Ex. No : 1(d) Date :	**Vigenere Cipher**

AIM:

To implement a program for encryption and decryption using vigenere cipher substitution technique

ALGORITHM:

1. The Vigenere cipher is a method of encrypting alphabetic text by using a series of different Caesar ciphers based on the letters of a keyword.
2. It is a simple form of *polyalphabetic* substitution.
3. To encrypt, a table of alphabets can be used, termed a Vigenere square, or Vigenere table.
4. It consists of the alphabet written out 26 times in different rows, each alphabet shifted cyclically to the left compared to the previous alphabet, corresponding to the 26 possible Caesar ciphers.
5. At different points in the encryption process, the cipher uses a different alphabet from one of the rows used.
6. The alphabet at each point depends on a repeating keyword.

PROGRAM:

vigenereCipher.java

```
public class vigenereCipher {
   static String encode(String text, final String key) {
      String res = "";
      text = text.toUpperCase();
      for (int i = 0, j = 0; i < text.length(); i++) {
         char c = text.charAt(i);
         if (c < 'A' || c > 'Z') {
            continue;
         }
         res += (char) ((c + key.charAt(j) - 2 * 'A') % 26 + 'A');
         j = ++j % key.length();
      }
      return res;
   }

   static String decode(String text, final String key) {
      String res = "";
      text = text.toUpperCase();
```

```
        for (int i = 0, j = 0; i < text.length(); i++) {
            char c = text.charAt(i);
            if (c < 'A' || c > 'Z') {
                continue;
            }
            res += (char) ((c - key.charAt(j) + 26) % 26 + 'A');
            j = ++j % key.length();
        }
        return res;
    }

    public static void main(String[] args) throws java.lang.Exception {
        String key = "VIGENERECIPHER";
        String msg = "SecurityLaboratory";
        System.out.println("Simulating Vigenere Cipher\n---------------------- ");
        System.out.println("Input Message : " + msg);
        String enc = encode(msg, key);
        System.out.println("Encrypted Message : " + enc);
        System.out.println("Decrypted Message : " + decode(enc, key));
    }
}
```

OUTPUT:

```
Simulating Vigenere Cipher
----------------------
Input Message : SecurityLaboratory
Encrypted Message : NMIYEMKCNIQVVROWXC
Decrypted Message : SECURITYLABORATORY
```

RESULT:

Thus the program for vigenere cipher encryption and decryption algorithm has been implemented and the output verified successfully.