

Operating System Practicals

Assignment 8

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To simulate the following file organization techniques

a) Single level directory

```
#include <bits/stdc++.h>

using namespace std;

unordered_map<string,bool> fileSystem;

void insertFile(){
    cout<<"Enter File Name: ";
    string fileName;
    cin >> fileName;
    fileSystem[fileName] = 1;
    cout<<"File "<<fileName<<" inserted in Master File Directory!"<<endl;
}

void displayFiles(){
    if(fileSystem.size()==0){
        cout<<"No Files in Master File Directory!"<<endl;
        return;
    }
    cout<<"Displaying all Files in Master File Directory: "<<endl;
    for(auto i: fileSystem){
        cout<<i.first<<endl;
    }
}

void deleteFile(){
    cout<<"Enter File Name: ";
    string fileName;
    cin >> fileName;
    if(fileSystem.find(fileName)==fileSystem.end()){
        cout<<"File "<<fileName<<" not found in Master File Directory!"<<endl;
        return;
    }
    fileSystem.erase(fileName);
    cout<<"File "<<fileName<<" deleted!"<<endl;
```

```

}

void searchFile(){
    cout<<"Enter File Name: ";
    string fileName;
    cin >> fileName;
    if(fileSystem.find(fileName)==fileSystem.end()){
        cout<<"File "<<fileName<<" not found in Master File Directory!"<<endl;
        return;
    }
    cout<<"File "<<fileName<<" found in Master File Directory!"<<endl;
}

void printMenu(){
    cout<<"-----"<<endl;
    cout<<"User Options:"<<endl;
    cout<<"1. Create File"<<endl;
    cout<<"2. Display All Files"<<endl;
    cout<<"3. Delete File"<<endl;
    cout<<"4. Search File"<<endl;
    cout<<"5. Exit Program"<<endl;
    cout<<">> ";
}

int main(){
    cout<<"Single Level Directory System"<<endl;
    int choice=-1;
    while(choice!=5){
        printMenu();
        cin >> choice;
        if(choice==1){
            insertFile();
        }else if(choice==2){
            displayFiles();
        }else if(choice==3){
            deleteFile();
        }else if(choice==4){
            searchFile();
        }else if(choice==5){
            break;
        }else{
            cout<<"Invalid Choice!"<<endl;
        }
    }
}

```

```
}  
}
```

Output:

```
krhero@hellblazer:/mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignment8$ ./a.out  
Single Level Directory System  
-----  
User Options:  
1. Create File  
2. Display All Files  
3. Delete File  
4. Search File  
5. Exit Program  
>> 1  
Enter File Name: file123  
File file123 inserted in Master File Directory!  
-----  
User Options:  
1. Create File  
2. Display All Files  
3. Delete File  
4. Search File  
5. Exit Program  
>> 2  
Displaying all Files in Master File Directory:  
file123  
-----  
User Options:  
1. Create File  
2. Display All Files  
3. Delete File  
4. Search File  
5. Exit Program  
>> 4  
Enter File Name: temp  
File temp not found in Master File Directory!  
-----  
User Options:  
1. Create File  
2. Display All Files  
3. Delete File  
4. Search File  
5. Exit Program
```

```
>> 4
Enter File Name: file123
File file123 found in Master File Directory!
-----
User Options:
1. Create File
2. Display All Files
3. Delete File
4. Search File
5. Exit Program
>> 3
Enter File Name: temp
File temp not found in Master File Directory!
-----
User Options:
1. Create File
2. Display All Files
3. Delete File
4. Search File
5. Exit Program
>> 3
Enter File Name: file123
File file123 deleted!
-----
User Options:
1. Create File
2. Display All Files
3. Delete File
4. Search File
5. Exit Program
>> 4
Enter File Name: file123
File file123 not found in Master File Directory!
-----
User Options:
1. Create File
2. Display All Files
3. Delete File
4. Search File
```

