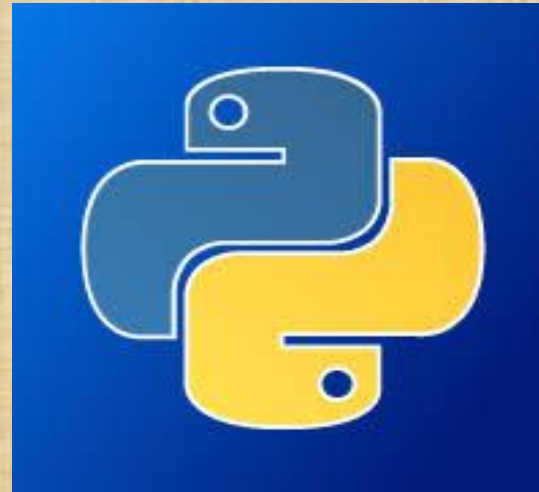


# VOICE OPERATED CALCULATOR

## USING PYTHON



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# AIM

## **AIM:TO MAKE/DESIGN VOICE OPERATED CALCULATOR USING PYTHON LIBRARIES**

# ADVANTAGES

- User friendly
- Specially made for physically disabled people
- We can design many different utility software using same software.
- Any one can operate it easily

# REQUIREMENTS

- Window(64 BIT) or IOS MAC operating system
- PYTHON 3.7/3.8/3.9
- PyAudio installed
- Speech Recognition installed
- Math
- Pyttx3

# PYTHON

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



Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.[29]

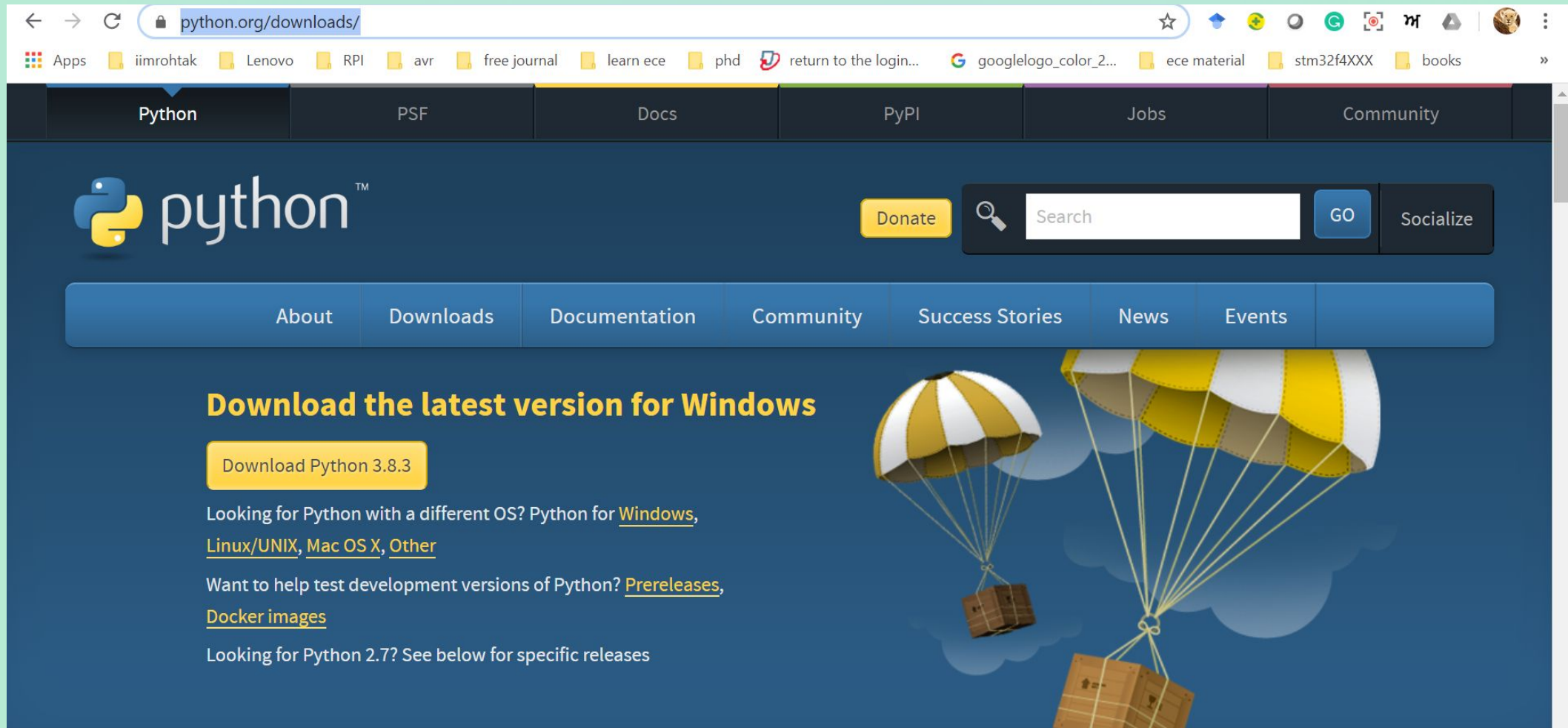
Python was created in the late 1980s, and first released in 1991, by Guido van Rossum as a successor to the ABC programming language. Python 2.0, released in 2000, introduced new features, such as list comprehensions, and a garbage collection system with reference counting, and was discontinued with version 2.7 in 2020.[30] Python 3.0, released in 2008, was a major revision of the language that is not completely backward-compatible and much Python 2 code does not run unmodified on Python 3.

