Project Title:
COMMUNICATION SYSTEM

Team Members (Group 5) :

Sl. no.	Student Name	Roll Number
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Problem Statement:

Write a C program to implement a simple communication system which has a Transmitter(Tx) and Receiver(Rx).
(a) The data to be transmitted will be in a file transmit.txt. The Tx adopts a suitable
method to ensure data security/ correctness and transmit the data. The encrypted data to be written to a file encrypt.txt.
(b) A noise module must be designed which will read encrypt.txt and modifies the contents.
(c) The Rx must be able to read encrypt.txt, find if there's an error or not and display the transmitted data.

Design steps:-

1. The 1st program (transmitter) provides the following features of problem statement:-
    a. The main code is responsible for taking message from the user, calling functions to provide encryption and byte stuffing and storing messages in the form of Data frames of size 3-13. It would also show a welcome message and at the end give the key for decryption.
    b. Function 1:- It encrypts the message using Julius Caesar shift encryption.
    c. Function 2:- It encrypts the message using Alberti disk encryption.

2. The 2nd program (Noise) provides these features :-
    a. Add or delete some part of the data frame i.e. it shows the process of adding noise due to other unwanted means when a message is transmitted from sender to receiver.
    b. Store the message with added noise in receiver.txt.
    c. It has one function which is used to remove noise by the receiver program.

3. The 3rd and final program (Receiver provides the following features) :-
    a. The main code is responsible for invoking the noise module, getting the message containing noise, removing noise from the received message (if present) ,decrypting (with key) and removing byte stuffing from it and printing the actual message . It also shows a “welcome to receiver’s end” message.
    b. Function 1 :- For removing byte stuffing from encrypted message.
    c. Function 2 :- It decrypts the message (after noise removal) by Julius Caesar encryption.
    d. Function 3:- It decrypts the message (after noise removal) by Alberti Disk encryption.

Additional features :-

1. Allowing users to choose between different encryption modes and shown by function 1,2 in program 1.
2. Allows users an option to enter the key required to encrypt and decrypt the message or give one generated by the system.
3. The user is required to provide the key for decryption, in order to provide better security as the message can't be read without the correct key.

