SEM - VII - 2022-23
CNS Lab

B3 - 2019BTECS00094 - Sweety Shrawan Gupta

Assignment 1

Caesar Cipher

Caesar Cipher:

The Caesar cipher is one of the earliest known and simplest ciphers. It is a type of substitution cipher in which each letter in the plaintext is 'shifted' a certain number of places down the alphabet. For example, with a shift of 1, A would be replaced by B, B would become C, and so on. The method is named after Julius Caesar, who apparently used it to communicate with his generals.

$$e(x) = (x + k) \pmod{26}$$

(Encryption Phase with shift n)

$$e(x) = (x - k) \pmod{26}$$

(Decryption Phase with shift n)

Code:

```
#include <bits/stdc++.h>
using namespace std;

int main()
{
    int k;
    string s, x;
```

```
    getline(cin, s);
    for (int i = 0; i < s.length(); i++)
        if (s[i] != ' ')
            x += s[i];
    s = x;

    cin >> k;

    cout << "\nPlain text is: " << s << endl;
    cout << "key is: " << k << endl;

    for (int i = 0; i < s.length(); i++)
    {
        if (s[i] >= 'a' and s[i] <= 'z')
            s[i] = (s[i] - 'a' + k + 26) % 26 + 'a';
        if (s[i] >= 'A' and s[i] <= 'Z')
            s[i] = (s[i] - 'A' + k + 26) % 26 + 'A';
    }

    cout << "\nCipher text is: " << s;

    for (int i = 0; i < s.length(); i++)
    {
        if (s[i] >= 'a' and s[i] <= 'z')
            s[i] = (s[i] - 'a' - k + 26) % 26 + 'a';
        if (s[i] >= 'A' and s[i] <= 'Z')
            s[i] = (s[i] - 'A' - k + 26) % 26 + 'A';

    }

    cout << "\n\nPlain text after decryption is: " << s;

    return 0;
}
```

Output:

inputf.in

```
1  Sweety Shrawan Gupta
2  3
```

outputf.in

```
1
2  Plain text is: SweetyShrawanGupta
3  key is: 3
4
5  Cipher text is: VzhhwbVkudzdqJxswd
6
7  Plain text after decription is: SweetyShrawanGupta
```