b) Two level directory

```
#include <bits/stdc++.h>

using namespace std;

unordered_map<string, unordered_map<string, bool>> fileSystem;
string user = "";

void login()
{
    cout << "Please enter Username: " << endl;
    cin >> user;
    cout << user << " Logged in!" << endl;
}

void logout()
{
    cout << user << " Logged out!" << endl;
    user = "";
}

void insertFile()
{
    if (user == "")
    {
        cout << "Please Login first!" << endl;
        return;
    }
    cout << "Enter File Name: ";
    string fileName;
    cin >> fileName;
    fileSystem[user][fileName] = 1;
    cout << "File " << fileName << " inserted in User File Directory!" << endl;
}

void displayFiles()
{
    if (fileSystem.size() == 0)
    {
        cout << "No Files in User File Directory!" << endl;
        return;
    }
    cout << "Displaying all Files in User File Directory: " << endl;
    for (auto i : fileSystem)
```

```

{
    cout << i.first << ":" << endl;
    for (auto j : i.second)
    {
        cout << "-" << j.first << endl;
    }
}
}

void deleteFile()
{
    if (user == "")
    {
        cout << "Please Login first!" << endl;
        return;
    }
    cout << "Enter File Name: ";
    string fileName;
    cin >> fileName;
    if (fileSystem[user].find(fileName) == fileSystem[user].end())
    {
        cout << "File " << fileName << " not found in User File Directory!" << endl;
        return;
    }
    fileSystem[user].erase(fileName);
    cout << "File " << fileName << " deleted!" << endl;
}

void searchFile()
{
    if (user == "")
    {
        cout << "Please Login first!" << endl;
        return;
    }
    cout << "Enter File Name: ";
    string fileName;
    cin >> fileName;
    if (fileSystem[user].find(fileName) == fileSystem[user].end())
    {
        cout << "File " << fileName << " not found in User File Directory!" << endl;
        return;
    }
    cout << "File " << fileName << " found in User File Directory!" << endl;
}

```

```

}

void printMenu()
{
    cout << "-----" <<
endl;
    cout << "User Options:" << endl;
    cout << "1. Login" << endl;
    cout << "2. Logout" << endl;
    cout << "3. Create File" << endl;
    cout << "4. Display All Files" << endl;
    cout << "5. Delete File" << endl;
    cout << "6. Search File" << endl;
    cout << "7. Exit Program" << endl;
    cout << ">> ";
}

int main()
{
    cout << "Two Level Directory System" << endl;
    int choice = -1;
    while (choice != 5)
    {
        printMenu();
        cin >> choice;
        if (choice == 1)
        {
            login();
        }
        else if (choice == 2)
        {
            logout();
        }
        else if (choice == 3)
        {
            insertFile();
        }
        else if (choice == 4)
        {
            displayFiles();
        }
        else if (choice == 5)
        {
            deleteFile();

```

```

    }
    else if (choice == 6)
    {
        searchFile();
    }
    else if (choice == 7)
    {
        break;
    }
    else
    {
        cout << "Invalid Choice!" << endl;
    }
}
}

```

Output:

```

krhero@hellblazer: /mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignments$ g++ 2.cpp
krhero@hellblazer: /mnt/0FB812900FB81290/BTech/Assignments/3rd_Year/OS/Assignments$ ./a.out
Two Level Directory System
-----
User Options:
1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program
>> 3
Please Login first!
-----
User Options:
1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program
>> 1
Please enter Username:
Krunal
Krunal Logged in!
-----

```


User Options:

1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program

>> 3

Enter File Name: myFile123

File myFile123 inserted in Master File Directory!

User Options:

1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program

>> 6

Enter File Name: myFile123

File myFile123 found in Master File Directory!

User Options:

1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program

>> 2

Logged out!

User Options:

1. Login
2. Logout
3. Create File

```
4. Display All Files
5. Delete File
6. Search File
7. Exit Program
>> 1
Please enter Username:
XYZ
XYZ Logged in!
-----
User Options:
1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program
>> 6
Enter File Name: myFile123
File myFile123 not found in Master File Directory!
-----
User Options:
1. Login
2. Logout
3. Create File
4. Display All Files
5. Delete File
6. Search File
7. Exit Program
>> 4
Displaying all Files in Master File Directory:
XYZ:
Krunal:
-myFile123
-----
User Options:
1. Login
2. Logout
3. Create File
```

```
4. Display All Files
5. Delete File
6. Search File
7. Exit Program
```