C PROGRAMMING PROJECT

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Personal Diary Management System using C

Abstract

This project presents a Personal Diary Management System developed in the C programming language. The system allows users to securely store, view, and edit diary entries based on dates. To ensure privacy, a password authentication mechanism and Caesar Cipher encryption technique are implemented. The program demonstrates practical usage of file handling, string manipulation, and modular programming concepts in C.

Problem Definition

Many individuals wish to maintain a personal diary to record daily experiences, thoughts, or important events. Traditional paper diaries lack security and are difficult to manage. The problem is to design a secure, simple, and text-based diary application that allows users to store entries with basic encryption and restricted access through password protection.

System Design

The system follows a menu-driven approach. After successful password verification, the user can choose from options to add a new entry, view/edit an existing entry by date, or exit the program.

Algorithm Overview:

1. Start the program.

2. Ask the user to enter a password.

3. If the password is incorrect, terminate the program.

4. Display menu options.

5. Perform the selected operation.

6. Repeat until the user chooses to exit.

Implementation Details

The program is implemented using multiple functions to maintain modularity. Caesar Cipher is used to encrypt diary entries before storing them in a file.

Key functions include:
- caesarCipher(): Encrypts and decrypts text using a shift value.
- addEntry(): Takes diary input from the user, encrypts it, and saves it to a file.
- viewEditEntry(): Retrieves and optionally edits an entry for a specific date.
- main(): Handles authentication and menu control.

Testing and Results

The program was tested with multiple test cases including correct and incorrect passwords, adding multiple diary entries, and editing existing entries. The system successfully encrypted stored entries and correctly decrypted them when viewed. Error

conditions such as missing files were also handled properly.

Conclusion and Future Work

The Personal Diary Management System successfully meets the objectives of secure data storage and easy diary management. It reinforces essential C programming concepts such as file handling and encryption. In future, the project can be extended with stronger encryption algorithms, search functionality, and a graphical user interface.

References

1. Kernighan, B. W., & Ritchie, D. M. – The C Programming Language
2. Official C Documentation
3. GeeksforGeeks – File Handling and Encryption in C

