



Welcome to the Introduction to Python Pre-Workshop Set up!

In this workshop, my aim is to kickstart your Python coding journey!

We will begin with a straightforward beginner's lesson, then move on to a fun project that you can showcase on Github!

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Python Introduction:

- **Why Python?**
- **Basic Syntax and Concepts**
 - Variables
 - Data Types (String, Integers and Floats, Booleans)
 - Functions (Defining/Calling Functions, Parameters and Return Values)
- **Data Structures:**
 - Lists & Dictionaries
- **Modules and Packages**
 - Importing Modules
 - Using External Packages
- **Input and Output**
 - **File Handling:**
 - Reading Files: Opening and reading from image files using PIL.
 - Writing Files: Saving text to audio files using gTTS output.
 - **Print Statements:** For displaying the extracted text for debugging.

****Please Note**** If you have **NOT** set up python on Visual Studio Code, and still wish to participate, don't worry! You can still follow along for this section of the workshop using the following Online Python IDE: <https://www.online-python.com/>

Python Project:

Main Objective: Convert an image to text, then text to audio.

Libraries We Will Use:

- **pytesseract:** A Python wrapper for Google's Tesseract-OCR Engine. It is used for optical character recognition (OCR) to recognize text from images.
- **PIL (Python Imaging Library):** also known as Pillow in its current version. A library for opening, manipulating, and saving many different image file formats. It is used in this project to load the image file.
- **gTTS (Google Text-to-Speech):** A Python library and CLI tool to interface with Google Translate's text-to-speech API. Converts the extracted text into spoken words in the form of an MP3 file.
- **pygame:** Pygame is a cross-platform set of Python modules designed for writing video games, including graphics and sound libraries built on the SDL library. In this project we will use it to Manage audio playback of the generated speech file.

Here is a checklist overview of things you will need prior to the Python Workshop!

Your Checklist:

- ☐ I have Visual Studio Code **(Step 1)**
 - ☐ I have downloaded Python **(Step 1)**
 - ☐ I have created a folder on my Desktop named "Image to Audio Project" **(Step 2)**
 - ☐ I have opened the "Image to Audio Project" folder in vscode **(Step 2)**
 - ☐ I have installed pytesseract and Tesseract-OCR **(Step 3)**
 - ☐ I have my Folder Destination Path **(Step 3)**
 - ☐ I have installed Pillow pytesseract gTTS using the vscode terminal **(Step 4)**
 - ☐ I have installed pip install pygame using the vscode terminal **(Step 4)**
-

Step 1: Download Visual Studio Code and the Install Python Extension

- **For Windows:**

Please follow this video. Completing timestamp **2:26-3:55** is optional

https://www.youtube.com/watch?v=cUAK4x_7thA

- **For MacOS:**

Please follow this video up until timestamp **2:09**

<https://www.youtube.com/watch?v=LhSdBC2vDZE>

Please follow this video up until timestamp **2:11**

<https://www.youtube.com/watch?v=QmFOl8GYz6E>

Your Checklist:

- ☐ I have Visual Studio Code
- ☐ I have downloaded Python

Step 2: Setting up the Image to Audio Project

- Create a **folder** on your desktop named **"Image to Audio Project"**
- Open **vscode** and on the top left click on **File**, then **Open Folder**, then **Desktop**. Find and select the **Image to Audio Project** folder and click **Open Folder**.

Your Checklist:

- ☐ I have created a folder on my Desktop named **"Image to Audio Project"**
- ☐ I have opened the **"Image to Audio Project"** folder in vscode

Step 3: Installing The Necessary Libraries

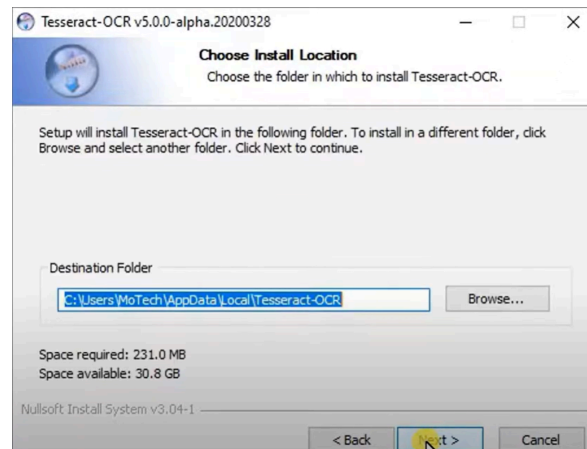
- **For Windows:**

On the top left of vscode, click on **Terminal**, then **New Terminal**

Next, Please follow this video until timestamp **3:08**

<https://www.youtube.com/watch?v=DG5D8A3zi4o>

****Please Note:**** when you reach the following installation page, copy the folder destination and paste it into notepad or any other place for safekeeping.



Once pasted it will look similar to this:

C:\Users\14379\AppData\Local\Programs\Tesseract-OCR

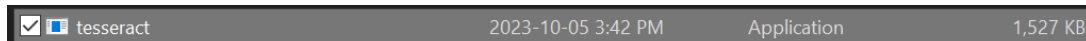
Make sure to manually type \tesseract.exe at the end. The final version should look like this:

C:\Users\14379\AppData\Local\Programs\Tesseract-OCR\tesseract.exe

Save this, We will need this later.

