# 07 - Alphabet Cipher Program-Encoded-Decoded Documentation

Author: Muzaffar Ali

Version: 1.0

Copyright: (c) Muzaffar Ali

License: Public

## Purpose

This project is designed for the Advanced Python Class by Muzaffar Ali. The Alphabet Cipher Program encodes and decodes messages using a simple Caesar cipher. The program shifts characters in the alphabet to create encoded messages and reverses the process for decoding.

## Requirements

- No additional libraries are required as the program uses Python's built-in functionality for string manipulation.

## Environment Setup

No special environment setup is needed for this program as it only uses Python's standard library.

## Code

The main code for the Alphabet Cipher Program is as follows:  
```python  
# Alphabet list repeated to handle wrapping around when shifting characters  
alphabet = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm',  
 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z',  
 'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm',  
 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z',  
 'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm',  
 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z']  
  
def caesar(start\_text, shift\_amount, cipher\_direction):  
 end\_text = ""  
 # If decoding, reverse the shift amount  
 if cipher\_direction == "decode":  
 shift\_amount \*= -1  
 # Iterate through each character in the input text  
 for char in start\_text:  
 # Check if the character is in the alphabet list  
 if char in alphabet:  
 # Find the current position of the character  
 position = alphabet.index(char)  
 # Calculate the new position after shifting  
 new\_position = position + shift\_amount  
 # Append the new character to the result text  
 end\_text += alphabet[new\_position]  
 else:  
 # If the character is not in the alphabet, leave it unchanged  
 end\_text += char  
 # Print the final encoded or decoded text  
 print(f"Here's the {cipher\_direction}d result: {end\_text}")  
  
should\_end = False  
while not should\_end:  
 # Ask the user for the direction: encode or decode  
 direction = input("Type 'encode' to encrypt, type 'decode' to decrypt:\n")  
 # Ask the user for the text to encode or decode  
 text = input("Type your message:\n").lower()  
 # Ask the user for the shift amount  
 shift = int(input("Type the shift number:\n"))  
  
 # Ensure the shift amount is within the range of 0-25  
 shift = shift % 26  
  
 # Call the caesar function with the user inputs  
 caesar(start\_text=text, shift\_amount=shift, cipher\_direction=direction)  
  
 # Ask the user if they want to go again  
 restart = input("Type 'yes' if you want to go again. Otherwise type 'no'.\n")  
 if restart == "no":  
 should\_end = True  
 print("Goodbye")  
```

## Execution

1. Ensure Python is installed on your system.  
2. Save the provided code in a file named `alphabet\_cipher.py`.  
3. Open a terminal or command prompt.  
4. Navigate to the directory where `alphabet\_cipher.py` is saved.  
5. Run the program using the command:  
```  
python main.py  
```

## How It Works

1. Imports and Setup:  
 - No external libraries are imported; the program uses Python's built-in functionality.  
  
2. Function `caesar(start\_text, shift\_amount, cipher\_direction)`:  
 - Alphabet List: A repeated list of alphabet letters to handle character shifting.  
 - Direction Check: If the direction is "decode", the shift amount is reversed.  
 - Character Shifting: Each character in the input text is shifted by the specified amount.  
 - Non-alphabet Characters: Characters not in the alphabet list are left unchanged.  
 - Output: The final encoded or decoded text is printed.  
  
3. User Interaction:  
 - The user is prompted to enter the direction (encode or decode), the message, and the shift amount.  
 - The program continues to run until the user chooses to exit.

## Output

The program encodes or decodes a message based on user input, displaying the result for each operation.