Secret Code Generator – CLI

# Abstract

The Secret Code Generator is a command-line interface (CLI) based project that demonstrates classical and modern cryptography techniques. It allows users to encode and decode text using multiple ciphers including Caesar, Vigenère, Atbash, Monoalphabetic Substitution, Morse Code, and Base64. Additionally, the tool can generate secure random passwords. The project highlights the working of various encryption algorithms and provides a practical utility for learning and experimentation.

# Introduction

Cryptography has been an essential part of secure communication for centuries. This project implements different ciphers and encoding schemes in Python, accessible through a simple CLI. The program maintains readability of inputs by preserving spaces and punctuation while encoding text.

# Features

The project supports the following operations:

1. 1. Caesar Cipher (Encode/Decode)
2. 2. Vigenère Cipher (Encode/Decode)
3. 3. Atbash Cipher (Symmetric transform)
4. 4. Monoalphabetic Substitution (custom or auto-generated key)
5. 5. Morse Code (Encode/Decode)
6. 6. Base64 Encoding/Decoding
7. 7. Random password/code generator

# Methodology

The program is implemented in Python 3 and follows a modular structure:  
- Helper functions handle text normalization, shifting, and validation.  
- Each cipher has dedicated encode/decode functions.  
- A dictionary-based approach is used for Morse encoding/decoding.  
- Base64 leverages Python’s standard 'base64' library.  
- Random code generator uses 'SystemRandom' for secure randomness.  
- A menu-driven CLI allows users to select operations interactively.

# Sample Outputs

[Add screenshots of program execution here: e.g., Caesar encoding, Vigenère decoding, Morse encoding.]

# Conclusion

The Secret Code Generator project demonstrates both classical ciphers and modern encoding schemes in an interactive way. It helps learners understand encryption logic while providing a functional tool for encoding/decoding messages and generating random secure codes.