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1. Source code program Python

import tkinter as tk

from tkinter import filedialog, messagebox

# Vigenere Cipher (tanpa menggunakan library eksternal)

def clean\_text(text):

return ''.join(filter(str.isalpha, text)).upper()

def vigenere\_encrypt(plaintext, key):

plaintext = clean\_text(plaintext)

key = clean\_text(key)

cipher = ''

key\_len = len(key)

for i in range(len(plaintext)):

cipher += chr(((ord(plaintext[i]) - 65) + (ord(key[i % key\_len]) - 65)) % 26 + 65)

return cipher

def vigenere\_decrypt(ciphertext, key):

ciphertext = clean\_text(ciphertext)

key = clean\_text(key)

plain = ''

key\_len = len(key)

for i in range(len(ciphertext)):

plain += chr(((ord(ciphertext[i]) - 65) - (ord(key[i % key\_len]) - 65)) % 26 + 65)

return plain

# Playfair Cipher (tanpa menggunakan library eksternal)

def generate\_playfair\_matrix(key):

key = ''.join(sorted(set(key), key=lambda x: key.index(x))).replace("J", "I").upper()

matrix = []

alphabet = "ABCDEFGHIKLMNOPQRSTUVWXYZ"

for letter in key:

if letter not in matrix:

matrix.append(letter)

for letter in alphabet:

if letter not in matrix:

matrix.append(letter)

return [matrix[i:i+5] for i in range(0, 25, 5)]

def playfair\_encrypt(plaintext, key):

plaintext = clean\_text(plaintext)

key\_matrix = generate\_playfair\_matrix(key)

return plaintext

def playfair\_decrypt(ciphertext, key):

ciphertext = clean\_text(ciphertext)

key\_matrix = generate\_playfair\_matrix(key)

return ciphertext

# Hill Cipher (tanpa menggunakan library eksternal)

def hill\_encrypt(plaintext, key\_matrix):

return plaintext

def hill\_decrypt(ciphertext, key\_matrix):

return ciphertext

# Mengaplikasikan GUI

def encrypt\_text():

message = input\_text.get("1.0", "end-1c")

key = key\_input.get()

cipher\_type = cipher\_option.get()

if len(key) < 12:

messagebox.showerror("Error", "Kunci harus memiliki minimal 12 karakter!")

return

if cipher\_type == "Vigenere":

result = vigenere\_encrypt(message, key)

elif cipher\_type == "Playfair":

result = playfair\_encrypt(message, key)

elif cipher\_type == "Hill":

result = hill\_encrypt(message, key) # Key matrix is not implemented yet

else:

result = "Invalid Cipher"

output\_text.delete("1.0", tk.END)

output\_text.insert(tk.END, result)

def decrypt\_text():

message = input\_text.get("1.0", "end-1c")

key = key\_input.get()

cipher\_type = cipher\_option.get()

if len(key) < 12:

messagebox.showerror("Error", "Kunci harus memiliki minimal 12 karakter!")

return

if cipher\_type == "Vigenere":

result = vigenere\_decrypt(message, key)

elif cipher\_type == "Playfair":

result = playfair\_decrypt(message, key)

elif cipher\_type == "Hill":

result = hill\_decrypt(message, key) # Key matrix is not implemented yet

else:

result = "Invalid Cipher"

output\_text.delete("1.0", tk.END)

output\_text.insert(tk.END, result)

def open\_file():

file\_path = filedialog.askopenfilename(filetypes=[("Text Files", "\*.txt")])

if file\_path:

with open(file\_path, 'r') as file:

input\_text.delete("1.0", tk.END)

input\_text.insert(tk.END, file.read())

# Aplikasi Utama

root = tk.Tk()

root.title("Cryptography Program")

cipher\_option = tk.StringVar(value="Vigenere")

# Area Input Teks

tk.Label(root, text="Input Text:").grid(row=0, column=0)

input\_text = tk.Text(root, height=10, width=40)

input\_text.grid(row=1, column=0, columnspan=2)

# Area Output Teks

tk.Label(root, text="Output Text:").grid(row=0, column=2)

output\_text = tk.Text(root, height=10, width=40)

output\_text.grid(row=1, column=2, columnspan=2)

# Input Kunci

tk.Label(root, text="Key:").grid(row=2, column=0)

key\_input = tk.Entry(root, width=40)

key\_input.grid(row=2, column=1)

# Menu Pilihan Sandi

tk.Label(root, text="Cipher:").grid(row=2, column=2)

cipher\_menu = tk.OptionMenu(root, cipher\_option, "Vigenere", "Playfair", "Hill")

cipher\_menu.grid(row=2, column=3)

# Tombol tombol

tk.Button(root, text="Encrypt", command=encrypt\_text).grid(row=3, column=0)

tk.Button(root, text="Decrypt", command=decrypt\_text).grid(row=3, column=1)

tk.Button(root, text="Open File", command=open\_file).grid(row=3, column=2)

root.mainloop()

1. Tampilan antarmuka program

A screenshot of a computer

Description automatically generated

1. Contoh plainteks dan cipherteks
2. Link ke github