Practical 10

Framing Protocol : Bit Stuffing

Implement a Program in C which demostrates bit-stuffing framing technique, where sender reads data, applies bit stuffing to the frame and sends it to receiver.

* Objective :-

To implement a C program demonstrating the bit-stuffing framing technique in data communication. The objective is to simulate a sender-receiver.

The program helps understand framing in data link layer, ensuring reliable transmission by avoiding misinterpretation of frame boundaries.

* Code

```
#include <stdio.h>
#include <string.h>

int main() {
    char data[100], stuffedData[200];
    int i, count = 0, j = 0;

    printf("Enter the data: ");
    scanf("%s", data);

    for(i = 0; i < strlen(data); i++) {
        if(data[i] == '1') {
            count++;
            stuffedData[j++] = data[i];
        } else {
            count = 0;
            stuffedData[j++] = data[i];
        }
        if(count == 5) {
            stuffedData[j++] = '0';
            count = 0;
        }
    }

    stuffedData[j] = '\0';

    printf("Data after bit stuffing: %s\n",
            stuffedData);
    return 0;
}
```

* Output

```
Enter the data: 1111101111111011111
Data after bit stuffing: 111110011111010111110


=== Code Execution Successful ===
```

* Learning Outcome

- Understand the bit-~~stuffing~~stuffing technique used in framing protocols.
- Learn how to modify data streams to prevent misinterpretation of control flags.
- Gain practical experience in String manipulation and conditional logic in C.