Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering

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Course Title: Structured Programming Lab

Course Code: CSE 104   Section: 222DC

Lab Project Name: Simple Encryption and Decryption(Caeser Cipher)

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Chapter 1

Introduction

1.1 Introduction

Caesar cipher is a simple method of encoding messages. Caesar ciphers use a substitution method where letters in the alphabet are shifted by some fixed number of spaces to yield an encoding alphabet. It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a left shift of 3, D would be replaced by A, E would become B, and so on.

1.2 Design Goals/Objective

In this age encryption is an important issue in our life. Because there have many kinds of messages that we want to hide from another. This is why encryption methods are invented. At first, Encryption is used by kings for communicating. The aims of the encryption method are written below.

• We can encrypt our data by using a simple algorithm.

• Hide data from unwanted persons

Chapter 2

Implementation of the Project

1. Implementation

C source code

```c
//This programme is for simple Encryption & Decryption



#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <conio.h>
#include<time.h>


    int password=119804;
    char w,spt;
    int plen,key,ascii;
    int count=0;

    int ran_key();
    int key_pin();
    int encryption_decryption();
    int encryption();
    int decryption();



    int main(){
    encryption_decryption();
    system("CLS");
    printf("\n\n\t\t\t\tThe program ends here...");
    printf("\n\n\t\t-------------------------------------------------
\n\n");
    getch();
    getch();
    getch();
    return 0;


}
```

```c
int ran_key(){
    time_t seconds;

    seconds = time(NULL);

    long long second=seconds;

    key= 2+(second%22);

    return key;

}




int key_pin(){

int pinmach;
tryagain:

    if(count>0){
        printf("\nYou enter wrong passwor %d time/s. You can try more
%d time/s.\n\n",count,3-count);
    }
printf("Please Enter your Pin to know your Encryption key: ");
scanf("%d",&pinmach);
if(password==pinmach){
    printf("Password Matched successfully..\n\n");
      printf("Your automatic key is %d",key);
        count==0;

}
else{
    printf("Password Not Matched..\n\a");



    count++;


    if(count>=3){
        printf("\n\nSorry You try Maximum time..We  will exit you from
the program for security issue.\n\n");
        printf("\n\n\t\t\t\tThe program ends here...");
    printf("\n\n\t\t-----------------------------------------------
\n\n");
        exit(0);
        }
        printf("If you want to re-enter your password press a key.\n");
```

```c
                getch();
                system("CLS");
                goto tryagain;
        }


}



int encryption_decryption(){
        char   enorde;




            system("CLS");
            printf("\t\t\t------------------------------------------------
\n");
                    printf("\t\t\t|\tWelcome to Encryption Decryption. \t|\n");
        printf("\t\t\t------------------------------------------------
\n\n\n");
        printf("Please enter E if you want Encryption or press D if you want
Decryption: ");
        scanf(" %c",&enorde);




    if(enorde=='e'||enorde=='E'){
        encryption();
    }



        else if(enorde=='d'||enorde=='D'){
         decryption();

    }



    else{
        printf("\nYou choose wrong value");
