

PROJECT REPORT ON LANGUAGE TRANSLATOR GUI

**(In partial fulfilment of the requirement of CBSE for all India senior secondary examination-2023 for class 12, Computer Science)**

**SUBMITTED BY**

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**BOARD ROLL NO.:**

**UNDER THE GUIDANCE OF**

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**COMPUTER SCIENCE PROJECT**

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(**CONVERT TEXT IN DIFFERENT LANGUAGES)**

**CERTIFICATE**

This is to certify that **PRIYANSH AGGARWAL**, student of class 12TH D have successfully completed the project on Language Translator GUI under the guidance of Mrs.Simrat Kaur, Faulty of Computer Science, St. Xavier’s School, Rohini, New Delhi during the academic year 2022-23.

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**ACKNOWLEDGEMENT**

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**LANGUAGE TRANSLATOR GUI**

**INTRODUCTION**

Translation refers to the process of converting a typed source language text clearly completely, accurately, and appropriately in a target language. Translation allows information to be transferred across languages, expanding accessibility of the information.

Translation is an activity, a product, and a process. As an activity, translation is a complex act that requires close reading of a text in the source language, understanding its meaning, and creating an equivalent text in the target language.

The word “TRANSLATION” also refers to the product of this activity: the final target language text that will be published or distributed. Although this document will touch on these aspects of translating, we will focus primarily on the process of creating a translation.

**OBJECTIVE**

The goal of translation practice for non-specialists is **to found the language skills of the learner,** to refine their thematic and cultural knowledge and to encourage them to think and to react.

The objective of language translator project is:

1. Develop a system which able to do conversion between the languages
2. Provide an easy and simple for translation
3. Endow good experience to the user
4. Translate almost each language

**APPLICATIONS**

In today’s ever-changing business environment, more and more organizations are going global to expand their operations and reach a broader audience. It implies dealing with partners, customers, and employees of different cultures and languages. Connecting with such people in various countries across the world comes with a lot of challenges. The most common one is language barriers.

Let’s have a look at the applications of language translation in the modern world.

* **Technical Translation**If businesses want to access the global audience; they must translate all their technical documents into the languages of their target areas. This is when the technical translation services are required.
* **Language Translation in Healthcare**

If you’re in the healthcare industry, the need for language translation is even higher because of the involvement of human beings. Any minor error can be a threat to their lives. Therefore, hiring a professional and experienced translator is exceptionally crucial for effective communication between the doctor, nurses, and patients. 

* **Translation in Travel & Tourism Industry**

In the travel and tourism sector, language translation is required for a variety of things. For example, the translation of travel documents, brochures, and terms and conditions documents is crucial for interacting with people of different regions.   
While dealing with global clients and other staff members, you have no time for language barriers to get in the way. Sure, Google Translator can be useful to some extent, but it is often misleading. Therefore, choosing a professional translator for your business can help break down such barriers and ensure that your message is communicable to a worldwide audience.

**PROJECT REQUIREMENTS**

**Minimum Requirements:**

Hardware:

* Computer System with 1GB RAM and 128GB SSD
* Processor : Intel Celeron

Software:

* Python v3.5
* Windows 8.0

**Recommended:**

Hardware:

* Computer System with 2GB RAM and 512GB SSD
* Processir: Intel Core i5 8TH gen

Software:

