Write a program to implement Vernam cipher and perform the following tasks.

1) Input plain text from a file and obtain binary ASCII character code for each letter of the plaintext.
2) Randomly generate a key and obtain binary ASCII character code for each letter of the key. Your key must be equal in length to the plaintext.
3) Perform Encryption: Plaintext XOR Key.
4) Write output cipher text as hex values in a file.
5) Decryption – Read ciphertext from the file and obtain its equivalent binary character code. Perform its XOR with Key (must be in binary).
6) Output plaintext - Obtain plaintext from decrypted binary code and write in a file.

Encryption:

In the below example, the message 'HELLO' will be encrypted using the key 'PLUTO'.

1. Obtain the binary ASCII character code for each letter of the plaintext:

Plaintext

H - 01001000
E - 01000101
L - 01001100
L - 01001100
O - 01001111

2. Obtain the binary ASCII character code for each letter of the key:

Key

P - 01010000
L - 01001100
U - 01010101
T - 01010100
O - 01001111

3. Carry out the XOR operation, applying it to each corresponding pair of bits:

Plaintext	01001000	01000101	01001100	01001100	01001111
Key	01010000	01001100	01010101	01010100	01001111
Ciphertext in binary	00011000	00001001	00011001	00011000	00000000

Ciphertext

00011000
00001001
00011001
00011000
00000000

In the worked example above, the ciphertext could be displayed **18, 9, 19, 18, 00** (in hex).