

CS 458 Spring 2024 - Coding assignment I

Due in Blackboard Assignment by Thursday, February 1st at 11:59pm

OBJECTIVE

The objective of this assignment is to implement a simple encryption and decryption program in any programming language.

PROGRAM FEATURES

- (1) **Encryption:**
 - Prompt the user to enter plaintext and a key.
 - Use the entered key to perform encryption (e.g., Shift cipher).
 - Display the resulting ciphertext.
- (2) **Decryption:**
 - Prompt the user to enter ciphertext and the corresponding key used for encryption.
 - Use the entered key to perform decryption and retrieve the original plaintext.
 - Display the decrypted plaintext.
- (3) **Brute Force Attack:**
 - Prompt the user to enter only the ciphertext (without the key).
 - Implement a brute force attack to try all possible keys (shift values) for a Caesar cipher.
 - Display all the possible plaintext results.

USER INTERACTION

The program should display a menu with options for encryption, decryption, and brute force attack. The user can choose the desired operation by entering the corresponding option number.

EXAMPLE INTERACTION

Choose an option:

1. Encryption
2. Decryption
3. Brute Force Attack

Enter your choice (1/2/3): 1

Enter plaintext: Hello World

Enter key: 3

Ciphertext: Khoor Zruog

REQUIREMENTS

- The code should be well-documented, including comments explaining the logic of encryption, decryption, and the brute force attack.
- Ensure error handling for invalid inputs (e.g., non-numeric key, empty plaintext/ciphertext).

SUBMISSION

Students are required to submit the source code via Blackboard.