# Name : Parth Randhir Mirajkar

# Roll no. IT2201

# Subject : Fundamental of Data Structure

# Project Name: File Inscription and Description

# Code:

#include <iostream>

#include <fstream>

#include <string>

using namespace std;

// XOR-based simple encryption and decryption functions

string encryptData(const string &data, const string &password)

{

    string encrypted = data;

    for (size\_t i = 0; i < data.size(); ++i)

    {

        encrypted[i] ^= password[i % password.size()]; // XOR encryption

    }

    return encrypted;

}

string decryptData(const string &data, const string &password)

{

    return encryptData(data, password); // XOR works both ways

}

struct FileNode

{

    string fileName;

    string password;

    FileNode \*next;

};

class FilePasswordList

{

private:

    FileNode \*head;

public:

    FilePasswordList() : head(nullptr) {}

    void addFilePassword(const string &fileName, const string &password)

    {

        if (fileExists(fileName))

            return;

        FileNode \*newNode = new FileNode{fileName, password, nullptr};

        if (head == nullptr)

        {

            head = newNode;

        }

        else

        {

            FileNode \*temp = head;

            while (temp->next)

                temp = temp->next;

            temp->next = newNode;

        }

    }

    FileNode \*getHead() const { return head; }

    void displayFiles() const

    {

        if (!head)

        {

            cout << "No files available." << endl;

            return;

        }

        FileNode \*temp = head;

        int index = 1;

        while (temp)

        {

            cout << index++ << ": " << temp->fileName << endl;

            temp = temp->next;

        }

    }

    string getPasswordForFile(const string &fileName) const

    {

        for (FileNode \*temp = head; temp; temp = temp->next)

            if (temp->fileName == fileName)

                return temp->password;

        return "";

    }

    bool fileExists(const string &fileName) const

    {

        for (FileNode \*temp = head; temp; temp = temp->next)

            if (temp->fileName == fileName)

                return true;

        return false;

    }

    ~FilePasswordList()

    {

        while (head)

        {

            FileNode \*temp = head;

            head = head->next;

            delete temp;

        }

    }

};

// Save both file names and encrypted passwords in one file

void saveFileData(const FilePasswordList &fileList, const string &masterPassword)

{

    ofstream file("passwords.txt");

    if (file.is\_open())

    {

        for (FileNode \*temp = fileList.getHead(); temp; temp = temp->next)

            file << temp->fileName << " " << encryptData(temp->password, masterPassword) << endl;

    }

    else

    {

        cerr << "Error saving file data." << endl;

    }

}

// Load file data (names and passwords) from the single file

void loadFileData(FilePasswordList &fileList, const string &masterPassword)

{

    ifstream file("passwords.txt");

    string fileName, encryptedPassword;

    while (file >> fileName >> encryptedPassword)

        fileList.addFilePassword(fileName, decryptData(encryptedPassword, masterPassword));

}

int main()

{

    FilePasswordList fileList; // Linked list for storing files and their passwords

    char choice;

    string fileName, password, fileData, line;

    string masterPassword;

    cout << "Enter master password: ";

    getline(cin, masterPassword);

    loadFileData(fileList, masterPassword);

    do

    {

        cout << "\nMenu:\n1. Create a new File\n2. Display list of Files\n3. Encrypt File\n4. Decrypt File\n5. Exit\n";

        cout << "Choose an option: ";

        cin >> choice;

        cin.ignore();

        switch (choice)

        {

        case '1':

        {

            cout << "Enter the name of the file to create: ";

            getline(cin, fileName);

            if (fileList.fileExists(fileName))

            {

                cout << "File already exists!" << endl;

                break;

            }

            ofstream file(fileName);

            if (!file)

            {

                cout << "Error creating file." << endl;

            }

            else

            {

                cout << "File " << fileName << " created successfully." << endl;

                file.close();

                cout << "Set a password for the file: ";

                getline(cin, password);

                fileList.addFilePassword(fileName, password);

                saveFileData(fileList, masterPassword);

            }

            break;

