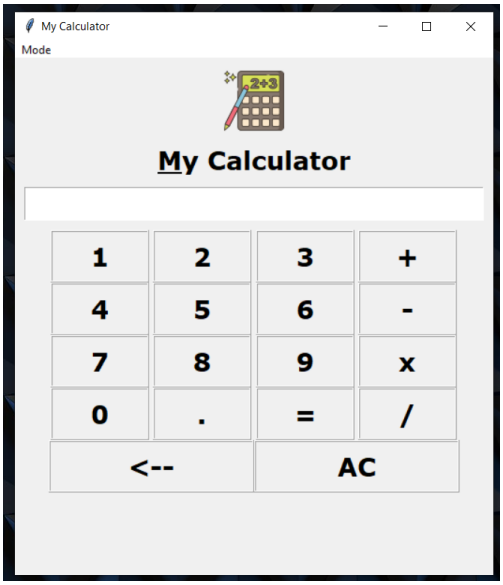
Project Name: GUI Smart-Voice Scientific Calculator

Table of Contents

Demo
Overview
Motivation
Technical Aspect
Installation
Run/How to Use/Steps
Directory Tree/Structure of Project
To Do/Future Scope
Technologies Used/System Requirements/Tech Stack
Credits

Demo



Overview

This is a smart-voice scientific digital-ware for performing calculations.
This repository contains the code for smart scientific calculator using one of the python libraries "Tkinter" Library. Also used pyttsx3 libraries to transform it from simple to smart.
The purpose of creating this repository is to help the people who are just new to tkinter along with exceeding capability to more than simple interface.
These python libraries helped to outdo from basic to advanced operations. Also raised knowledge in discovering these libraries with practical use of it.
It helps to perform not only normal operations but also mathematical or scientific calculations.
The screenshot will help you in understanding the flow of output. You can take video of working.

Motivation

The idea of making smart scientific calculator came to my mind as this is the device without voice but with hands that most of the local shopkeepers and even people uses in their daily life. That led me to create this particular project as to help people who do not have their hands or old age people can use calculator with their voice. Otherwise I also thought that normal/any people who have luggage in their hands and because of that reason if they cannot press button then by using voice also, they can do calculations. One of the most important reason to create is for students who uses scientific calculator. This just gives wings to simple app and it will provide little different experience to them. It is a step to enter into revolutionary future technological world. It helped me to expand the scope of mental ability with technical skills. This taught me amalgation of intangible concepts, logical thinking with python knowledge. Scientific Calculator eliminate tedious computations and appreciate logic over it. It is not handheld so no need to carry it, you can walk freely and just open app on device where you wish to work.

Technical Aspect

Python when combined with Tkinter library provides a fast and easy way and is used to create GUI applications.
You don’t need to worry about the installation of the Tkinter module separately as it comes with Python already.
It gives a powerful object-oriented interface to the Tk GUI toolkit.
Python when integrated with pyttsx3 library then provides user-friendly application.
It provides handy to use flow for anyone who is using it as you saw in demo.
pyttsx3 is cross-platform a text-to-speech conversion library and major advantage is it also works offline and it is compatible with python2 as well as python3. That is, it is platform independent.

Installation

Using intel core i5 9th generation with NVIDIA GFORECE GTX1650.
Windows 10 Environment Used.
Already Installed Anaconda Navigator for Python 3.x
The Code is written in Python 3.8.
If you don't have Python installed then please install Anaconda Navigator from its official site.
If you are using a lower version of Python you can upgrade using the pip package, ensuring you have the latest version of pip, *python* -m pip install --*upgrade pip and press Enter*.

Run/How to Use/Steps

Keep your internet connection on while running or accessing files and throughout too.
Follow this when you want to perform from scratch.

Open Anaconda Prompt, Perform the following steps:

Creating Virtual Environment named “smartvoice”. You can give any name of your choice.

conda create -n smartvoice python=3.6

y

conda activate smartvoice

pip install pyttsx3

cd <PATH>

You can also create requirement.txt file as, pip freeze > requirements.txt

run files.

Creating Virtual Environment is necessary so that you do not have to install packages every-time you run the code. Once all required packages are installed in virtual environment then you only need to access/open the virtual environment and run the final file.

Follow this when you want to just perform on local machine.
Download ZIP File.
Right-Click on ZIP file in download section and select Extract file option, which will unzip file.
Move unzip folder to desired folder/location be it D drive or desktop etc.
Open Anaconda Prompt, write cd <PATH> and press Enter.
eg: cd C:\Users\Monica\Desktop\Projects\Python Projects 1\Tkinter\Scientific_Calculator_with_voice
Now, open virtual environment that you have created ie
conda activate smartvoice
In Anconda Prompt, pip install -r requirements.txt to install all packages.
In Anaconda Prompt, write python <filename>.py and press Enter. That is,
In Anaconda Prompt, write python main.py and press Enter.
Then, you can see smart scientific calculator GUI on desktop as well as console and you can perform relevant operations.

You can also perform scientific operations by selecting mode tab on upper left corner.
By Clicking on X button /Speaking Close, it will close the interface.
You can also minimize and maximize it.
You can also run all codes from Command Prompt instead of Anaconda Prompt after setting Environmental Variable Path Settings.

Note: I have created smartvoice virtual environment and used for more than one project and therefore you might see more than one unused library in requirements.txt especially for this project so do not worry because I am using them in another project under similar virtual environment. Whenever you get No Module <name of package> Error then see its PyPI Documentation and Install it using pip install <package-name> written there. In some cases, you need to install its .whl file which I will inform you if it's necessary.

Note: cd <PATH>
[Go to Folder where file is. Select the path from top and right-click and select copy option and paste it next to cd one space <path> and press enter, then you can access all files of that folder] [cd means change directory]

Directory Tree/Structure of Project

Folder: Tkinter > Scientific_Calculator_with_voice

audio_helper.py

main.py

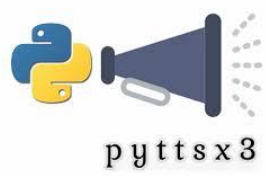
To Do/Future Scope

It is possible to custom built it depending on various requirements. Then it will transcend all its execution.

Can also add gaze-controlled ability to it.

Can also work with light-pen as we use for smartphones.

Technologies Used/System Requirements/Tech Stack



Credits

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