

**Low Level Design Document**

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**Title – Desktop Client of Caesar Cipher in Graphical User Interface**

**Overview:** [**https://www.javatpoint.com/caesar-cipher-technique**](https://www.javatpoint.com/caesar-cipher-technique)

**Task: 1. Design a basic template for the GUI(Rough-Sketch).**

**Task: 2. Starting construction phase for the GUI.**

**Task: 3. Make a flowchart for the logic.**

**Task: 4. Implement the logic using the flowchart created in the previous phase.**

**Task: 5. Integrate the GUI app with the backend code for Caesar-Cipher.**

**Task: 6. Generating project report.**

**Task: 7. Uploading and committing changes on GitHub.**

**Task: 8. Embark the testing phase.**

**Task: 9. Resolving bugs if any through various rigorous processes of software testing.**

**Task: 10. Committing final changes on GitHub (Done after experimentation and rigorous testing).**

**Objectives:**

1.The main purpose of our project is to protect digital data confidentiality using an old school encryption technique known as **Caesar-Cipher**.

2. Another objective of our project can be to make an interactive app which shows the decryption of various messages (Cipher-Text) in real time so that students, professors and many others can benefit from our app as it would give them a platform to learn about this amazing technique not just briefly but in a detailed manner and using this they can dive deep into the world of cryptography as it would help in establishing a foundation for various enthusiasts who want to enter the world of cryptography, cybersecurity, etc. which can further open doors for many fields like blockchain technology, encrypted networking etc.

**So, let’s dive:**

**Tools: Visual Code Studio, Tkinter, Pycharm, Illustrator for logo, PyGame.**

**Brief** **analysis:**

One of the earliest and the simplest form of encryption technique, Caesar cipher involves replacing the letters of the alphabet with the letter three places down the current letter. It is a type of substitution cipher.

For Example:

Plain Text: HelloWorld

Cipher Text: KhoorZruog

The encryption/decryption of the letter is performed by first converting the letters into numbers, according to the scheme A=0, B =1, C =2,…..,X=23, Y=24, Z=25 and performing a modular arithmetic.

The Algorithm can be represented as follows:

Encryption: C = E(K,P) = (P + K)mod26

Decryption: P = D(K,C) = (C - K)mod26

Where,

C : Cipher Text

K : Key (Key=3 for Caesar cipher)

P: Plain Text

**Implementation:**

First, we will start by loading the required packages. Then we will make a basic template for our Graphical User Interface (GUI). We will utilise tkinter and pygame library to make out project interactive by creating a root widget, which is a window where we are going to attach our radio buttons and the text bar. We will set the dimensions of our window. We will use the mainloop() method when we want to run our program to get a window as displayed

Add a canvas to our window. Canvas is a rectangular area where we can place our text and widgets. We do attach our canvas to the root window, or the parent window and we give the same dimensions as our root window. We will also give a background colour to our canvas.

Then, we will create instances to set the font properties like size and style.

We will create a text bar where the user can enter the text. We use the Entry widget to enter and display single line of text.

We will create another text label which tells the user to “choose an operation” from the given options.

We now define a function in which will get the value of the radio button selected by the user and will perform either encryption or decryption based on the option selected by the user. The value of the radio button selected is stored in the variable we created above. To retrieve the value, we use get() method.

Now we define our Encryption and decryption function. The function basically traverses through the given text character by character. For each character, we convert it according to the algorithm we defined earlier. Then we return the newly generated text. We also create text labels which will show the output after the execution of the function.

We will create the radio buttons and link the radio buttons to the encryption and decryption function defined above.

Lastly, we will create a text label “Converted Text” below which the user can find the converted text.