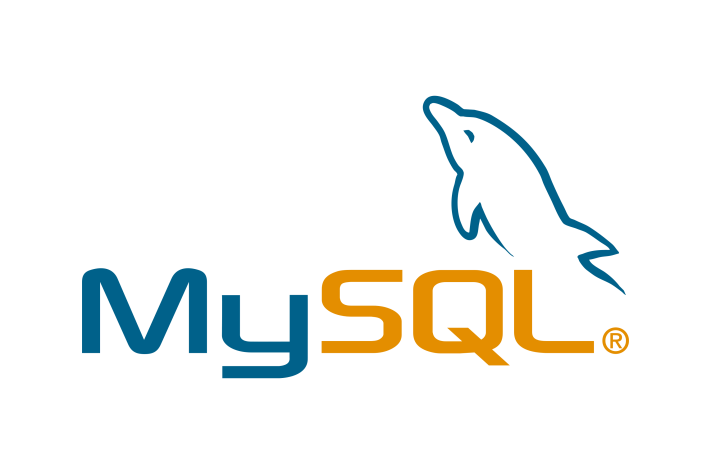
* Python v3.9
* Windows v10

**DEVELOPMENT TOOLS AND TECHNOLOGIES**

PYTHON: For Interface Visibility to End User

MySql: For storing or translated language

**PYTHON MY SQL**

** **

**PYTHON AS FRONT END**

**PYTHON** is an interpreted high-level general-purpose programming language.Its design philosophy emphasizes code readability with its use of significant indentation.Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large scale projects.

Python uses dynamic typing and a combination of reference counting and a cycle-detecting garbage collector for memory management.It also features dynamic name resolution(late binding), which binds method and variable names during program execution.

Python have tones of modules, some are implicity installed during the installation of python and for other we have to install them explicitly using pip.And, **tkinter** module is among one of them.

Python as big lidt of good features, few are listedbelow.

* It supports functional and structured programming methods as well as OOP.
* It can be used as a scripting language or can be compiled to byte-code for building large applications.
* It provides very high-level dynamic data types and supports dynamic type checking.
* It supports automatic garbage collection.
* It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java

A Python library is **a collection of related modules**. It contains bundles of code that can be used repeatedly in different programs. It makes Python Programming simpler and convenient for the programmer.

**Example :**

* TensorFlow.
* Scikit-Learn.
* Numpy.

**MySql as Backend**

A **Relational Database Management System (RDBMS)** is software that:

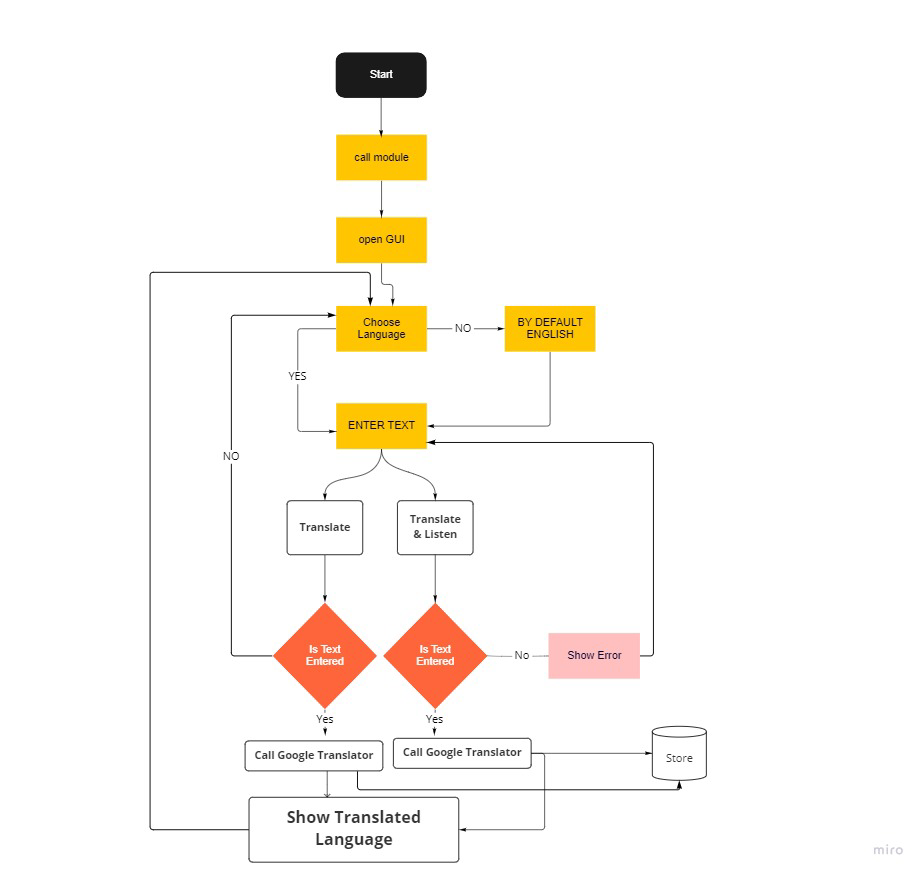
* Enables you to implement a database with tables, columns and indexes.
* Guarantees the Referential Integrity between rows of various tables.
* Updates the indexes automatically.
* Interprets an SQL query and combines information from various tables.

