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

void playfair(char ch1, char ch2, char key[MX][MX]) {

int i, j, w, x, y, z;

FILE \* out;

if ((out = fopen("cipher.txt", "a+")) == NULL) {

printf("File Currupted.");

}

for (i = 0; i < MX; i++) {

for (j = 0; j < MX; j++) {

if (ch1 == key[i][j]) {

w = i;

x = j;

} else if (ch2 == key[i][j]) {

y = i;

z = j;

}

}

}

//printf("%d%d %d%d",w,x,y,z);

if (w == y) {

x = (x + 1) % 5;

z = (z + 1) % 5;

printf("%c%c", key[w][x], key[y][z]);

fprintf(out, "%c%c", key[w][x], key[y][z]);

} else if (x == z) {

w = (w + 1) % 5;

y = (y + 1) % 5;

printf("%c%c", key[w][x], key[y][z]);

fprintf(out, "%c%c", key[w][x], key[y][z]);

} else {

printf("%c%c", key[w][z], key[y][x]);

fprintf(out, "%c%c", key[w][z], key[y][x]);

}

fclose(out);

}

void main() {

int i, j, k = 0, l, m = 0, n;

char key[MX][MX], keyminus[25], keystr[10], str[25] = {

0

};

char alpa[26] = {

'A',

'B',

'C',

'D',

'E',

'F',

'G',

'H',

'I',

'J',

'K',

'L',

'M',

'N',

'O',

'P',

'Q',

'R',

'S',

'T',

'U',

'V',

'W',

'X',

'Y ',

'Z'

};

printf("\nEnter key:");

gets(keystr);

printf("\nEnter the plain text:");

gets(str);

n = strlen(keystr);

//convert the characters to uppertext

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]);

}

//convert all the characters of plaintext to uppertext

for (i = 0; i < strlen(str); i++) {

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

else if (str[i] == 'J') str[i] = 'I';

str[i] = toupper(str[i]);

}

// store all characters except key

j = 0;

for (i = 0; i < 26; i++) {

for (k = 0; k < n; k++) {

if (keystr[k] == alpa[i]) break;

else if (alpa[i] == 'J') break;

}

if (k == n) {

keyminus[j] = alpa[i];

j++;

}

}

//construct key keymatrix

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] = keyminus[m];

m++;

}

printf("%c ", key[i][j]);

}

printf("\n");

}

// construct diagram and convert to cipher text

printf("\n\nEntered text :%s\nCipher Text :", str);

for (i = 0; i < strlen(str); i++) {

if (str[i] == 'J') str[i] = 'I';

if (str[i + 1] == '\0') 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++;

}

}

}

getch();

}