    }
```

```c
    printf("\n\n Do you want Encrypt or Decrypt again???\n");
    printf("If you want Encrypt or Decrypt again press 'Y'.And if you don't
want press 'N': ");
    scanf(" %c",&w);
    if((w=='y'||w=='Y')||(w=='n'|| w== 'N'))
    printf("");


        else{
            printf("You Press a wrong Key..Note: If you press wrong key
again...This programme will exit....\n");
            printf("\nPlease enter a valid(Y/N) key: ");
            scanf(" %c",&w);


            if((w=='y'||w=='Y')||(w=='n'||w== 'N'))
                printf("");
            else{
                    printf("\nSorry..You Press a wrong key
Again..\n\a");
    }
    }
    if(w=='n'||w=='N'){
        system("EXIT");
    }
    if(w=='y'||w=='Y'){
        encryption_decryption();
    }


}




int encryption(){
    char plaintext[500];

    printf("\nPlease enter the Plain text: ");

        fflush(stdin);

        gets(plaintext);

        plen=strlen(plaintext);

        ran_key();

        printf("\nThe chipher text is: ");
```

```c
        for(int i=0;i<plen;i++){

               ascii = plaintext[i];

         if(ascii==32){

            printf("%c",ascii);


         }

         else if(ascii>=65 && ascii<=90){
             int temp;
             temp=ascii-65;
             temp=(temp+key)%26;
             temp=temp+65;

             printf("%c",temp);
         }



        else if(ascii>=97 && ascii<=122){
             int temp;
             temp=ascii-97;
             temp=(temp+key)%26;
             temp=temp+97;
             printf("%c",temp);
         }
         else if( (ascii>=48 && ascii<=58) || (ascii>=33 && ascii<=48)  ||
(ascii>=58 && ascii<=65) ||(ascii==92)||(ascii==94) ||(ascii==95) ){
             int temp;
             temp=ascii;
             printf("%c",temp);
         }



        }

        printf("\n\n");
        key_pin();

}






int decryption(){
        char ciphertext[500];
```

```c
        printf("\nPlease enter the Cipher text: ");

        fflush(stdin);

        gets(ciphertext);

        plen=strlen(ciphertext);

        printf("\nPlease enter the Key: ");

        scanf(" %d",&key);

        printf("\nThe chipher text is: ");

        for(int i=0;i<plen;i++){

            ascii = ciphertext[i];
        if(ascii==32){

            printf("%c",ascii);

        }
        else if(ascii>=65 && ascii<=90){
            int temp;

            temp=ascii-65;

            temp=(temp-key)%26;

            if(temp<0){

                temp+=26;
            }

            temp=temp+65;

            printf("%c",temp);
        }
        else if(ascii>=97 && ascii<=122){

            int temp;

            temp=ascii-97;

            temp=(temp-key)%26;

            if(temp<0){

                temp+=26;
            }
```
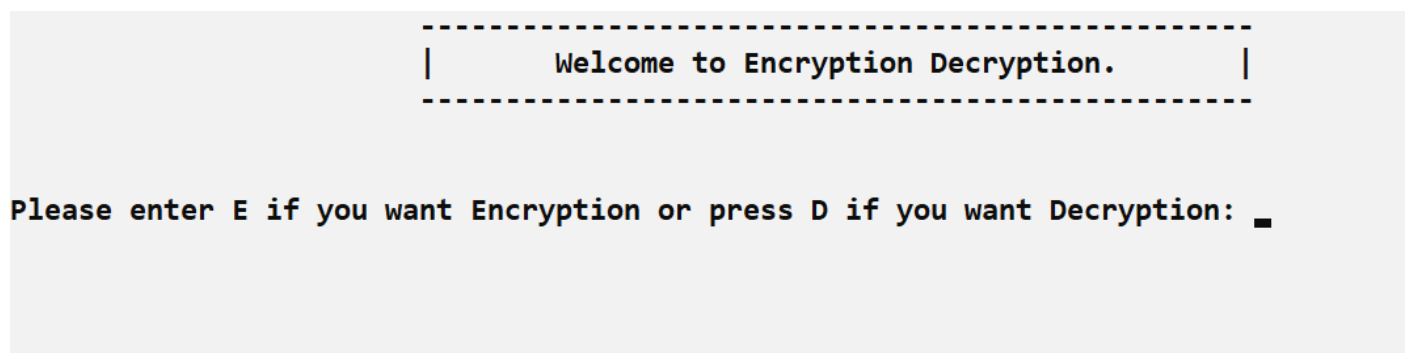
```
                temp=temp+97;

                printf("%c",temp);


            }
        else if( (ascii>=48 && ascii<=58) || (ascii>=33 && ascii<=48)  ||
(ascii>=58 && ascii<=65) ||(ascii==92)||(ascii==94) ||(ascii==95) ){
                int temp;
                temp=ascii;
                printf("%c",temp);
            }


    }


}
```
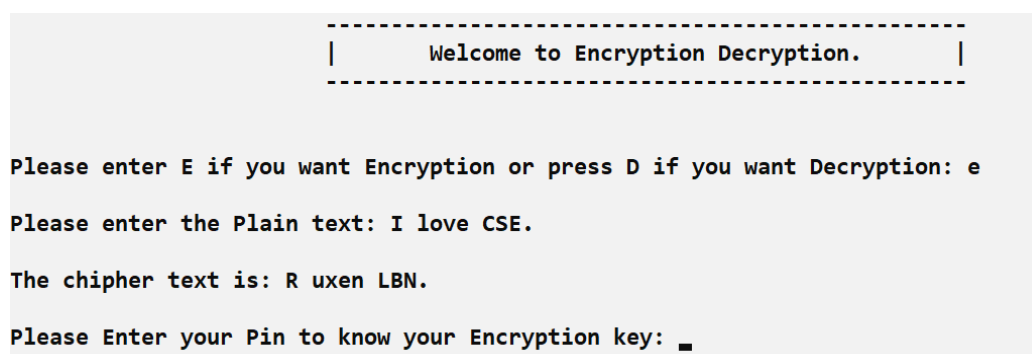
Screenshots

```
        ----------------------------------------------------
        |          Welcome to Encryption Decryption.       |
        ----------------------------------------------------


Please enter E if you want Encryption or press D if you want Decryption: _
```

