Practical No – 2

Title: Crack the code. (Cryptanalysis)

Theory:
The text gets encrypted using particular algorithm. Here, we used ceaser cipher algorithm to encrypt text. And we have tried certain permutations and combinations on the key. The many different we will get from the various keys. Choose the relevant and meaningful word. And that world which is formed will be your decrypted message. And the key used for that decrypted word will be your answered key.

Code Snapshots:

```cpp
// Note: The following program deciphers the text using different keys.
// The user needs to identify the correct plain text from various options

#include <iostream>
#include <iomanip>

using namespace std;

int main() {

    char patternChar = '-';
    char resetChar = ' ';
    int lineWidth = 90;
    int initialWidth = 50;

    cout << setfill(patternChar) << setw(lineWidth) << patternChar << endl;
    cout << setfill(resetChar);
    cout << setw(initialWidth) << "Text Decryption" << endl;
    cout << setfill(patternChar) << setw(lineWidth) << patternChar << endl;
    cout << setfill(resetChar);


    cout << endl;
    cout << "Enter the Ciphered Text: " << endl;
```

```cpp
    string cipherText;
    getline(cin, cipherText);

    cout << endl;


    for(size_t i = 1; i < 26; i++){
        int currentKey = i;
        string currPlainText = "";

        for(size_t j = 0; j<cipherText.size(); j++){
            char decipheredAlpha;
            if(isalpha(cipherText[j])){
                if(cipherText[j] >= 'A' && cipherText[j] <= 'Z'){
                    decipheredAlpha = (((cipherText[j]-'A')-
currentKey)+26)%26+'A';
                }else{
                    decipheredAlpha = (((cipherText[j]-'a')-
currentKey)+26)%26+'a';
                }
            }else{
                decipheredAlpha = cipherText[j];
            }

            currPlainText += decipheredAlpha;
        }

        cout << "Key: " << currentKey << endl;
        cout << "Plain Text: " << currPlainText << "\n" << endl;
    }

    return 0;
}
```

Output Snapshots:

```
PROBLEMS    OUTPUT    TERMINAL    DEBUG CONSOLE

Key: 6
Plain Text: EBIIL

Key: 7
Plain Text: DAHHK

Key: 8
Plain Text: CZGGJ

Key: 9
Plain Text: BYFFI

Key: 10
Plain Text: AXEEH

Key: 11
Plain Text: ZWDDG

Key: 12
Plain Text: YVCCF

Key: 13
Plain Text: XUBBE

Key: 14
Plain Text: WTAAD
```

```
Key: 15
Plain Text: VSZZC

Key: 16
Plain Text: URYYB

Key: 17
Plain Text: TQXXA

Key: 22
Plain Text: OLSSV

Key: 23
Plain Text: NKRRU

Key: 24
Plain Text: MJQQT

Key: 25
Plain Text: LIPPS

PS C:\Users\Ashitra\OneDrive\Desktop\7th sem\Practicals\CNS\Programs> []
```

Conclusion:
1. By trying permutations and combinations for the key value, the message can be decrypted easily.
2. The most relevant and meaningful world from the keys can be chosen as the decryption key for the message.