

# Implementation Outline

## 1. Tech Stack

Python (for simplicity & cross-platform use)

Tkinter → GUI

googletrans library → Translation (Google Translate API unofficial)

Optional: pyperclip for copy-to-clipboard, gTTS for text-to-speech

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## 2. Features

Input text box for the user

Dropdown menus for source & target languages

Translate button

Output area for translated text

Optional:

Copy to Clipboard

Listen to translation (Text-to-Speech)

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### 3. Example Code (Python + Tkinter + googletrans)

```
import tkinter as tk

from tkinter import ttk, messagebox

from googletrans import Translator, LANGUAGES

import pyperclip

from gtts import gTTS

import os


# Translator object
translator = Translator()


def translate_text():
    try:
        src_lang = source_lang.get()

        tgt_lang = target_lang.get()

        text = input_text.get("1.0", tk.END).strip()
```

if not text:

    messagebox.showwarning("Warning", "Please enter text to translate.")

    return

result = translator.translate(text, src=src\_lang, dest=tgt\_lang)

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

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

except Exception as e:

    messagebox.showerror("Error", str(e))

def copy\_to\_clipboard():

    pyperclip.copy(output\_text.get("1.