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons

* MySQL is released under an open-source license. So you have nothing to pay to use it.
* MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.
* MySQL uses a standard form of the well-known SQL data language.
* MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.
* MySQL works very quickly and works well even with large data sets.
* MySQL is very friendly to PHP, the most appreciated language for web development.

**The following are the most important features of MySQL:**

* Relational Database Management System (RDBMS) MySQL is a relational database management system.
* Easy to use. MySQL is easy to use.
* It is secure
* Client/ Server Architecture.
* High Flexibility.

**PROJECT DIAGRAM **

**PYTHON MODULES AND FUNCTIONS**

* **Modules**

1. **OS:** The OS module in Python provides functions related to operating systems i.e allowing creation and removing of a directory (folder), fetching its contents, changing and identifying the current directory, etc
2. **Playsound:** playsound is a Python module by which users can play sound in a single line of code. It is a cross - platform module which is a single function without any dependencies for playing sounds and audios
3. **gTTs:** gTTS (Google Text-to-Speech)is a Python library and CLI tool to interface with Google Translate text-to-speech API.
4. **Mysql.connector:** MySQL Connector/Python enables Python programs to access MySQL databases, using an API
5. **Tkinter:** Tkinter is the Python interface to Tk, which is the GUI toolkit for Tcl/Tk. Tcl (pronounced as tickle) is a scripting language often used in testing, prototyping, and GUI development.
6. **Translate:** Translate is a simple but powerful translation tool written in python with support for multiple translation providers. The biggest reason to use translate is to make translations in a simple way without the need of bigger effort and can be used as a translation tool like command line

* **Functions**

1. **TK():** It helps to display the root window and manages all the other components of the tkinter application.
2. **TK.Title():** Python Tkinter ‘**title**‘ refers to the name provided to the window. It appears on the top of the window & mostly found on the top left or centre of the screen.
3. **print():** print a message on the screen
4. **TK.minsize():** Takes two values as arguments and decides the sixe of GUI when minimized
5. **TK.maxsize():** Takes two values as arguments and decides the sixe of GUI when maximized
6. **ttk.button():**ttk.Button(container, text, command) In this syntax: The container is the parent component on which you place the button. The text is the label of the button. The command specifies a callback function that will be called automatically when the buttonclicked**.**
7. **ttk.label():**Tkinter Label widget is used to display a text or image on the screen.
8. **ttk.grid():**This geometry manager organizes widgets in a table-like structure in the parent widget.
9. **ttk.combobox():**The ttk. Combobox widget combines a text field with a pop-down list of values.
10. **Str():**returns the string version of the object
11. **Get():**returns the value of the item with the specified key.
12. **Insert():**used to insert the given element at a particular index in a list

**UDF**

**A user-defined function (UDF) is a function provided by the user of a program or environment, in a context where the usual assumption is that functions are built into the program or environment**

**Btnctrl():** This function is created in project for the purpose of translating the given text into different language (langauge as selected throgh drop down option) and storing the information in mysql database using mysql connector. Function is called on clcik on “Translate” Button.

**Btnctrl1():** This function is created in project for the purpose of translating the given text into different language (langauge as selected throgh drop down option) and as well as listening of converted text throgh internal or external audio devices. Function also store the information in mysql database using mysql connector. Function is called on clcik on “Translate & Listen” Button. Google gTTS library is used to convert the text into speech

**FUTURE SCOPE OF THIS PROJECT**

The future of translation will cover more cultures, as the internet continues to penetrate in emerging countries worldwide.Besides the top languages for translation,the software will have to provide accurate solutions to communicate with audiences who speak less knows dialects

Also we can note down that with few more changes this project can be made to have the capacity to listen to things and convert it into text.

