

```

import java.util.ArrayList;
import java.util.List;

// Component class
abstract class FileComponent {
    public void add(FileComponent fileComponent) {
        throw new UnsupportedOperationException();
    }

    public void remove(FileComponent fileComponent) {
        throw new UnsupportedOperationException();
    }

    public FileComponent getChild(int i) {
        throw new UnsupportedOperationException();
    }

    public String getName() {
        throw new UnsupportedOperationException();
    }

    public void display() {
        throw new UnsupportedOperationException();
    }
}

// Leaf class
class File extends FileComponent {
    private String name;

    public File(String name) {
        this.name = name;
    }

    public String getName() {
        return name;
    }

    public void display() {
        System.out.println("File: " + getName());
    }
}

// Composite class

```

```

class Directory extends FileComponent {
    private String name;
    private List<FileComponent> components = new ArrayList<>();

    public Directory(String name) {
        this.name = name;
    }

    public void add(FileComponent fileComponent) {
        components.add(fileComponent);
    }

    public void remove(FileComponent fileComponent) {
        components.remove(fileComponent);
    }

    public FileComponent getChild(int i) {
        return components.get(i);
    }

    public String getName() {
        return name;
    }

    public void display() {
        System.out.println("Directory: " + getName());
        for (FileComponent component : components) {
            component.display();
        }
    }
}

```

// Client code to test Composite Pattern

```

public class FileSystemTest {
    public static void main(String[] args) {
        FileComponent file1 = new File("File1.txt");
        FileComponent file2 = new File("File2.txt");
        FileComponent file3 = new File("File3.txt");

        Directory dir1 = new Directory("Dir1");
        Directory dir2 = new Directory("Dir2");

        dir1.add(file1);
        dir1.add(file2);
    }
}

```

```
    dir2.add(file3);  
    dir2.add(dir1);  
  
    dir2.display();  
}  
}
```