		Signature of the Lab teacher
Date		

* EXERCISE - II *

▷ AIM: Implementation of Bit stuffing.

▷ DESCRIPTION: Bit Stuffing is a process of inserting an extra bit as 0, once the frame sequence encountered 5 consecutive 1's.

▷ PROGRAM:

```
#include<stdio.h>
#include<string.h>
void bitstuffing (int n, int a[])
{ int b[30];
  int i, j, k;
  i=0;
  j=0;
  while (i<n)
  {
    if (a[i] == 1)
    { int c=1;
      b[j]=a[i];
      for (k=i+1; a[k]==1 && k<n && c<5; k++)
      {
        j++;
        b[j] = a[k];
        c++;
```

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```
if (c==5)
{ j++;
  b[j]=0;
 }
}
else {
 b[j] = a[i];
}
i++;
j++;
}
for(i=0 ; i<j ; i++)
   printf ("%d", b[i]);
}
int main()
 { int n;
   scanf("%d",&n);
   int a[100],i;
   for(i=0; i<n; i++)
    { scanf ("%d", &a[i]);
    }
    bitstuffing (n,a);
    return 0;
   }
```

⊳ output:

```
6
1 1 1 1 1 1
1111101
```

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* EXERCISE - 12 *

AIM: Implementation of Character stuffing.

DESCRIPTION: Byte stuffing or character stuffing is a method for converting a message formed of a sequence of bytes that may contain reserved values such as frame delimiters into another byte sequence that does not contain the reserved values.

PROGRAM:

```
#include<stdio.h>
#include<string.h>
void main()
{
  char f[50][50], s[50][50];
  char flag[10];
  strcpy(flag, "flag");
  char esc[10];
  strcpy(esc, "esc");
  int i,j, k=0, n;
  strcpy(f[k++], "flag");
  printf("Enter length of string : \n");
  scanf("%d", &n);
  printf("Enter the string : ");
```

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```
for(i=0; i<=n ; i++)
{ gets( s[i]);
}
printf ("\n You entered :\n");
for(i=0; i<=n;i++)
 { puts ( s[i]);
 }
printf("\n");
 for(i=1; i<=n ; i++)
 { if(strcmp (s[i], flag ) !=0 && strcmp (s[i], esc) !=0)
    { strcpy( f[k++], s[i]);
     }
     else
      { strcpy ( f[k++ ], "esc");
        strcpy (f[k++], s[i]);
       }
    }
    strcpy (f[k++], "flag");
    printf ("Byte stuffing at sender side : \n");
    for(i=0; i<k; i++)
    { printf ("%s \t", f[i]);
     }
    }
```

© Output:

```
Enter length of string : 8
Enter the string :
1
1
0
0
0
0
1
0
You entered:
1
1
0
0
0
0
1
0
Byte stuffing at sender side:
flag 11000010 flag.
```

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* EXERCISE - 13 *

AIM: Implementation of Character count.

DESCRIPTION: Framing method uses a field in the header to specify the number of characters in the frame. When the data link layer at the destination sees the character count, it knows how many characters follow and hence where the end of the frame is.

PROGRAM:

```
#include <stdio.h>
int main()
{
  char s[100];
   int n, i, j, c=0, co=0;
   Printf ("Enter the string:");
   scanf ("%.s", s);
   Printf ("Enter the num of frames :");
   scanf ("%.d", &n);
   int f[n];
   Printf ("Enter the frame size of frames :\n");
   for (i=0; i<n; i++)
    { printf ("Frame: %.d", i);
```

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```
scanf ("%d", &f[i]);
}printf ("\n The no.of frames : %d\n", n);
for(i=0;i<n;i++)
{ printf (" The content of the frame %d:", i);
  j=0;
  while( c < strlen(s) && j<f[i])
  { printf ("%c", s[c]);
    if (s[c] != '\0')
    { co++;
    }
     c++;
     j++;
   }
   printf ("\n Size of frame %d : %d\n\n ",i, co);
   co=0;
  }
}
```

Output:

```
Enter the frame size of frames:
Frame 0 : 5
Frame 1 : 5
Frame 2 : 5
The no. of frames : 3
The content of the frame 0 : 10010
Size of frame 0 : 5
The content of the frame 1 : 10101
Size of frame 1 : 5
The content of the frame 2 : 01
Size of frame 2 : 2
```