PROGRAM :

```c
#include <stdio.h>

#include <stdlib.h>

#include <string.h>


#define MAX 1000

#define PASSWORD "1234"

#define SHIFT 3


void caesarCipher(char *text, int shift)
{
    for (int i = 0; text[i] != '\0'; i++) {
        char c = text[i];
        if (c >= 'a' && c <= 'z') {
            c = ((c - 'a' + shift + 26) % 26) + 'a';
        } else if (c >= 'A' && c <= 'Z') {
            c = ((c - 'A' + shift + 26) % 26) + 'A';
        }
        text[i] = c;
```

```c
    }
}

void addEntry()
{
    char date[20], entry[MAX];
    FILE *fp;

    printf("Enter date (dd-mm-yyyy): ");
    scanf("%19s", date);
    getchar();

    printf("Write your diary entry:\n");
    fgets(entry, MAX, stdin);
    entry[strcspn(entry, "\n")] = '\0';

    caesarCipher(entry, SHIFT);

    fp = fopen("diary.txt", "a");
```

```c
    if (fp == NULL)
    {
        printf("Error opening file!\n");
        return;
    }
    fprintf(fp, "%s:%s\n", date, entry);
    fclose(fp);


    printf("Entry saved successfully!\n");
}

void viewEditEntry()
{
    char date[20], line[MAX], newEntry[MAX];
    FILE *fp, *temp;
    int found = 0;
    printf("Enter date to view/edit (dd-mm-yyyy): ");
    scanf("%19s", date);
    getchar();
```

```c
    fp = fopen("diary.txt", "r");

    if (fp == NULL)

    {

        printf("No diary file found. Please add an entry
first.\n");

        return;

    }

    temp = fopen("temp.txt", "w");

    if (temp == NULL)

    {

        printf("Error creating temp file!\n");

        fclose(fp);

        return;

    }

    while (fgets(line, MAX, fp))

    {

        char fileDate[20], entry[MAX];

        if (sscanf(line, "%19[^:]:%[^\n]", fileDate, entry) ==
2)
```

```c
{
    if (strcmp(fileDate, date) == 0)
    {
        found = 1;
        caesarCipher(entry, -SHIFT);
        printf("Diary entry on %s:\n%s\n", date, entry);


        printf("Do you want to edit this entry? (y/n): ");
        char choice;
        scanf(" %c", &choice);
        getchar();
        if (choice == 'y' || choice == 'Y')
        {
            printf("Enter new diary entry:\n");
            fgets(newEntry, MAX, stdin);
            newEntry[strcspn(newEntry, "\n")] = '\0';
            caesarCipher(newEntry, SHIFT);
            fprintf(temp, "%s:%s\n", date, newEntry);
```

```c
                continue;
            }
        }
    }
    fprintf(temp, "%s", line);
}


fclose(fp);
fclose(temp);


if (found)
{
    remove("diary.txt");
    rename("temp.txt", "diary.txt");
    printf("Changes saved successfully!\n");
}
else
 {
    remove("temp.txt");
```

```c
        printf("No entry found for this date.\n");
    }
}

int main()
{
    char inputPass[20];
    int choice;
    printf("Enter password: ");
    scanf("%19s", inputPass);
    if (strcmp(inputPass, PASSWORD) != 0)
    {
        printf("Incorrect password! Exiting...\n");
        return 0;
    }
    do
    {
        printf("\nPersonal Diary Menu:\n");
        printf("1. Add Entry\n");
```

```c
printf("2. View/Edit Entry by Date\n");
printf("3. Exit\n");
printf("Enter choice: ");
scanf("%d", &choice);
getchar();

switch (choice)
{
  case 1:
    addEntry();
    break;
  case 2:
    viewEditEntry();
    break;
  case 3:
    printf("Exiting diary. Goodbye!\n");
    break;
  default:
    printf("Invalid choice. Try again.\n");
```

```
        }

    }

     while (choice != 3);


    return 0;

}
```

OUTPUTS :

When entered the right password .

```
Enter password: 1234

Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: |
```

When the password is entered wrong , the window automatically closes .

When the user opts for choice 1 . The user is asked to enter the date of committing the entry .

```
C:\Users\soods\OneDrive\Doc   X    +   v

Enter password: 1234

Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: 1
Enter date (dd-mm-yyyy): |
```

After entering the date we can Enter the content .

```
 C:\Users\soods\OneDrive\Doc  X    +   ∨

Enter password: 1234

Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: 1
Enter date (dd-mm-yyyy): 30-11-2025
Write your diary entry:
Hi I am Shive Sood . I am currently persuing B.Tech in CSE at UPES Dehradun. |
```

After entering the content the window again displays a menu .

```
 C:\Users\soods\OneDrive\Doc  X    +   ∨

Enter password: 1234

Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: 1
Enter date (dd-mm-yyyy): 30-11-2025
Write your diary entry:
Hi I am Shive Sood . I am currently persuing B.Tech in CSE at UPES Dehradun.
Entry saved successfully!

Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: |
```

If the user opts for the choice 2 it will ask for the date when the
content was saved to find that file for editing and reviewing.

```
Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: 2
Enter date to view/edit (dd-mm-yyyy): 30-11-2025
Diary entry on 30-11-2025:
Hi I am Shive Sood . I am currently persuing B.Tech in CSE at UPES Dehradun.
Do you want to edit this entry? (y/n): y
Enter new diary entry:
I am Shiven Sood Studing Upes and currntly going to give my end sem exams . |
```

After entering the content a message is displayed telling us that the changes in the content have been made successfully and again shows the menu . And by opting for choice 3 "Exit" the window closes .

```
Do you want to edit this entry? (y/n): y
Enter new diary entry:
I am Shiven Sood Studing Upes and currntly going to give my end sem exams .
Changes saved successfully!

Personal Diary Menu:
1. Add Entry
2. View/Edit Entry by Date
3. Exit
Enter choice: |
```

THANK YOU