**SOURCE CODE**

#importing modules

from tkinter import \*

from translate import Translator

from tkinter import ttk,messagebox,Text

from gtts import gTTS

from playsound import playsound

import os

import mysql.connector

from mysql.connector import Error

# initializing window

window = Tk()

window.title("Language Translation Project")

window.minsize(800,200)

window.maxsize(800,200)

#Source language combo box

label1=ttk.Label(window, text = "Source Language:",font = ("Times New Roman", 10))

label1.grid(row = 0, column = 0,padx = 10, pady = 25)

combo1=ttk.Combobox(window,state='readonly')

combo1['values'] = ("English","spanish","German","French","Italian")

combo1.grid(row = 0,column = 1)

combo1.current(0)

#Destination language combo box

label2=ttk.Label(window, text = "Translated Language:",font = ("Times New Roman", 10))

label2.grid(row = 0,column = 4, padx = 10, pady = 25)

combo2=ttk.Combobox(window,state='readonly')

combo2['values'] = ("English","spanish","German","French","Italian")

combo2.grid(row = 0,column = 5)

combo2.current(0)

#source/Dest. input language box

text1=Text(window, width = 20, height = 5,wrap = WORD, padx = 5, pady = 10)

text1.grid(row = 15,column = 1 )

text2=Text(window, width = 25, height = 5,wrap = WORD, padx = 5, pady = 10)

text2.grid(row = 15,column = 5)

def btnctrl():

try:

source\_lan=str(combo1.get())

dest\_lan=str(combo2.get())

input\_text=text1.get("1.0","end-1c")

translator= Translator(from\_lang=source\_lan[:3],to\_lang=dest\_lan[:3])

translation = translator.translate(input\_text)

print(translation)

text2.delete(1.0,"end")

output\_text=text2.insert(1.0,str(translation))

output\_text=text2.get("1.0","end-1c")

#storing in database

try:

connection = mysql.connector.connect(host='localhost',

user='root',

password='Admin@1234')

if connection.is\_connected():

db\_Info = connection.get\_server\_info()

print("Connected to MySQL Server version ", db\_Info)

cursor = connection.cursor()

cursor.execute("create database if not exists translated")

cursor.execute("use translated")

cursor.execute("create table if not exists translated\_data(source\_lan longtext,dest\_lan longtext,source\_data longtext,dest\_data longtext)")

cursor.execute("insert into translated\_data(source\_lan,dest\_lan,source\_data,dest\_data) values('"+source\_lan+"','"+dest\_lan+"','"+input\_text+"','"+output\_text+"');")

cursor.execute("commit;")

except Exception as e:

print("Error while connecting to MySQL" + str(e))

finally:

if connection.is\_connected():

cursor.close()

connection.close()

print("MySQL connection is closed")

except Exception as e:

messagebox.showerror("try again")

print(e)

def btnctrl1():

try:

source\_lan=str(combo1.get())

dest\_lan=str(combo2.get())

input\_text=text1.get("1.0","end-1c")

translator= Translator(from\_lang=source\_lan[:3],to\_lang=dest\_lan[:3])

translation = translator.translate(input\_text)

text2.delete(1.0,"end")

output\_text=text2.insert(1.0,str(translation))

output\_text=text2.get("1.0","end-1c")

if dest\_lan[:2].lower()=="ge":

langg="de"

myobj=gTTS(text=output\_text,lang=langg,slow=False)

elif dest\_lan[:2].lower()=="sp":

langgg="es-ES"

myobj=gTTS(text=output\_text,lang=langgg,slow=False)

else:

myobj=gTTS(text=output\_text,lang=dest\_lan[:2].lower(),slow=False)

myobj.save("test.mp3")

playsound("test.mp3",False)

os.remove("test.mp3")

try:

connection = mysql.connector.connect(host='localhost',

user='root',

password='Admin@1234')

if connection.is\_connected():

db\_Info = connection.get\_server\_info()

print("Connected to MySQL Server version ", db\_Info)

cursor = connection.cursor()

cursor.execute("create database if not exists translated")

cursor.execute("use translated")

cursor.execute("create table if not exists translated\_data(source\_lan longtext,dest\_lan longtext,source\_data longtext,dest\_data longtext)")

cursor.execute("insert into translated\_data(source\_lan,dest\_lan,source\_data,dest\_data) values('"+source\_lan+"','"+dest\_lan+"','"+input\_text+"','"+output\_text+"');")

cursor.execute("commit;")

except Exception as e:

print("Error while connecting to MySQL" + str(e))

finally:

if connection.is\_connected():

cursor.close()

connection.close()

print("MySQL connection is closed")

except Exception as e:

messagebox.showerror("try again")

print(e)

