

Ex .1 CAESER CIPHER

AIM:

Implement the Caesar Cipher

PROCEDURE:

Step 1:

Design of Caesar Cipher algorithm

Step 2:

Implementation using C or python code

Step 3:

- In Ceaser Cipher each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet.
- For example, with a left shift of 3, D would be replaced by A, E would become B, and so on.
- 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.
- Encryption of a letter x by a shift n can be described mathematically as,
$$En(x) = (x + n) \bmod 26$$
- Decryption is performed similarly $(x) = (x - n) \bmod 26$

PROGRAM:

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

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

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

```
int main() {
```

```
    char plain[10], cipher[10];
```

```
    int key, i, length;
```

```
printf("\n Enter the plain text (max 9 chars): ");  
scanf("%9s", plain);
```

```
printf("\n Enter the key value: ");  
scanf("%d", &key);
```

```
length = strlen(plain);
```

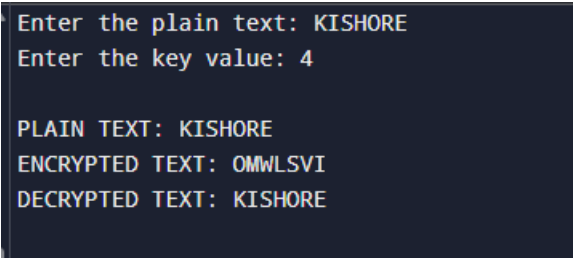
```
printf("\n\n\t PLAIN TEXT: %s", plain);  
printf("\n\n\t ENCRYPTED TEXT: ");
```

```
for (i = 0; i < length; i++) {  
    cipher[i] = plain[i] + key;  
  
    if (isupper(plain[i]) && (cipher[i] > 'Z'))  
        cipher[i] -= 26;  
    if (islower(plain[i]) && (cipher[i] > 'z'))  
        cipher[i] -= 26;  
  
    printf("%c", cipher[i]);  
}
```

```
cipher[length] = '\0';
```

```
printf("\n\n\t AFTER DECRYPTION: ");  
for (i = 0; i < length; i++) {  
    plain[i] = cipher[i] - key;  
  
    if (isupper(cipher[i]) && (plain[i] < 'A'))  
        plain[i] += 26;  
    if (islower(cipher[i]) && (plain[i] < 'a'))  
        plain[i] += 26;  
  
    printf("%c", plain[i]);  
}  
  
printf("\n");  
  
return 0;  
}
```

OUTPUT:

A screenshot of a terminal window with a dark background and light-colored text. It shows the output of a C program. The first two lines are prompts for user input: "Enter the plain text: KISHORE" and "Enter the key value: 4". The next three lines show the results of the encryption and decryption process: "PLAIN TEXT: KISHORE", "ENCRYPTED TEXT: OMWLSVI", and "DECRYPTED TEXT: KISHORE".

```
Enter the plain text: KISHORE  
Enter the key value: 4  
  
PLAIN TEXT: KISHORE  
ENCRYPTED TEXT: OMWLSVI  
DECRYPTED TEXT: KISHORE
```

RESULT:

The program is executed successfully