Python interpreters are supported for mainstream operating systems and available for a few more (and in the past supported many more). A global community of programmers develops and maintains C-Python, a free and open-source[31] reference implementation. A non-profit organization, the Python Software Foundation, manages and directs resources for Python and C-Python development. It currently ties with Java as the second most popular programming language in the world.

# HOW TO DOWNLOAD PYTHON



# Visit: [www.Python.org/downloads](http://www.Python.org/downloads)



The screenshot shows the Python.org/downloads website. The browser's address bar displays 'python.org/downloads/'. The website's navigation bar includes links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this, a secondary navigation bar features links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area prominently displays the heading 'Download the latest version for Windows' in yellow text. Directly beneath this heading is a yellow button labeled 'Download Python 3.8.3'. Further down, the text provides links for other operating systems: 'Looking for Python with a different OS? Python for [Windows](#), [Linux/UNIX](#), [Mac OS X](#), [Other](#)'. It also includes links for development versions: 'Want to help test development versions of Python? [Prereleases](#), [Docker images](#)'. A final line of text states: 'Looking for Python 2.7? See below for specific releases'. The background of the main content area features a blue sky with white clouds and two yellow and white striped parachutes carrying cardboard boxes.





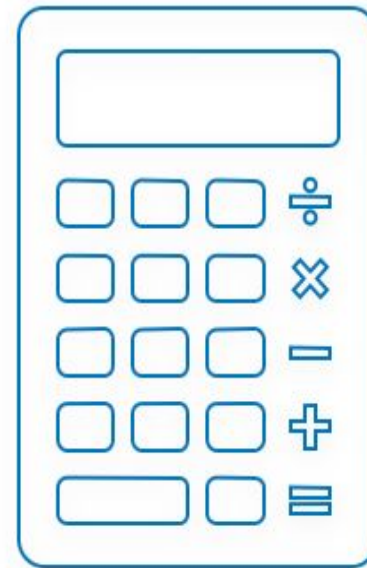
# MODULE USED IN THIS PROGRAM

- Math
- PyAudio
- Speech Recognition
- Pyttx3

# MATH

## Python Math Module

Import | Functions | Examples



**Table 2.6: USEFUL AUGMENT ASSIGNMENT OPERATORS**

Operator To	Example	Is Equivalent
<code>*=</code>	<code>x *= 5</code>	<code>x = x * 5</code>
<code>/=</code>	<code>x /= 5</code>	<code>x = x / 5</code>
<code>%=</code>	<code>x %= 5</code>	<code>x = x % 5</code>
<code>+=</code>	<code>x += 5</code>	<code>x = x + 5</code>
<code>-=</code>	<code>x -= 5</code>	<code>x = x - 5</code>



This module provides access to the mathematical functions defined by the C standard.

These functions cannot be used with complex numbers; use the functions of the same name from the `cmath` module if you require support for complex numbers. The distinction between functions which support complex numbers and those which don't is made since most users do not want to learn quite as much mathematics as required to understand complex numbers. Receiving an exception instead of a complex result allows earlier detection of the unexpected complex number used as a parameter, so that the programmer can determine how and why it was generated in the first place.

# PYAUDIO



# INTRODUCTION

py-Audio provides Python bindings for Port-Audio, the cross-platform audio I/O library. With py-Audio, you can easily use Python to play and record audio on a variety of platforms.

Command to install: `pip install PyAudio`

# SPEECH RECOGNITION





# INTRODUCTION

Speech Recognition is an important feature in several applications used such as home automation, artificial intelligence, etc.

# Installation required:

Python Speech Recognition module:

```
pip install speechrecognition
```

PyAudio: Use the following command for linux users

```
sudo apt-get install python3-pyaudio
```

Windows users can install pyaudio by executing the following command in a terminal

```
pip install pyaudio
```

Python pytsx3 module:

```
pip install pytsx3
```

Speech Input Using a Microphone and Translation of Speech to Text

Allow Adjusting for Ambient Noise: Since the surrounding noise varies, we must allow the program a second or too to adjust the energy threshold of recording so it is adjusted according to the external noise level.

Speech to text translation: This is done with the help of Google Speech Recognition. This requires an active internet connection to work. However, there are certain offline Recognition systems such as PocketSphinx, but have a very rigorous installation process that requires several dependencies. Google Speech Recognition is one of the easiest to use.

# PYTTX3



# Introduction

**pyttsx3** is a text-to-speech conversion library in Python. Unlike alternative libraries, it works offline and is compatible with both Python 2 and 3. An application invokes the `pyttsx3.init()` factory function to get a reference to a `pyttsx3. Engine` instance. it is a very easy to use tool which converts the entered text into speech.

`pip install pyaudio`

Python `pyttsx3` module:

`pip install pyttsx3`

Speech Input Using a Microphone and Translation of Speech to Text



# OUTPUTS

```
*Python 3.8.6 Shell*
File Edit Shell Debug Options Window Help
Python 3.8.6 (tags/v3.8.6:db45529, Sep 23 2020, 15:52:53) [MSC v.1927 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Admin\AppData\Local\Programs\Python\Python38\calculator.py =
Hello! How may I help you?
Listening...
Recognizing...
User said: product

Listening...
Recognizing...
User said: 95

The first number is: 95.0
Listening...
Recognizing...
User said: 64

The second number is: 64.0
The product is: 6080.0
The program ended!, We welcome your feedbacks:
```

THANK YOU!