COMPUTER NETWORKS
LAB 8

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Ques - Write a program for the frame sorting technique used in buffers used in Java language.

Buffer stores the packets when the receiver's receiving capacity is less than the sender's sending capacity.
The data link layer divides the stream of bits received from the network layer into manageable data units called frames.

CODE:

IN C LANGUAGE:

```
#include<stdio.h>
#include<string.h>
#define FRAM_TXT_SIZ 3
#define MAX_NOF_FRAM 127

char str[FRAM_TXT_SIZ*MAX_NOF_FRAM];
struct frame                    // structure maintained to hold frames
{
        char text[FRAM_TXT_SIZ];
        int seq_no;
}
        fr[MAX_NOF_FRAM], shuf_ary[MAX_NOF_FRAM];
        int assign_seq_no()                     //function which splits message
{
         int k=0,i,j;                   //into frames and assigns sequence no
        for (i=0; i < strlen(str); k++)
{
         fr[k].seq_no = k;
        for (j=0; j < FRAM_TXT_SIZ && str[i]!='\0'; j++)
        fr[k].text[j] = str[i++];
}
        printf ("\nAfter assigning sequence numbers:\n");
        for (i=0; i < k; i++)
        printf("%d:%s ",i,fr[i].text);
        return k;               //k gives no of frames
}
```

```
        void generate(int *random_ary, const int limit)
        //generate array of random nos
{
        int r, i=0, j;
        while(i < limit)
{
         r = random() % limit;
        for (j=0; j < i; j++)
        if( random_ary[j] == r )
        Break;
        if( i==j ) random_ary[i++] = r;
}
}
        void shuffle( const int no_frames )              // function shuffles the frames
{
        int i, k=0, random_ary[no_frames];
        generate(random_ary, no_frames);
        for (i=0; i < no_frames; i++)
        shuf_ary[i] = fr[random_ary[i]];
        printf("\n\nAFTER SHUFFLING:\n");
        for (i=0; i < no_frames; i++)
        printf("%d:%s ",shuf_ary[i].seq_no,shuf_ary[i].text);
}
        void sort(const int no_frames)                   // sorts the frames
{
        int i,j,flag=1;
        struct frame hold;
        for (i=0; i < no_frames-1 && flag==1; i++)
         //Search for frames in sequence
{
        flag=0;
        for (j=0; j < no_frames-1-i; j++)                //(based on seq no.) and display
        if(shuf_ary[j].seq_no > shuf_ary[j+1].seq_no)
{
        hold = shuf_ary[j];
        shuf_ary[j] = shuf_ary[j+1];
        shuf_ary[j+1] = hold;
        flag=1;
}
}
}
        int main()
{
        int no_frames,i;
        printf("Enter the message: ");
        gets(str);
        no_frames = assign_seq_no();
        shuffle(no_frames);
        sort(no_frames);
        printf("\n\nAFTER SORTING\n");
        for (i=0;i<no_frames;i++)
        printf("%s",shuf_ary[i].text);
        printf("\n\n");
}
```

OUTPUT:

Output Clear

```
/tmp/e5pMSV8qGV.o
Enter the message: This is computer networks
After assigning sequence numbers:
0:Thi 1:s i 2:s c 3:omp 4:ute 5:r n 6:etw 7:ork 8:s

AFTER SHUFFLING:
1:s i 7:ork 0:Thi 5:r n 3:omp 6:etw 4:ute 8:s 2:s c

AFTER SORTING
This is computer networks
```