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AC LAB 3

1. Write a C program to implement Hill Cipher substitution techniques.

Program:

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

int main()
{
   unsigned int a[3][3] = { {6,24,1},{13,16,10},{20,17,15}};
   unsigned int b[3][3]= {{8,5,10},{21,8,21},{21,12,8}};
   int i,j, t=0;
   unsigned int c[20],d[20];
   char msg[20];

   printf("\nEnter the plain text\n");
   scanf("%s",msg);

   for(i=0;i<strlen(msg);i++)
   {
```

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```
    c[i]=msg[i]-65;
    printf("%d ",c[i]);

 }
 for(i=0;i<3;i++)
 {
    t=0;
    for(j=0;j<3;j++)
    {
       t=t+(a[i][j]*c[j]);
    }
    d[i]=t%26;
 }
printf("\nEncrypted Cipher Text\n");
for(i=0;i<3;i++)
          printf("%c ",d[i]+65);
for(i=0;i<3;i++)
{

   t=0;
    for(j=0;j<3;j++)
    {
```

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```
        t=t+(b[i][j]*d[j]);
      }
      c[i]=t%26;
  }

  printf("\nDecrypted Cipher Text\n");
  for(i=0;i<3;i++)
            printf("%c ",c[i]+65);
            getch();
            return 0;
}
```

OUTPUT:

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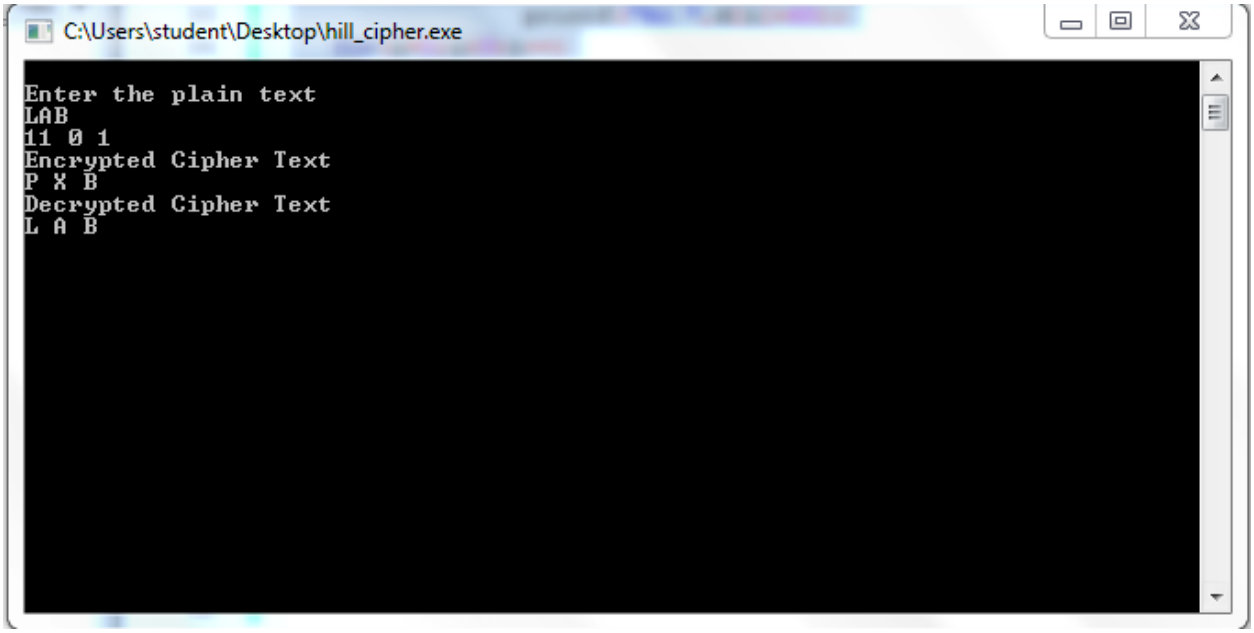

2. C program to implement Vigenere Substitution Technique

Program:

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

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```
void encipher();
void decipher();

void main()
{
  int choice;
  while(1)
  {
     printf("\n\n1. Encrypt Text\n");
     printf("2. Decrypt Text\n");
     printf("3. Exit");
     printf("\nEnter your choice\n");
     scanf("%d", &choice);
     if (choice == 3)
      exit(0);
      else if (choice == 1)
         encipher();
      else if (choice == 2)
         decipher();
      else
         printf("\nInvalid Input\n");
  }
}
void encipher()
{
```

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```
    unsigned int i,j;
    char input[50], key[10];
    printf("\nEnter plain text: ");
    scanf("%s",input);
    printf("\nEnter Key value: ");
    scanf("%s",key);
    printf("\n Resultant Cipher Text: ");
    for(i=0, j=0;i<strlen(input);i++,j++)
    {

       if(j>=strlen(key))
       {

          j=0;
       }
       printf("%c", 65+(((toupper(input[i])-65)+(toupper(key[i])-65))%26));
    }
}

    void decipher()
    {
      unsigned int i,j;
    char input[50], key[10];
    int value;
    printf("\nEnter Cipher text: ");
    scanf("%s",input);
```

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```
printf("\nEnter Key value: ");
scanf("%s",key);
for(i=0, j=0;i<strlen(input);i++,j++)
{

   if(j>=strlen(key))
   {
      j=0;
   }
   value = (toupper(input[i])-64)-(toupper(key[i])-64);
if(value<0)
{
   value = value*-1;
}
printf("%c",65+(value%26));

}
}
```

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OUTPUT: