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//*************************************
// Name: Play Fair Cipher
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//*************************************

#include <stdio.h>
#define siz 5
void encrypt(int *i, int *j)


   {
      (*i)++,(*j)++;
      if((*i)==siz) *i=0;
      else if((*j)==siz) *j=0;
}
void playfair(char ch1,char ch2, char mat[siz][siz])


   {
      int j,m,n,p,q,c,k;
      for(j=0,c=0;(c<2)||(j<siz);j++)
            for(k=0;k<siz;k++)
                  if(mat[j][k] == ch1)
                        m=j,n=k,c++;
                  else if(mat[j][k] == ch2)
                        p=j,q=k,c++;
      if(m==p)
            encrypt(&n,&q);
      else if(n==q)
            encrypt(&m,&p);
      else
            n+=q,q=n-q,n-=q;
      printf("%c%c",mat[m][n],mat[p][q]);
}
void main()


   {
   char mat[siz][siz],key[10],str[25]={0};
   int m,n,i,j;
   char temp;
   printf("Enter Key String:");
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gets(key);
m=n=0;
for(i=0;key[i]!='\0';i++)


    {
            for(j=0;j<i;j++)
                if(key[j] == key[i]) break;
            if(key[i]=='j') key[i]='i';
            if(j>=i)


            {
                mat[m][n++] = key[i];
                if(n==siz)
                    n=0,m++;
            }
    }
    for(i=97;i<=122;i++)


      {
            for(j=0;key[j]!='\0';j++)
                if(key[j] == i)
                 break;
                else if(i=='j')
                    break;
          if(key[j]=='\0')


             {
                mat[m][n++] = i;
                if(n==siz) n=0,m++;
             }
            }
            printf("Enter input String:");
            gets(str);
            printf("\n\nMatrix :\n");
            for(i=0;i<siz;i++)


            {
                for(j=0;j<siz;j++)
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                printf("%c\t",mat[i][j]);
        printf("\n");
}
printf("\n\nEntered text :%s\nCipher Text :",str);
for(i=0;str[i]!='\0';i++)


        {
                temp = str[i++];
                if(temp == 'j') temp='i';
                if(str[i]=='\0')
                        playfair(temp,'x',mat);
                else


                {
                        if(str[i]=='j') str[i]='i';
                        if(temp == str[i])


                                {
                                        playfair(temp,'x',mat);
                                        i--;
                                }
                                else
                                        playfair(temp,str[i],mat);
                        }
                }
   }
```