Results:-

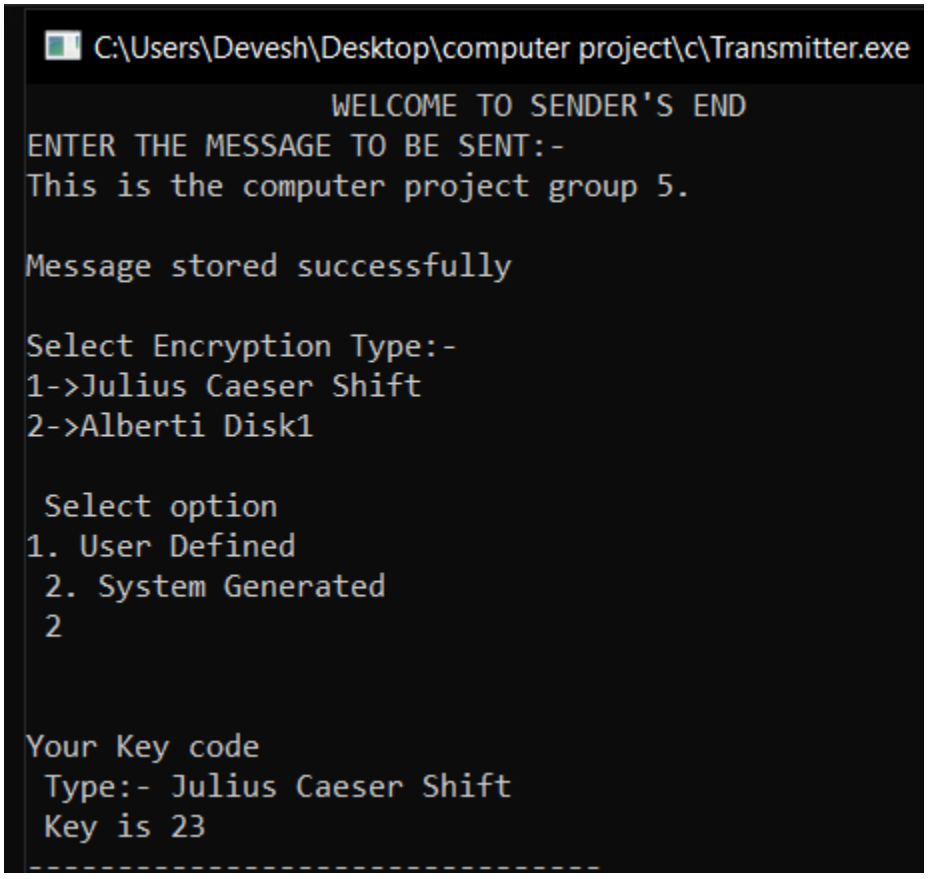

Figure 1 shows the working of transmitter program

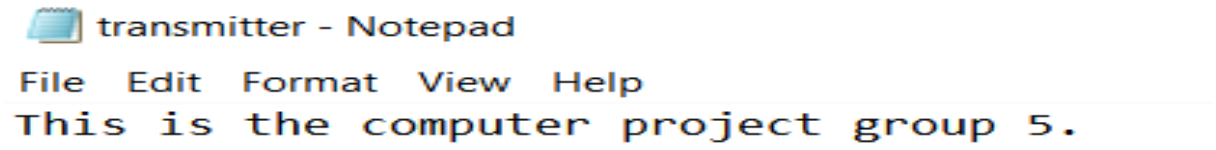

Figure 2 - Shows information stored in transmitter.txt

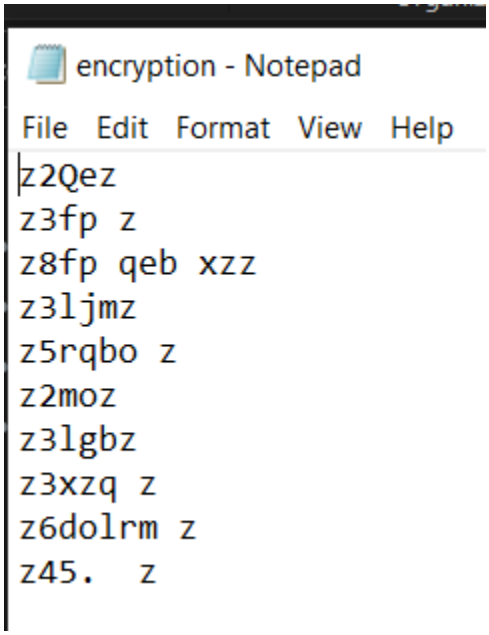

Figure 3 Message stored in encryption.txt in encrypted, byte stuffed and in frames.

```
C:\Users\Devesh\Desktop\computer project\c\receivers.exe
                        WELCOME TO RECEIVERS END

Enter Encryption type:-
 1. JULIUS CAESER SHIFT
2. ALBERTI DISK
1

 ENTER KEY :-
 23
WITHOUT NOISE REMOVAL:-
        ThSis KiMs the computer cprojecLct cgrDoup 45. T

AFTER NOISE REMOVAL
        This is the computer project group 5.
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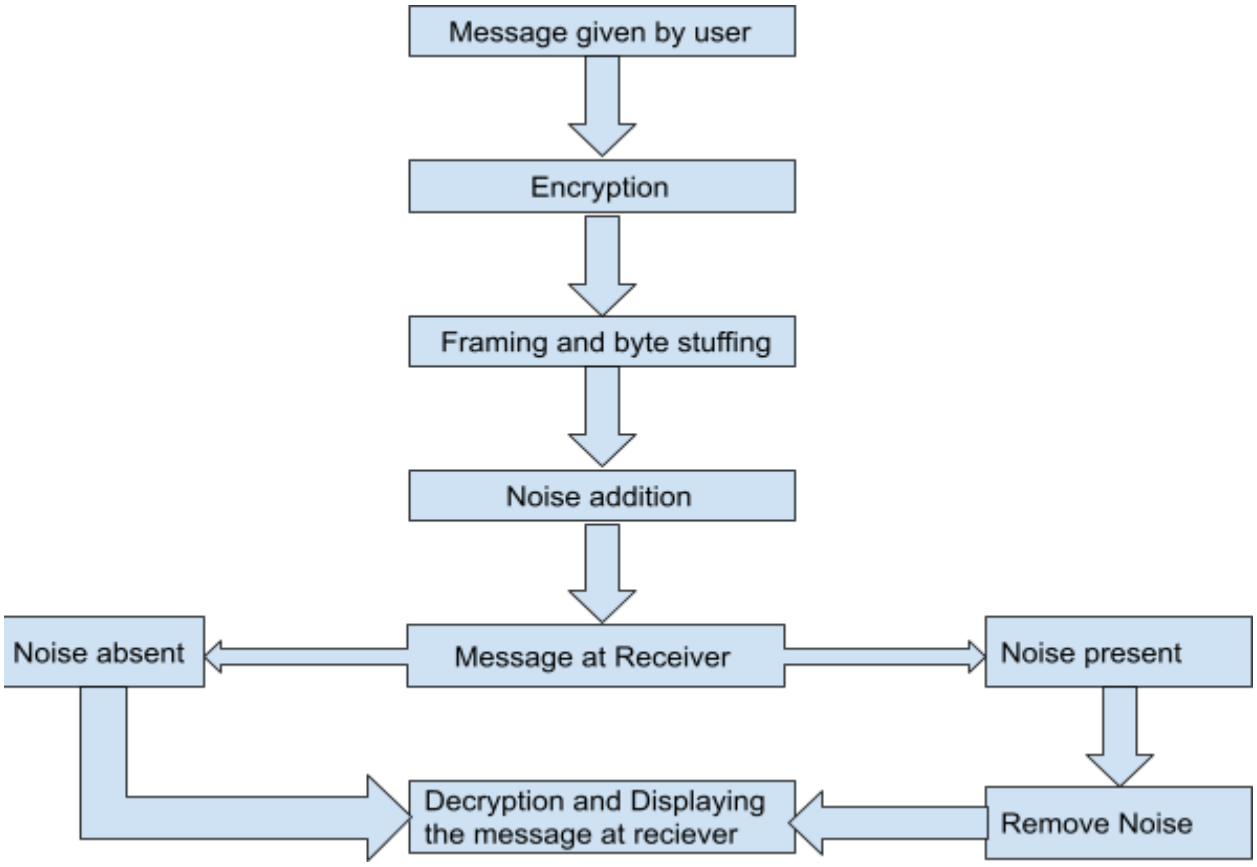
Figure 4 shows the working of the receiver program.

Working as flow chart



Role of team members:-

Sl. No.	Student name	Role
1.	Devesh Kumar	Implementing Transmitter program,add-on features and encryption/decryption protocols
2.	Abhishek Mittal	Implementing noise program, report writing
3.	Siddhant Kumar	Implementing Receiver Program, encryption and decryption protocols
4.	Kamtekar Varad	Receiver program, Implementing Add-on Features