Did you **forget** to save the folder Destination path in the above screenshot? If so, follow these steps:

1. Click **Window key + s** and type **run** then hit **Enter**
2. Type **AppData**, then click **Local**, then **Programs**, then **hold Shift** and **right click** on **Tesseract-OCR**
3. Look for **tesseract**, it should be an application and have about 1500 KB



4. **Hold shift** and **right click** your mouse, then **copy as path**
5. Paste the path into notepad or any other place for safe keeping. Make sure to remove the quotation marks if they show up
6. Type \tesseract.exe at the end of the pasted path
7. Your final path should look similar to:
C:\Users\14379\AppData\Local\Programs\Tesseract-OCR\tesseract.exe

- **For MacOS:**

Open vscode, on the top left of vscode, click on **Terminal**, then **New Terminal** and individually paste and run the following commands one at a time.

- pip install pytesseract
- /bin/bash -c "\$(curl -fsSL <https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh>)"
- brew install tesseract
- brew list tesseract
 - You should see an output which looks similar to this:
/usr/local/Cellar/tesseract/3.04.01_1/bin/tesseract
****Please Note:** Copy this folder destination path and paste it into notepad or any other place for safekeeping. We will need this later.**

Your Checklist:

- ☐ I have installed pytesseract and Tesseract-OCR
- ☐ I have my Folder Destination Path

Step 4: Installing Pillow pytesseract gTTS and pygame within our project folder

- If you have not already done so: Open **vscode** and on the top left click on **File**, then **Open Folder**, then **Desktop**. Find and select the **Image to Audio Project** folder and click **Open Folder**.
- Next, on the top left click on **Terminal**, then **New Terminal**, then paste and run the following command:
 - `pip install Pillow pytesseract gTTS`

Output should look similar to this:

```
PS C:\Users\14379\Desktop\Image to Audio Project> pip install Pillow pytesseract gTTS
Collecting Pillow
  Using cached pillow-10.2.0-cp311-cp311-win_amd64.whl.metadata (9.9 kB)
Collecting pytesseract
  Using cached pytesseract-0.3.10-py3-none-any.whl (14 kB)
Collecting gTTS
  Using cached gTTS-2.5.1-py3-none-any.whl.metadata (4.1 kB)
Collecting packaging>=21.3 (from pytesseract)
  Downloading packaging-23.2-py3-none-any.whl.metadata (3.2 kB)
Collecting requests<3,>=2.27 (from gTTS)
  Downloading requests-2.31.0-py3-none-any.whl.metadata (4.6 kB)
Requirement already satisfied: click<8.2,>=7.1 in c:\users\14379\appdata\local\programs\python\python311\lib\site-packages (from gTTS) (8.1.6)
Requirement already satisfied: colorama in c:\users\14379\appdata\local\programs\python\python311\lib\site-packages (from click<8.2,>=7.1->gTTS) (0.4.6)
Collecting charset-normalizer<4,>=2 (from requests<3,>=2.27->gTTS)
  Downloading charset-normalizer-3.3.2-cp311-cp311-win_amd64.whl.metadata (34 kB)
Collecting idna<4,>=2.5 (from requests<3,>=2.27->gTTS)
  Downloading idna-3.6-py3-none-any.whl.metadata (9.9 kB)
Collecting urllib3<3,>=1.21.1 (from requests<3,>=2.27->gTTS)
  Downloading urllib3-2.2.1-py3-none-any.whl.metadata (6.4 kB)
Collecting certifi>=2017.4.17 (from requests<3,>=2.27->gTTS)
  Downloading certifi-2024.2.2-py3-none-any.whl.metadata (2.2 kB)
Downloading pillow-10.2.0-cp311-cp311-win_amd64.whl (2.6 MB)
 2.6/2.6 MB 7.0 MB/s eta 0:00:00
Downloading gTTS-2.5.1-py3-none-any.whl (29 kB)
Downloading packaging-23.2-py3-none-any.whl (53 kB)
 23.0/53.0 kB 689.9 kB/s eta 0:00:00
Downloading requests-2.31.0-py3-none-any.whl (62 kB)
 62.6/62.6 kB 1.7 MB/s eta 0:00:00
Downloading certifi-2024.2.2-py3-none-any.whl (163 kB)
 163.8/163.8 kB 4.8 MB/s eta 0:00:00
Downloading charset-normalizer-3.3.2-cp311-cp311-win_amd64.whl (99 kB)
 99.9/99.9 kB 2.8 MB/s eta 0:00:00
Downloading idna-3.6-py3-none-any.whl (61 kB)
 61.6/61.6 kB 814.7 kB/s eta 0:00:00
Downloading urllib3-2.2.1-py3-none-any.whl (121 kB)
 121.1/121.1 kB 2.4 MB/s eta 0:00:00
Installing collected packages: urllib3, Pillow, packaging, idna, charset-normalizer, certifi, requests, pytesseract, gTTS
Successfully installed Pillow-10.2.0 certifi-2024.2.2 charset-normalizer-3.3.2 gTTS-2.5.1 idna-3.6 packaging-23.2 pytesseract-0.3.10 requests-2.31.0 urllib3-2.2.1
PS C:\Users\14379\Desktop\Image to Audio Project>
History restored
PS C:\Users\14379\Desktop\Image to Audio Project>
History restored
PS C:\Users\14379\Desktop\Image to Audio Project>
```

- Next install pygame using the following command:
 - `pip install pygame`

It should look similar to this:

```
PS C:\Users\14379\Desktop\Image to Audio Project> pip install pygame
Collecting pygame
  Downloading pygame-2.5.2-cp311-cp311-win_amd64.whl.metadata (13 kB)
  Downloading pygame-2.5.2-cp311-cp311-win_amd64.whl (10.8 MB)
 10.8/10.8 MB 7.8 MB/s eta 0:00:00
Installing collected packages: pygame
Successfully installed pygame-2.5.2
```

Your Checklist:

- ☐ I have installed Pillow pytesseract gTTS within the vscode terminal
- ☐ I have installed pip install pygame using the vscode terminal