

```

class PlayFair {
    @Override
    public String encrypt(String plainText, String key) {

        for(int i=0;i<plainText.length();i=i+SIZE)
        {
            int b[] = new int[SIZE];

            for(int j=0;j<SIZE;j++)
                b[j] = plainText.charAt(i+j)-'A';

            for(int j=0;j<SIZE;j++)
            {
                int sum = 0;
                for(int k=0;k<SIZE;k++)
                    sum = (sum+b[k]*K[k][j]);

                sum = sum%26;

                cipherText.append((char)(sum+'A'));
            }

        }

        return cipherText.toString();
    }

    @Override
    public String decrypt(String cipherText, String key) {

        for(int i=0;i<cipherText.length();i=i+SIZE)
        {
            int b[] = new int[SIZE];

            for(int j=0;j<SIZE;j++)
                b[j] = cipherText.charAt(i+j)-'A';

            for(int j=0;j<SIZE;j++)
            {
                int sum = 0;
                for(int k=0;k<SIZE;k++)
                {
                    sum = (sum+b[k]*invK[k][j]);
                }

                sum = sum%26;

                plainText.append((char)(sum+'A'));
            }

        }

        return plainText.toString();
    }
}

```

Key Matrix: $\{\{17, 17, 5\}, \{21, 18, 21\}, \{2, 2, 19\}\}$

Output:

XCFABGEYTDULVJZEZLAYEQDIUKOBDFPABGNYSBBSBGPDMJWMAYBJTJKPGUMTJKNBCNDENITBUKE
JOHIZCYQLWQECPLZSSLUHUEOAIHJYNECKLIMUVSXEXEPAVTVMPCSFRTXGWNQJIZMZNILEZLWKA
AVTTGSKPGUWXCHINZJQQDULLYWRSLUUKIGUTAZVDGKLIMUVKPGZNUXZQFPWVJPZAHWPZOQDDVU
RMLIBQUIEDNXWRWJWXBCDFIBURKWSJCEBXHSPGJQYJKNNOKHIMUZZJJTHCZRSRMDSOEJXNPNB
TRCJTJKPGNEPEUATHRPRULGPUZYWHRYKZISSUHACAINXXCOJRSLKQEZJIFTTYMXBWJGTQLDBIBO
COGAFCFYJNLXXHPBWJKPGTDSQQHVXFNUQPGVMHSCXPHEQCQFFSLFABGNYLRFSSMMXZTMUSTHGBWE
FSLGQGLMLSKASXENSJEXGWYFKPGRSXYWWSUTXVQKKCVGPXZQIYODVONIGSQYPNEJWXZHFYTCPPK
PKULNURTPSNXBYBIDDZJFNPSVWWMRFOHANXOLKPGBPDAONVJCVIRLLKREZNIGMKGJHZPAXZZJQQH
CZVECNFSLKQEDRNLGKLMTJKPTBAIAJBBNPFMQIHFGQXILUWWVVZTRBHUBNULZQZTUHNULPPEZAE
BYGFSLFMZEVYKZFSYZNBDEAPCENPFRRCLAPUAVWWZTGSNPFDRATORUNCRSLWWVIIMFDYTAVHZG
XHBBPRHVSPZRECSNILXXVFDYTAVTGSTGBBHJWUMKPGKEMFYHRSFFSJQTSOKZPFYWDRAUWIYWS
EFKGXWWRBSQYPNEZMDNGTQLBKWOFWHJWQFTTZALLEABGZNHRFOKPGXHYOYUSTALTPEZLNRSJY
MJSJLAUUKBLQVOPUSXDJNVDFGJEYTFATNSJFYQDDRAFFSTQNPCECAKPGVHHHMOZNTMDRNKEC
DRJFTOOCVHWXDDALZWTGBEVDGZYSKFYFNAGFYJYIPKPGRSXSQENUQFSLTGSKMXHJWYYRITBIYH
GWEFPWGWEVOBTNZJRJZJFWNSZIE