Implementation of DES

```
#include<stdio.h>
int main()
{
 int i, cnt=0, p8[8]={6,7,8,9,1,2,3,4};
 int p10[10]={6,7,8,9,10,1,2,3,4,5};

 char input[11], k1[10], k2[10], temp[11];
 char LS1[5], LS2[5];
 //k1, k2 are for storing interim keys
 //p8 and p10 are for storing permutation key

 //Read 10 bits from user...
 printf("Enter 10 bits input:");
 scanf("%s",input);
 input[10]='\0';

 //Applying p10...
 for(i=0; i<10; i++)
 {
  cnt = p10[i];
  temp[i] = input[cnt-1];
 }
 temp[i]='\0';
 printf("\nYour p10 key is    :");
 for(i=0; i<10; i++)
 { printf("%d,",p10[i]); }

 printf("\nBits after p10     :");
 puts(temp);
 //Performing LS-1 on first half of temp
 for(i=0; i<5; i++)
 {
  if(i==4)
   temp[i]=temp[0];
  else
   temp[i]=temp[i+1];
 }
 //Performing LS-1 on second half of temp
```

```
 for(i=5; i<10; i++)
 {
  if(i==9)
   temp[i]=temp[5];
  else
   temp[i]=temp[i+1];
 }
 printf("Output after LS-1  :");
 puts(temp);

 printf("\nYour p8 key is     :");
 for(i=0; i<8; i++)
 { printf("%d,",p8[i]); }

 //Applying p8...
 for(i=0; i<8; i++)
 {
  cnt = p8[i];
  k1[i] = temp[cnt-1];
 }
 printf("\nYour key k1 is     :");
 puts(k1);
//This program can be extended to generate k2 as per DES algorithm.
}
```

Output of program

```
Enter 10 bits input:1100011100

Your p10 key is    :6,7,8,9,10,1,2,3,4,5,
Bits after p10     :1110011000
Output after LS-1  :1100110001

Your p8 key is     :6,7,8,9,1,2,3,4,
Your key k1 is     :10001100
```