NAME – PRAKRATI SINGH SAP - 500082638

LAB TASK 2

BIT STUFFING AND DESTUFFING

Bit Stuffing - It is the process of adding an extra bit 0 in the bit stream whenever there are five consecutive 1's in it.

Destuffing - The process of removing the 0 after five consecutive 1's in the received signal is called destuffing.

CODE:

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
//Bit Stuffing - It is the process of adding an extra 0 after five 1's so that the receiver does not mistake the pattern '11111' for a flag.
int main()
{
    int num, count = 0;
    printf("Enter length of bit stream: ");
    //bit stream: all data shown in the form of binary
    scanf("%d", &num);
    int k = num + (num/5);
    int *arr=(int*)malloc(k*sizeof(int));
    printf("Enter the bit stream: \n");
    //Taking the bit stream as input
    for (int i = 0; i < num; i++)
    {
        scanf("%d", &arr[i]);
    }
    for (int i = 0; i < num; i++)
    {
        if (arr[i] == 1)
        {
            count++;
            //counter variable to count the 1's
        }
        else
        {
            count = 0;
        }
        if (count == 5)
        //checking if count is equal to 5
        {
```

```
            num = num + 1;
            //increasing the size of array by 1 to insert the new bit
            int j = num - 1;
            while (j > i + 1)
            //loop from the end of the array till the fifth 1.
            {
                arr[j] = arr[j - 1];
                j--;
            }
            arr[j] = 0;
            //inserting 0 in the place after five 1's
            i++;
            count = 0;
        }
    }
    printf("Array after stuffing: \n");
    for (int i = 0; i < num; i++)
    {
        printf("%d", arr[i]);
        //printing the stuffed array after bit stuffing
    }
    //Destuffing - The process of removing the 0 after five consecutive 1's in
the received signal is called destuffing.
    for (int i = 0; i < num; i++)
    {
        if (arr[i] == 1)
        {
            count++;
        }
        else
        {
            count = 0;
        }
        if (count == 5)
        {
            num = num - 1;
            //decreasing the array size
            int j = i+1;
            while (j < num)
            {
                arr[j] = arr[j + 1];
                j++;
            }
            count = 0;
        }
```

```
    }
    printf("\nArray after de-stuffing: \n");
    for (int i = 0; i < num; i++)
    {
        printf("%d", arr[i]);
    }
}
```

OUTPUT:

```
PS C:\Users\91766\Desktop\ \500082638-PRAKRATI SINGH-DCCN\Lab> cd "c:\Users
-o bitstuffing } ; if ($?) { .\bitstuffing }
Enter length of bit stream: 10
Enter the bit stream:
1
1
1
1
1
1
1
1
1
1
Array after stuffing:
111110111110
Array after de-stuffing:
1111111111
PS C:\Users\91766\Desktop\ \500082638-PRAKRATI SINGH-DCCN\Lab\LAB WORK>
```