
18                     File newFile = new($"105547489-0{i}", ".txt", 100);
19                     fileSystem.Add(newFile);
20                 }
21                 else
22                 {
23                     File newFile = new($"105547489-{i}", ".txt", 100);
24                     fileSystem.Add(newFile);
25                 }
26             }
27
28             Folder folder1 = new("Folder 1");
29             fileSystem.Add(folder1);
30             for (int i = 0; i <= 11; i++)
31             {
32                 if (i < 10)
33                 {
34                     File newFile = new($"105547489-0{i}", ".txt", 100);
35                     folder1.Add(newFile);
36                 }
37                 else
38                 {
39                     File newFile = new($"105547489-{i}", ".txt", 100);
40                     folder1.Add(newFile);
41                 }
42             }
43
44             Folder folder2 = new("Folder 2");
45             Folder folder3 = new("Folder 3");
46             folder2.Add(folder3);
47             fileSystem.Add(folder2);
48             fileSystem.Add(folder3);
49
```

```
50              for (int i = 0 ; i <= 23 ; i++)
51              {
52                  if (i < 10)
53                  {
54                      File newFile = new($"105547489-0{i}", ".txt", 100);
55                      folder3.Add(newFile);
56                  }
57                  else
58                  {
59                      File newFile = new($"105547489-{i}", ".txt", 100);
60                      folder3.Add(newFile);
61                  }
62              }
63
64              //Adding empty folder
65              for (int i = 0; i <= 29; i++)
66              {
67                  Folder emptyFolder = new($"Empty{i}");
68                  fileSystem.Add(emptyFolder);
69              }
70
71              fileSystem.PrintContents();
72              Console.ReadLine();
73          }
74      }
75  }
76
```

```
1  namespace HurdleTest
2  {
3      public abstract class Thing
4      {
5          readonly 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 => _name;
17     }
18 }
19
```

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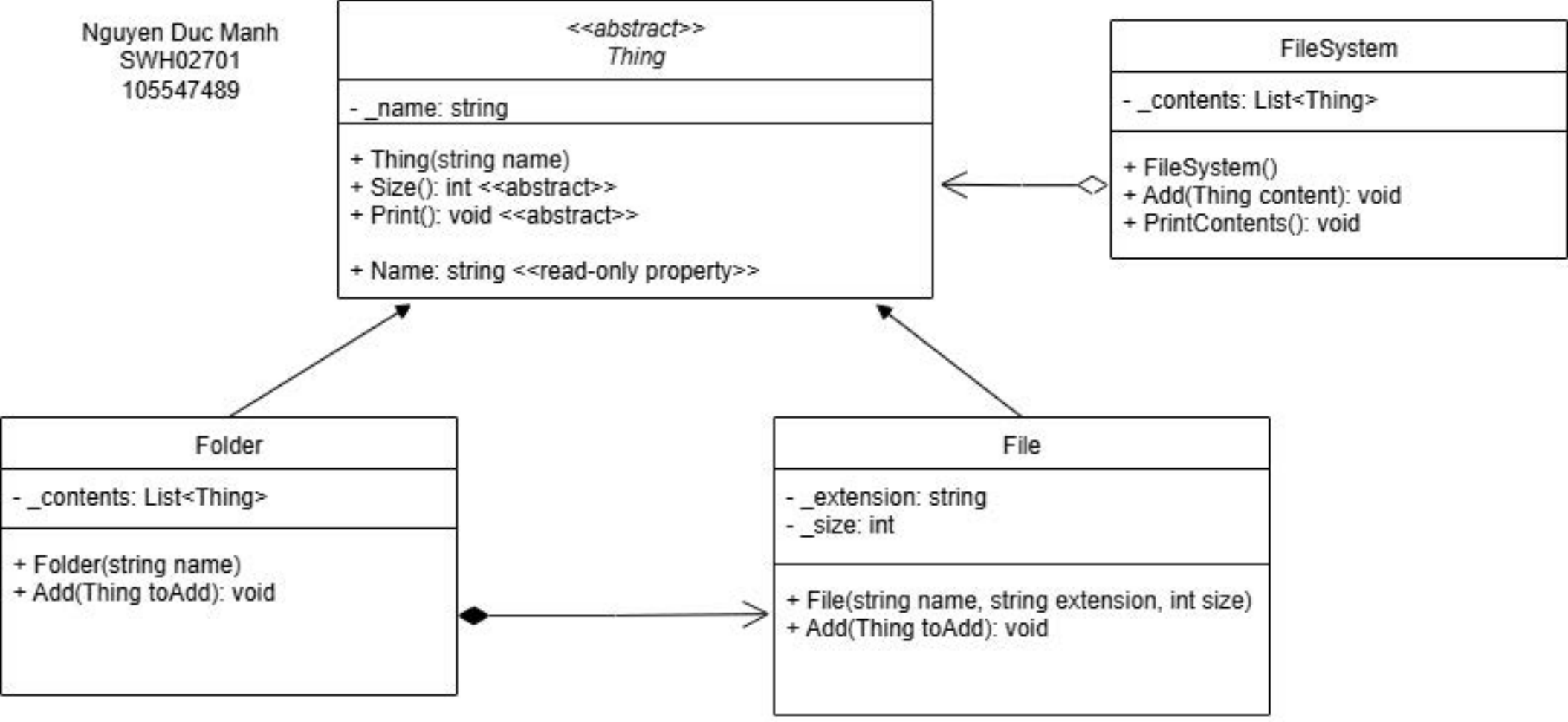