        }

        case '2':

        {

            cout << "List of files:" << endl;

            fileList.displayFiles();

            break;

        }

        case '3':

        {

            fileList.displayFiles();

            cout << "Enter the name of the file to encrypt: ";

            getline(cin, fileName);

            if (!fileList.fileExists(fileName))

            {

                cout << "File does not exist!" << endl;

                break;

            }

            ifstream inFile(fileName);

            if (!inFile.is\_open())

            {

                cout << "Error: File not found." << endl;

                break;

            }

            fileData = "";

            while (getline(inFile, line))

            {

                fileData += line + '\n';

            }

            inFile.close();

            password = fileList.getPasswordForFile(fileName);

            if (password.empty())

            {

                cout << "Password not found for file." << endl;

                break;

            }

            ofstream outFile(fileName);

            outFile << encryptData(fileData, password);

            outFile.close();

            cout << "File encrypted successfully!" << endl;

            break;

        }

        case '4':

        {

            fileList.displayFiles();

            cout << "Enter the name of the file to decrypt: ";

            getline(cin, fileName);

            if (!fileList.fileExists(fileName))

            {

                cout << "File does not exist!" << endl;

                break;

            }

            ifstream inFile(fileName);

            if (!inFile.is\_open())

            {

                cout << "Error: File not found." << endl;

                break;

            }

            fileData = "";

            while (getline(inFile, line))

            {

                fileData += line + '\n';

            }

            inFile.close();

            string enteredPassword;

            cout << "Enter password for decryption: ";

            getline(cin, enteredPassword);

            if (fileList.getPasswordForFile(fileName) != enteredPassword)

            {

                cout << "Incorrect password. Decryption failed!" << endl;

                break;

            }

            ofstream outFile(fileName);

            outFile << decryptData(fileData, enteredPassword);

            outFile.close();

            cout << "File decrypted successfully!" << endl;

            break;

        }

        case '5':

            cout << "Exiting the program." << endl;

            break;

        default:

            cout << "Invalid option. Please try again." << endl;

        }

    } while (choice != '5');

    return 0;

}

# Original File Content:

Area 51, a U.S. Air Force base located in the Nevada desert, is one of the most mysterious and highly classified sites in the world. Established in 1955 as part of the larger Nevada Test and Training Range, Area 51 was originally created to test top-secret aircraft, particularly the U-2 reconnaissance plane during the Cold War. Its remote location, high security, and the secrecy surrounding its operations have fuelled countless conspiracy theories, particularly regarding UFO sightings and alleged extraterrestrial activity.

The base is officially known as "Homey Airport" or "Groom Lake," named after the nearby salt flat. However, "Area 51" is the name that has captured the public's imagination. For decades, the U.S. government denied its existence, finally acknowledging it in 2013 through declassified CIA documents, which shed light on its origins and purpose. According to these documents, the base primarily served as a testing ground for advanced military technology, including aircraft like the SR-71 Blackbird, F-117 Nighthawk, and other stealth and surveillance technology.

