

EXPERIMENT 10

OBJECTIVE:

Implement the concept of data encryption and data decryption:

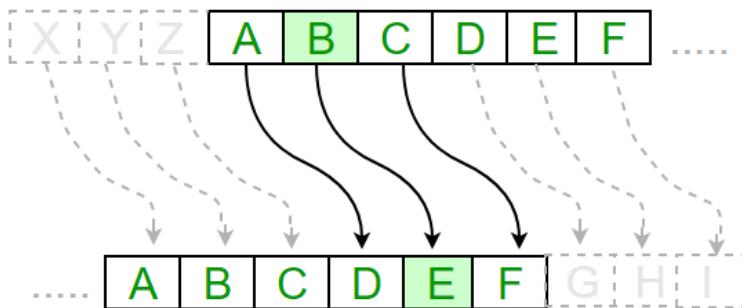
The Caesar Cipher is one of the simplest and oldest methods of encrypting messages, named after Julius Caesar, who reportedly used it to protect his military communications. This technique involves shifting the letters of the alphabet by a fixed number of places. For example, with a shift of three, the letter 'A' becomes 'D', 'B' becomes 'E', and so on.

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

(Encryption Phase with shift n)

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

(Decryption Phase with shift n)



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

int main() {
    char text[500], ch;
    int key;

    // Taking user input.
    printf("Enter a message to encrypt: ");
    scanf("%s", text);
    printf("Enter the key: ");
    scanf("%d", &key);
    // Visiting character by character.

    for (int i = 0; text[i] != '\0'; ++i) {
        ch = text[i];
        // Check for valid characters.
        if (isalnum(ch)) {
            // Lowercase characters.
            if (islower(ch)) {
                ch = (ch - 'a' + key) % 26 + 'a';
            }
            // Uppercase characters.
            if (isupper(ch)) {
                ch = (ch - 'A' + key) % 26 + 'A';
            }
            // Numbers.
        }
    }
}
```

```
if (isdigit(ch)) {
    ch = (ch - '0' + key) % 10 + '0';
}
// Invalid character.
else {
    printf("Invalid Message");
}
// Adding encoded answer.
text[i] = ch;
}
printf("Encrypted message: %s", text);
return 0;
}
```

Output:

```
Enter a message to encrypt: yZq8NS92mdR
Enter the key: 6
Encrypted message: eFw4TY58sjX
```