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Q-5

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <ctype.h>
#define MAX 5

int choice;
void playfair(char ch1, char ch2, char key
              [MAX][MAX])
{ int i, j, w, x, y, z;

  for(i=0; i<MAX; i++)
  for(j=0; j<MAX; j++)
  { if(ch1==key[i][j])
    { w=i;
      x=j;
    }
    else if(ch2==key[i][j])
    { y=i;
      z=j;
```

```
}
}
}
if (w==y)
  { if (choice==1)
      { x = (x+1)%5;
        z = (z+1)%5;
      }
    else
    { x = ((x-1)%5+5)%5;
      z = ((z-1)%5+5)%5;
    }
  printf("%d%d%c", key[w][x], key[y][z]);
}
  else if (x==z){
      if (choice==1)
        { w=(w+1)%5;
          y = (y+1)%5;
        }
      else{
          w = ((w-1)%5+5)%5;
          y = ((y-1)%5+5)%5;
        }
```

```
void main()
{
    int i, j, k=0, l, m=0, n;
    char key[MX][MX], keymatrix[25],
         keystr[10], str[25]={0};
    char alpa[26]={'A','B','C','D','E','E','G','H',
                   'I','J','K','L','M','N','O','P','Q',
                   'R','S','T','U','V','W','X','Y','Z'};
    printf("\n1: Encrypting\n2: Decrypting\n");
    scanf("%d",&choice);
    if(choice!=1 && choice!=2)
    {printf("Invalid choice"); return;}
    fflush(stdin);
    printf("\nEnter key");
    gets(keystr);
    printf("\nEnter key text:");
    gets(str);
    removeDuplicate(keystr);
```

```
printf("%c %c %c", key[w][x], key[y][z]);
}
else
    printf("%c %c %c", key[w][z], key[y][x]);
}
}.

void removeDuplicates(char *str)
{ int hash[256] = {0};
  int current_index = 0;
  int last_unique_index = 0;
  while(*(str + current_index)) {
      char temp = *(str + current_index);
      if (0 == hash[temp]) {
          hash[temp] = 1;
          *(str + last_unique_index) = temp;
          last_unique_index++; }
          current_index++;
      }
      *(str + last_unique_index) = '\0';
  }
```

```
n = strlen(keystr);
for (i=0; i<n; i++)
{ if (keystr[i] == 'j') keystr[i] = 'i';
else if (keystr[i] == 'J') keystr[i] = 'I';
keystr[i] = toupper(keystr[i]);
if (k == 2)
{ keymatrix[j] = alpa[i];
j++;
}
}
k = 0;
for (i=0; i<mx; i++)
{ for (j=0; j<mx; j++)
{ if (k<n)
key[i][j] = keystr[k];
k++;
} else key[i][j]
= keymatrix[k];
```

```
n++;
}
printf("%c", key[i][j]);
}
}
printf("\n");
}
```

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```
for(i=0; i< strlen(str); i++)
if( str[i] == 'j' || str[i] == 'I')
if(str[i+1] == 'o', playfair
(str[i], 'x', key);
else
if( str[i+1] == 'j')
str[i+1] = 'I';
if (str[i] == str[i+1])
playfair (str[i], 'x', key);
else
playfair( str[i], str[i+1],
key);
i++; } }
if(choice==2) printf("\n---x");}
```