

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

```
void create_playfair_matrix(char *key, char matrix[5][5]) {
    int i, k;
    char temp[26] = {0};

    for (i = 0, k = 0; i < strlen(key); i++) {
        if (key[i] != 'J') {
            if (temp[toupper(key[i]) - 'A'] == 0) {
                temp[toupper(key[i]) - 'A'] = 1;
                matrix[k / 5][k % 5] = toupper(key[i]);
                k++;
            }
        }
    }

    for (i = 0; i < 26; i++) {
        if (temp[i] == 0) {
            if (i == 'J' - 'A') {
                continue;
            }
            matrix[k / 5][k % 5] = 'A' + i;
            k++;
        }
    }
}
```

```
void playfair_cipher(char *plaintext, char *key, char *ciphertext) {
    char matrix[5][5];
    int i, k, row1, col1, row2, col2;
    int plaintext_len = strlen(plaintext);

    create_playfair_matrix(key, matrix);

    for (i = 0, k = 0; i < plaintext_len; i += 2) {
        for (row1 = 0; row1 < 5; row1++) {
            for (col1 = 0; col1 < 5; col1++) {
                if (matrix[row1][col1] == toupper(plaintext[i])) {
                    break;
                }
            }
            if (col1 < 5) {
                break;
            }
        }
    }
}
```