PYTHON LIBRARIES

Introduction

After reading this book, you should have a good understanding of the principles behind any Python project. When you find an idea for a project, you know to import the required libraries and use your skills to achieve your goals. It's probably less complicated than you initially thought.

Now that you've learned the fundamentals of Python and experimented with several projects by following my advice in this book, it's time for the next step: building on your own code.

- Step 1: Understand the logic behind any programming language.
- Step 2: Learn how to code this logic in a specific language (ex: Python).
- Step 3: Ability to read and understand almost any source code written by someone else.
- Step 4: Create your code to achieve a defined goal.

This annex will help you with step 4. Coding your scripts doesn't mean to not look for examples at all, but it's your choice and your style that will be implemented. I will give you 10 interesting libraries you can use in various projects. They work well on Raspberry Pi and are easy to use because they are properly documented.

1 - GPIO

Name	GPIO
Goal	Interact with the GPIO pins on Raspberry Pi
Package	sudo apt install rpi.gpio
Documentation	https://sourceforge.net/p/raspberry-gpio-python/wiki/Home/

Basic example	import RPi.GPIO as GPIO
	GPIO.setmode(GPIO.BCM)
	GPIO.setwarnings(False)
	led = 4
	#Turn on the LED
	print "LED on"
	GPIO.output(led,1)
	#Wait 5s
	time.sleep(5)
	#Turn off the LED
	print "LED off"
	GPIO.output(led,0)

Links	https://raspberrytips.com/raspberry-pi-gpio-pins/
Alternative	gpiozero https://projects.raspberrypi.org/en/projects/physical-computing

2 - Guizero

Name	Guizero
Goal	Create simple GUI (User interfaces) with Python
Package	sudo apt install python3-guizero
Documentation	https://lawsie.github.io/guizero/
Basic example	from guizero import App app = App(title="Hello world") app.display()
Links	https://projects.raspberrypi.org/en/projects/getting-started-with-guis

3 - Twitter

Name	Twython
Goal	Use the Twitter API in Python
Package	sudo pip3 install twython
Documentation	https://twython.readthedocs.io/en/latest/
Basic example	from twython import Twython from auth import (consumer_key, consumer_secret, access_token, access_token_secret) twitter = Twython(consumer_key, consumer_secret, access_token, access_token_secret) message = "Hello World!" twitter.update_status(status=message) print("Tweeted: " + message)
Links	https://projects.raspberrypi.org/en/projects/getting-started-with-the-twitter-api
Alternative	python-twitter, tweepy

4 - Pygame

Name	Pygame
Goal	Games development
Package	sudo apt install python3-pygame
Documentation	https://www.pygame.org/docs/

5 - Flask

Name	Flash
Goal	Create a website with Python
Package	sudo pip3 install flask
Documentation	https://flask.palletsprojects.com/en/2.0.x/

Basic example	`from flask import Flask`
	
	`app = Flask(__name__)`
	
	`@app.route('/')`
	`def index():`
	`  return 'Hello world'`

Links	https://projects.raspberrypi.org/en/projects/python-web-server-with-flask

6 - MySQL

Name	MySQL Connector
Goal	Store information in a database
Package	sudo pip3 install mysql-connector-python
Documentation	https://dev.mysql.com/doc/connector-python/en/
Basic example	import mysql.connector cnx = mysql.connector.connect(user='scott', password='password', host='127.0.0.1', database='employees') cnx.close()
Alternatives	MiniDB, SQLite3, etc.

7 - OpenCV

Name	OpenCV
Goal	Computer vision library, image processing and machine learning
Package	sudo apt install python3-opencv
Documentation	https://docs.opencv.org/4.5.2/d6/d00/tutorial_py_root.html

8 - Requests

Name	Requests
Goal	Make HTTP requests in Python
Package	sudo apt install python3-requests
Documentation	https://dev.mysql.com/doc/connector-python/en/
Basic example	import requests response = requests.get('https://raspberrytips.com')

9 - Matplotlib

Name	Matplotlib
Goal	Create data visualizations
Package	sudo apt install python3-matplotlib
Documentation	https://matplotlib.org/
Basic example	import matplotlib.pyplot as plt plt.plot([57,42,24,6]) plt.ylabel('random numbers') plt.show()

10 - Pillow

Name	Pillow
Goal	Image manipulation
Package	sudo pip3 install pillow
Documentation	https://pillow.readthedocs.io/en/stable/
Basic example	from PIL import Image img = Image.new('RGB', (100, 50), color = 'red') img.save('red_square.png')

Conclusion

These libraries are a small example of what you can do with Python, just to give you a few ideas. But there are libraries for everything, so feel free to use your friend Google to look for alternatives or specific modules for your projects.

Once you have found a library and the documentation page, you should be able to use any of them with your new Python skills!