A C++ program to decipher a plain text

Methodology:

Checkpoint 1 required breaking a cipher created using the Caesar cipher. The cipher text provided was:

```
The given cipher text :

odroboewscdrolocdcwkbdmyxdbkmdzvkdpybwyeddrobo
```

The approach to break this cipher was to use a brute force method by attempting all possible shifts (26 shifts for the English alphabet) to decrypt the text. The Caesar cipher works by shifting each letter by a fixed number of positions in the alphabet. By trying all shifts, one can identify the decrypted text that forms meaningful English words.

Mechanism of working the code(c++):

- Iterates over all possible shift values from 1 to 25.
- Shifts each letter of the cipher text backward by the shift value, wrapping around the alphabet.
- Prints each decoded output for manual inspection to find the meaningful plaintext.

This approach demonstrates the weakness of the Caesar cipher: it is vulnerable to simple brute force analysis because there are only 26 possible keys. Once the correct shift is found, the ciphertext can be easily decrypted.

A C++ program to decipher a plain text for a substitution cipher

Methodology

The program to decipher substitution ciphers typically involves these steps:

- Frequency Counting: Count each letter's occurrences in the cipher text to identify common letters.
- Initial Mapping: Map the most frequent cipher letters to the most frequent English letters (like E, T, A).
- Pattern Matching: Identify common English word patterns, especially two- and three-letter words like "THE," "AND," "OF."
- Iterative Improvement: Refine the letter mappings by comparing linguistic patterns and context clues.
- Readability Assessment: Score or assess decrypted text for how closely it resembles readable English text.

When comparing two ciphers, Cipher 2 is easier to break because:

- It has clearer frequency patterns that match English letter distribution.
- It includes more recognizable common English words such as "THE," "AND," and "WAS."
- It has a longer text length, giving a better statistical basis for frequency analysis.
- The story narrative structure provides predictable language patterns aiding decryption.