When the program is executed, the user will input what do he want. If he want to encrypt the message he press 'e' or 'E' and if he want to decrypt the message user press 'd' or 'D'.

If the user press 'e' the program want to get an input a message for encryption. And if user input the plain text the program encrypt the message by a key which is automatic generated.

```
            ------------------------------------------------
            |        Welcome to Encryption Decryption.     |
            ------------------------------------------------


Please enter E if you want Encryption or press D if you want Decryption: e

Please enter the Plain text: I love CSE.

The chipher text is: R uxen LBN.

Please Enter your Pin to know your Encryption key: _
```

If the user want to know about the key (which are automatic generated) he or she input the pin code.If the pin is right the program will show the Encryption key.

```
        -------------------------------------------------
        |        Welcome to Encryption Decryption.       |
        -------------------------------------------------


Please enter E if you want Encryption or press D if you want Decryption: E

Please enter the Plain text: I Love CSE.

The chipher text is: X Adkt RHT.

Please Enter your Pin to know your Encryption key: 119804
Password Matched successfully..

Your automatic key is 15

 Do you want Encrypt or Decrypt again???
If you want Encrypt or Decrypt again press 'Y'.And if you don't want press 'N':
```

And the user input the wrong key the program want the rignt key again.

```
        -------------------------------------------------------
        |            Welcome to Encryption Decryption.          |
        -------------------------------------------------------


Please enter E if you want Encryption or press D if you want Decryption: E

Please enter the Plain text: I love CSE.

The chipher text is: M pszi GWI.

Please Enter your Pin to know your Encryption key: 1253
Password Not Matched..
If you want to re-enter your password press a key.
■


You enter wrong passwor 1 time/s. You can try more 2 time/s.

Please Enter your Pin to know your Encryption key:
```

And if the user input wrong pin three time the program will exit for security pourpose.

```
You enter wrong passwor 2 time/s. You can try more 1 time/s.

Please Enter your Pin to know your Encryption key: 2369
Password Not Matched..


Sorry You try Maximum time..We  will exit you from the program for security issue.



                        The program ends here...

          -------------------------------------------------


Process returned 0 (0x0)   execution time : 9.066 s
Press any key to continue.
```

If user want to decrypt the message user should know about the key. For decrypt message user input the cipher text and key then the program decrypt the message successfully.

```
          ----------------------------------------------------
          |           Welcome to Encryption Decryption.       |
          ----------------------------------------------------


Please enter E if you want Encryption or press D if you want Decryption: d

Please enter the Cipher text: Z Cfmv TJV

Please enter the Key: 17

The chipher text is: I Love CSE

 Do you want Encrypt or Decrypt again???
If you want Encrypt or Decrypt again press 'Y'.And if you don't want press 'N':
```

This is the total process of my program.

Chapter 3

Conclusion

Learning Outcome

The simple encryption-decryption program is designed for encrypting or decrypting any data easily. Though this is a simple algorithm we can encrypt any message by using this program. To develop this program I have learned how a encryption Algorithm work.

From this assignment, I have learned to implement a few C concepts in future projects such as function if else condition do while statement, character type array and string, and recursion in the program.

Future Scope

(I)In the future I will develop this project using GUI-based Language for getting a better user experience.

(II) I will be using a word type key instead of digits to encrypt the message.

References

[1] Author Initial. Author Surname, Title. City: Publisher, Year Published, p. Pages Used.

[2] https://www.geeksforgeeks.org/caesar-cipher-in-cryptography/

[3] https://cryptii.com/pipes/caesar-cipher

[4]https://www.javatpoint.com/caesar-cipher-technique