#Button

Text\_Convert = ttk.Button(window, text ="Translate", command = btnctrl)

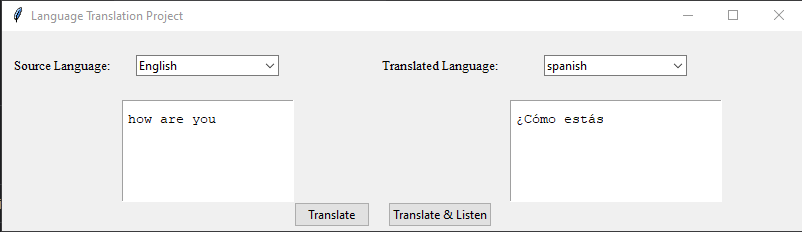
Text\_Convert.grid(row = 84,column = 2)

Text\_N\_Audio\_Convert = ttk.Button(window, text ="Translate & Listen", command = btnctrl1)

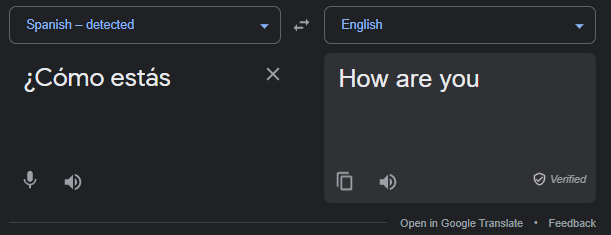
Text\_N\_Audio\_Convert.grid(row = 84,column = 4)

**OUTPUT SCREENSCHOTS**

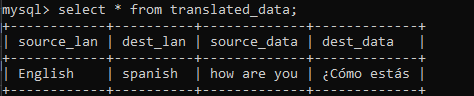
**Test Case:1**

****

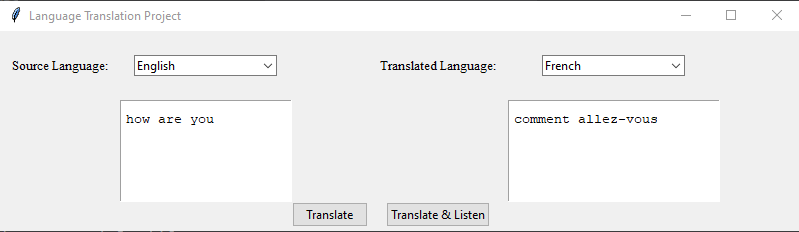
Test check at Google:

****

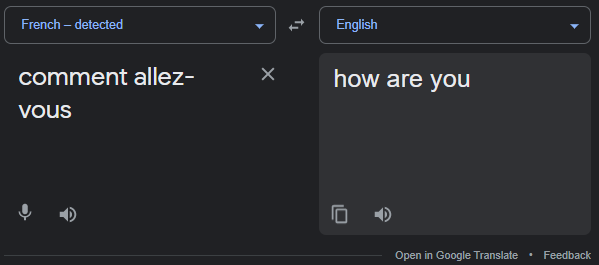
Entry in Database:

****

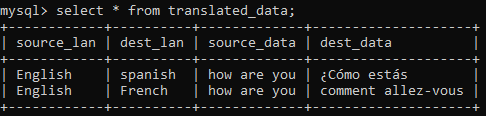
**Test Case:2**

****

Test check at Google:

****

Entry in Database:

****

**CONCLUSION**

In conclusion,I think that translation is necessary, or rather, indespensable, to communicate and bring a concept closer to people who belong to different cultural realities. An important element for me is taking into account that every communicative act has a communicative residue;a concept, word, or expression that seems to make our translation come to a standstill and to make it impossible to continue.So it is essential to have the ability or skill to see which parts of the message could be misunderstood and which tools could be used to compensate for this residue.

Attention must then be paid to the reader and the context; because every discourse we make, written or oral, is influenced by its cultural context. It is as though there were a border that united two cultures and separated them at the same time, making the differences clear. For me it is here, on this border, where translation takes place.

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