# Encode Caesar Cipher with Username and Password (encode) 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 program encodes a message with a Caesar cipher and stores it in a QR code image. The user must authenticate with a username and password, then provide a message and a PIN for encoding.

## Requirements

- getpass: Provides a secure way to handle password input.

- qrcode: A module to generate QR codes.

- string: Provides a collection of string constants, such as ASCII letters and digits.

## Environment Setup

1. Ensure Python is installed on your system.  
2. Install the required libraries using the following commands:  
```  
pip install qrcode[pil]  
```

## Execution

1. Save the provided code in a file named `caesar\_cipher\_qr\_encode.py`.  
2. Open a terminal or command prompt.  
3. Navigate to the directory where `caesar\_cipher\_qr\_encode.py` is saved.  
4. Run the program using the command:  
```  
python caesar\_cipher\_qr\_encode.py  
```

## How It Works

1. Function `authenticate()`:  
 - Prompts the user for a username and password.  
 - Returns True if they match the stored credentials, False otherwise.  
  
2. Function `get\_message()`:  
 - Prompts the user to enter a message.  
 - Ensures the message is between 1 and 1000 characters long.  
  
3. Function `get\_pin()`:  
 - Prompts the user to enter a private PIN between 0 and 100.  
 - Validates the input to ensure it is a number within the range.  
  
4. Function `caesar\_cipher(message, shift)`:  
 - Applies a Caesar cipher to the given message with the specified shift.  
 - Parameters: `message` (str): The message to be ciphered. `shift` (int): The number of positions to shift each character.  
 - Returns: The ciphered message.  
  
5. Function `generate\_qr\_code(data)`:  
 - Generates a QR code from the given data and saves it as `cipher\_message\_qr.png`.  
 - Parameters: `data` (str): The data to encode in the QR code.  
  
6. Main Function `main()`:  
 - Handles the workflow: authenticate, get message, get PIN, cipher the message, and generate a QR code.  
 - Prompts the user to enter the necessary information and performs the encoding and QR code generation.

## Output

The program encodes a user-provided message with a Caesar cipher using a PIN and stores the encoded message in a QR code image. The QR code is saved as `cipher\_message\_qr.png`.