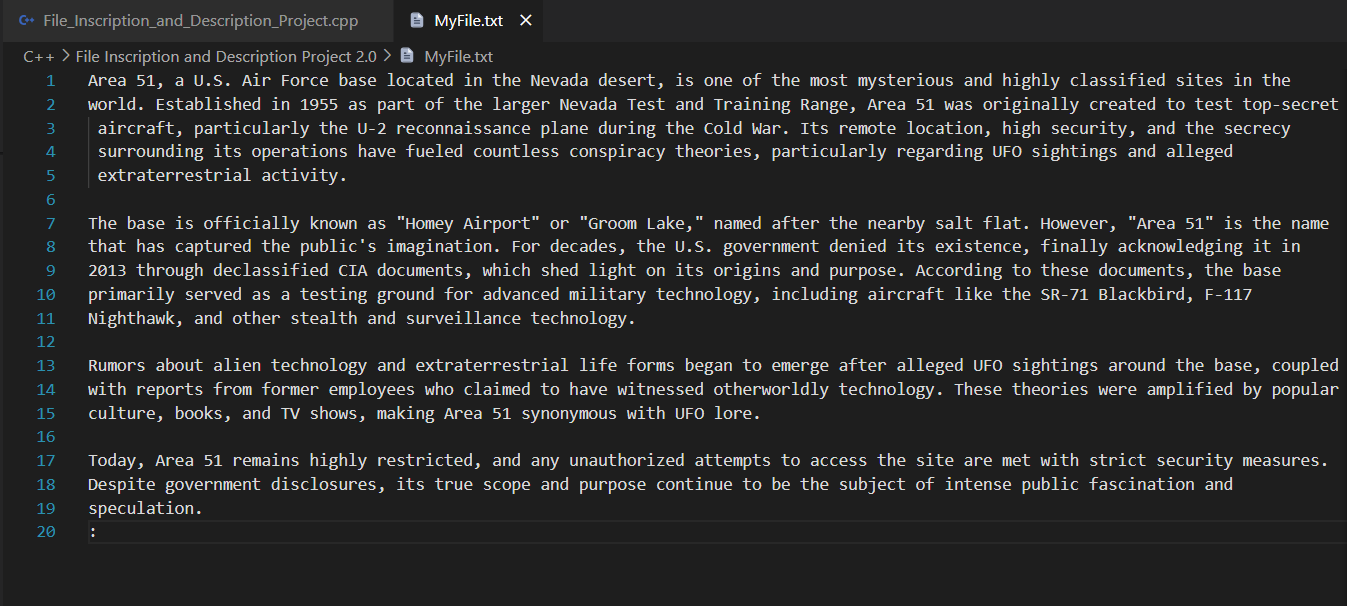
Rumours about alien technology and extraterrestrial life forms began to emerge after alleged UFO sightings around the base, coupled with reports from former employees who claimed to have witnessed otherworldly technology. These theories were amplified by popular culture, books, and TV shows, making Area 51 synonymous with UFO lore.

Today, Area 51 remains highly restricted, and any unauthorized attempts to access the site are met with strict security measures. Despite government disclosures, its true scope and purpose continue to be the subject of intense public fascination and speculation.

# File Content After Inscription:

qBUQQe‑c‑qYBv\_BSURQCU\\_SQDUTY^DXU~UFQTQTUCUBDYC\_^U\_VDXU]\_CD]ICDUBY\_ECQ^TXYWX\IS\QCCYVYUTCYDUCY^DXU:G\_B\T‑uCDQR\YCXUTY^ QC@QBD\_VDXU\QBWUB~UFQTQdUCDQ^TdBQY^Y^WbQ^WUqBUQGQC\_BYWY^Q\\ISBUQDUTD\_DUCDD\_@CUSBUD:QYBSBQVD@QBDYSE\QB\IDXUeBUS\_^^QYCCQ^SU@\Q^UTEBY^WDXUs\_\TgQB‑yDCBU]\_DU\\_SQDY\_^XYWXCUSEBYDIQ^TDXUCUSBUSI:CEBB\_E^TY^WYDC\_@UBQDY\_^CXQFUVEU\UTS\_E^D\UCCS\_^C@YBQSIDXU\_BYUC@QBDYSE\QB\IBUWQBTY^WevCYWXDY^WCQ^TQ\\UWUT:UHDBQDUBBUCDBYQ\QSDYFYDI‑::dXURQCUYC\_VVYSYQ\\I[^\_G^QCx\_]UIqYB@\_BD\_BwB\_\_]|Q[U^Q]UTQVDUBDXU^UQBRICQ\DV\QD‑x\_GUFUBqBUQYCDXU^Q]U:DXQDXQCSQ@DEBUTDXU@ER\YSCY]QWY^QDY\_^‑v\_BTUSQTUCDXUe‑c‑W\_FUB^]U^DTU^YUTYDCUHYCDU^SUVY^Q\\IQS[^\_G\UTWY^WYDY^:

# File Content After Description:



# Terminal:

