Hackathon Project

# Project Title:

Base64 Encoder/Decoder using Tkinter

# Student Name(s) and Roll Number(s):

P. Sandeep - 25B21A4630

V. Avinash Yadav - 25B21A4618

N. Hiranya Naga Manikanta - 25B21A4617

P. Leela Charan Santhosh - 256Q1A4602

I. Anand Kumar - 25B21A4636

# Department:

Computer Science and Cyber Security

# Institution:

Kakinada Institute of Technology

# Academic Year:

2025

# Problem Statement

The project aims to provide a simple graphical interface to encode and decode text using Base64 encoding. This tool solves the problem of manually converting data to Base64 and vice versa, which is commonly required in data handling, secure communication, and software development tasks.

# How We Do It

We developed a Python-based GUI application using Tkinter, which allows users to input text, encode it to Base64, and decode Base64 text back to readable text. The application leverages Python's built-in 'base64' module for encoding and decoding operations. The interface is user-friendly, providing clear input and output text areas with buttons for encoding and decoding.

# Conclusion

The Base64 Encoder/Decoder GUI project provides an efficient and easy-to-use tool for converting text to and from Base64 format. It simplifies tasks that involve data encoding, improves productivity, and demonstrates the application of Python and Tkinter in building practical software tools. The project is lightweight, intuitive, and can be further enhanced with additional features in the future.

# Python Code for Base64 Encoder/Decoder

import base64  
import tkinter as tk  
from tkinter import messagebox  
  
def encode\_text():  
 text = input\_text.get("1.0", tk.END).strip()  
 if text:  
 encoded = base64.b64encode(text.encode("utf-8")).decode("utf-8")  
 output\_text.delete("1.0", tk.END)  
 output\_text.insert(tk.END, encoded)  
 else:  
 messagebox.showwarning("Warning", "Please enter text to encode!")  
  
def decode\_text():  
 text = input\_text.get("1.0", tk.END).strip()  
 if text:  
 try:  
 decoded = base64.b64decode(text.encode("utf-8")).decode("utf-8")  
 output\_text.delete("1.0", tk.END)  
 output\_text.insert(tk.END, decoded)  
 except Exception:  
 messagebox.showerror("Error", "Invalid Base64 text!")  
 else:  
 messagebox.showwarning("Warning", "Please enter text to decode!")  
  
root = tk.Tk()  
root.title("Base64 Encoder / Decoder")  
root.geometry("400x400")  
root.resizable(False, False)  
  
tk.Label(root, text="Enter text:", font=("Arial", 12, "bold")).pack(pady=5)  
input\_text = tk.Text(root, height=5, width=45)  
input\_text.pack()  
  
tk.Button(root, text="Encode", command=encode\_text, bg="lightgreen", width=15).pack(pady=5)  
tk.Button(root, text="Decode", command=decode\_text, bg="lightblue", width=15).pack(pady=5)  
  
tk.Label(root, text="Output:", font=("Arial", 12, "bold")).pack(pady=5)  
output\_text = tk.Text(root, height=5, width=45)  
output\_text.pack()  
  
root.mainloop()