C Programming Mini Project

Documentation

## File Encryption and Decryption using C:

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## Abstract:

This project implements a File Encryption and Decryption system using the C programming language. The main objective is to protect confidential data stored in files from unauthorized access. The program converts readable file content into an unreadable format using a key-based character shifting method. The same key is used to decrypt the file and restore the original content.

## Introduction:

Data security is important in the digital world. Files stored on computers can be accessed by unauthorized users. This project provides a simple solution by encrypting file data so that it becomes unreadable without the correct key. It can be used for protecting text files, passwords, and confidential information.

## Objectives:

• Understand structured programming concepts.

• Implement file handling in C.

• Apply encryption and decryption logic.

• Improve logical thinking and problem-solving skills.

## Tools & Technology:

Programming Language: C

Compiler: GCC / CodeBlocks / Turbo C

Platform: Windows / Linux

## System Requirements:

Hardware: Basic computer with minimum 4GB RAM

Software: C Compiler and any IDE/Text Editor

## Methodology / Algorithm:

• Start the program

• Ask user to choose Encrypt or Decrypt

• Read file name and key from user

• Open file in read mode

• Modify each character using key

• Write result into new file

## Flowchart:

## C:\Users\Admin\Downloads\ChatGPT Image Feb 25, 2026, 02_04_01 PM.png

## Program Code:

#include <stdio.h>

#include <ctype.h>

int main() {

char text[100];

int key, i, choice;

printf("1. Encrypt\n2. Decrypt\n");

printf("Enter your choice: ");

scanf("%d", &choice);

printf("Enter a word: ");

getchar();

fgets(text, sizeof(text), stdin);

for(i = 0; text[i] != '\0'; i++) {

if(isdigit(text[i])) {

printf("Attempts Failed!\n");

return 0;

}

}

printf("Enter key value: ");

scanf("%d", &key);

for(i = 0; text[i] != '\0'; i++) {

if(choice == 1) {

if(text[i] >= 'a' && text[i] <= 'z')

text[i] = ((text[i] - 'a' + key) % 26) + 'a';

}

else if(choice == 2) {

if(text[i] >= 'a' && text[i] <= 'z')

text[i] = ((text[i] - 'a' - key + 26) % 26) + 'a';

}

}

printf("Result: %s", text);

return 0;

}

## Sample Input / Output:

1. Encrypt

2. Decrypt

Enter your choice: 1

Enter a word: hello

Enter key value: 3

Result: khoor

## Result:

The program executed successfully and encrypted/decrypted the file content based on the user’s choice.

## Applications:

• Data security for text files

• Academic learning of cryptography basics

• Secure storage of confidential information

## Future Enhancements:

• Implement stronger encryption algorithms

• Add password-based authentication

• Create a graphical user interface

## References:

• C Programming Books

• Online Tutorials

• Class Notes

## Conclusion:

The File Encryption and Decryption project demonstrates file handling and basic cryptography concepts in C programming. It ensures that sensitive data can be protected using a simple key-based method.