

1. Implement the data link layer framing methods such as character, character-stuffing and bit stuffing.

Bytestuffing.c

```
#include<stdio.h>
#include<string.h>
main()
{
    char a[30], fs[50] = " ", t[3], sd, ed, x[3], s[3], d[3], y[3];
    int i, j, p = 0, q = 0;
    clrscr();
    printf("Enter characters to be stuffed:");
    scanf("%s", a);
    printf("\nEnter a character that represents starting delimiter:");
    scanf(" %c", &sd);
    printf("\nEnter a character that represents ending delimiter:");
    scanf(" %c", &ed);
    x[0] = s[0] = s[1] = sd;
    x[1] = s[2] = '\0';
    y[0] = d[0] = d[1] = ed;
    d[2] = y[1] = '\0';
    strcat(fs, x);
    for(i = 0; i < strlen(a); i++)
    {
        t[0] = a[i];
        t[1] = '\0';
        if(t[0] == sd)
            strcat(fs, s);
        else if(t[0] == ed)
            strcat(fs, d);
        else
            strcat(fs, t);
    }
    strcat(fs, y);
    printf("\n After stuffing:%s", fs);
    getch();
}
```

OUTPUT:

Bitstuffing.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i=0,count=0;
    char databits[80];
    printf("Enter Data Bits: ");
    scanf("%s",databits);
```

```
printf("\nData Bits After Bit stuffing: ");
for(i=0; i<strlen(databits); i++)
{
    if(databits[i]=='1')
        count++;
    else
        count=0;
    printf("%c",databits[i]);
    if(count==5)
    {
        printf("0");
        count=0;
    }
}
getch();
}
```

OUTPUT: