

CODE FOR FILE SYSTEMS AND ITS IMPLEMENTATION

CODE:

```
import os
```

```
class File:
```

```
    def __init__(self, name, content=""):
        self.name = name
        self.content = content
```

```
class Directory:
```

```
    def __init__(self, name):
        self.name = name
        self.children = { }
```

```
    def add_child(self, child):
        self.children[child.name] = child
```

```
class FileSystem:
```

```
    def __init__(self):
        self.root = Directory("root")
```

```

def create_file(self, path, content=""):
    path_components = path.split("/")
    parent_dir = self.root
    for component in path_components[:-1]:
        if component not in parent_dir.children:
            new_dir = Directory(component)
            parent_dir.add_child(new_dir)
            parent_dir = parent_dir.children[component]

    file_name = path_components[-1]
    new_file = File(file_name, content)
    parent_dir.add_child(new_file)

def display_directory_structure(self, directory=None, indent=0):
    if directory is None:
        directory = self.root
    print(" " * indent + directory.name + "/")
    for child in directory.children.values():
        if isinstance(child, Directory):
            self.display_directory_structure(child, indent + 1)
        else:
            print(" " * (indent + 1) + child.name)

```

Example usage:

```
fs = FileSystem()
```

```
fs.create_file("root/documents/example.txt", "This is an example file.")
```

```
fs.create_file("root/documents/test.txt", "This is another file.")
```

```
fs.create_file("root/pictures/photo.jpg")
```

```
fs.display_directory_structure()
```