```
C:\Users\Bill\Desktop\COS20(
OOP Hurdle Test
This File System contains:
File '105547489-00.txt' Size: 100bytes
File '105547489-01.txt' Size: 100bytes
File '105547489-02.txt' Size: 100bytes
File '105547489-03.txt' Size: 100bytes
File '105547489-04.txt' Size: 100bytes
File '105547489-05.txt' Size: 100bytes
File '105547489-06.txt' Size: 100bytes
File '105547489-07.txt' Size: 100bytes
File '105547489-08.txt' Size: 100bytes
File '105547489-09.txt' Size: 100bytes
File '105547489-10.txt' Size: 100bytes
File '105547489-11.txt' Size: 100bytes
File '105547489-12.txt' Size: 100bytes
File '105547489-13.txt' Size: 100bytes
File '105547489-14.txt' Size: 100bytes
File '105547489-15.txt' Size: 100bytes
File '105547489-16.txt' Size: 100bytes
File '105547489-17.txt' Size: 100bytes
File '105547489-18.txt' Size: 100bytes
File '105547489-19.txt' Size: 100bytes
The Folder: 'Folder 1' contains 0 folder(s) and 12 file(s) totalling 1200 bytes:
File '105547489-00.txt' Size: 100bytes
File '105547489-01.txt' Size: 100bytes
File '105547489-02.txt' Size: 100bytes
File '105547489-03.txt' Size: 100bytes
File '105547489-04.txt' Size: 100bytes
File '105547489-05.txt' Size: 100bytes
File '105547489-06.txt' Size: 100bytes
File '105547489-07.txt' Size: 100bytes
File '105547489-08.txt' Size: 100bytes
File '105547489-09.txt' Size: 100bytes
File '105547489-10.txt' Size: 100bytes
File '105547489-11.txt' Size: 100bytes

The Folder: 'Folder 2' contains 1 folder(s) and 0 file(s) totalling 2400 bytes:
The Folder: 'Folder 3' Size: 2400 bytes

The Folder: 'Folder 3' contains 0 folder(s) and 24 file(s) totalling 2400 bytes:
File '105547489-00.txt' Size: 100bytes
```

```
File '105547489-03.txt' Size: 100bytes
File '105547489-04.txt' Size: 100bytes
File '105547489-05.txt' Size: 100bytes
File '105547489-06.txt' Size: 100bytes
File '105547489-07.txt' Size: 100bytes
File '105547489-08.txt' Size: 100bytes
File '105547489-09.txt' Size: 100bytes
File '105547489-10.txt' Size: 100bytes
File '105547489-11.txt' Size: 100bytes
File '105547489-12.txt' Size: 100bytes
File '105547489-13.txt' Size: 100bytes
File '105547489-14.txt' Size: 100bytes
File '105547489-15.txt' Size: 100bytes
File '105547489-16.txt' Size: 100bytes
File '105547489-17.txt' Size: 100bytes
File '105547489-18.txt' Size: 100bytes
File '105547489-19.txt' Size: 100bytes
File '105547489-20.txt' Size: 100bytes
File '105547489-21.txt' Size: 100bytes
File '105547489-22.txt' Size: 100bytes
File '105547489-23.txt' Size: 100bytes

The Folder: 'Empty0' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty1' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty2' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty3' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty4' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty5' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty6' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty7' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty8' contains 0 folder(s) and 0 file(s) totalling 0 bytes:

The Folder: 'Empty9' contains 0 folder(s) and 0 file(s) totalling 0 bytes:
```