Ex. No : 1(a) Date :	**Encryption and Decryption Using Ceaser Cipher**

AIM:

To encrypt and decrypt the given message by using Ceaser Cipher encryption algorithm.

ALGORITHMS:

1. In Ceaser Cipher each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet.
2. For example, with a **left shift of 3**, **D** would be replaced by **A**, **E** would become **B**, and so on.
3. The encryption can also be represented using modular arithmetic by first transforming the letters into numbers, according to the scheme, **A = 0, B = 1, Z = 25.**
4. Encryption of a letter x by a shift n can be described mathematically as,

$$En(x) = (x + n) \bmod 26$$

5. Decryption is performed similarly,

$$Dn(x) = (x - n) \bmod 26$$

PROGRAM:

CaesarCipher.java

```
class caesarCipher {
   public static String encode(String enc, int offset) {
      offset = offset % 26 + 26;
      StringBuilder encoded = new StringBuilder();
      for (char i : enc.toCharArray()) {
         if (Character.isLetter(i)) {
            if (Character.isUpperCase(i)) {
               encoded.append((char) ('A' + (i - 'A' + offset) % 26));
            } else {
               encoded.append((char) ('a' + (i - 'a' + offset) % 26));
            }
         } else {
            encoded.append(i);
         }
      }
```

```
        return encoded.toString();
    }

    public static String decode(String enc, int offset) {
        return encode(enc, 26 - offset);
    }

    public static void main(String[] args) throws java.lang.Exception {
        String msg = "Anna University";
        System.out.println("Simulating Caesar Cipher\n---------------------- ");
        System.out.println("Input : " + msg);
        System.out.printf("Encrypted Message : ");
        System.out.println(caesarCipher.encode(msg, 3));
        System.out.printf("Decrypted Message : ");
        System.out.println(caesarCipher.decode(caesarCipher.encode(msg, 3), 3));
    }
}
```

OUTPUT:

```
Simulating Caesar Cipher
----------------------
Input : Anna University
Encrypted Message : Dqqd Xqlyhuvlwb
Decrypted Message : Anna University
```

RESULT:

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