Python Project Ideas (Beginner, Intermediate, Advanced)

# Beginner Projects

## To-Do List App (Command-Line Based)

Create a simple to-do list where users can add, view, and delete tasks.

* Skills You’ll Learn:
* - File handling (open, write, read)
* - Lists and dictionaries
* - Conditional statements and loops

## Number Guessing Game

A fun game where the computer selects a random number and the user tries to guess it.

* Skills You’ll Learn:
* - random module
* - Loops (while)
* - User input and conditionals

## Simple Calculator

A basic calculator that performs addition, subtraction, multiplication, and division.

* Skills You’ll Learn:
* - Functions
* - Input validation
* - Loop and conditionals

## Quiz App

A program that asks the user multiple-choice questions and gives a score at the end.

* Skills You’ll Learn:
* - Dictionaries or lists for questions
* - Functions
* - Loops and conditionals

## Password Generator

A tool that generates a random password of a specified length.

* Skills You’ll Learn:
* - random and string modules
* - Loops
* - String manipulation

# Intermediate Projects

## Weather App (API-based)

Fetch live weather data from an API like OpenWeatherMap.

* Skills You’ll Learn:
* - requests module
* - JSON parsing
* - API key usage

## Personal Budget Tracker

Track expenses and income, categorize them, and calculate balance.

* Skills You’ll Learn:
* - File I/O (CSV or JSON)
* - Dictionaries & data validation
* - pandas for optional data handling

## Image Converter (JPG ↔ PNG)

Convert image formats using a GUI.

* Skills You’ll Learn:
* - PIL or Pillow library
* - File handling
* - tkinter for basic GUI

## Pomodoro Timer

A timer that helps manage productivity using the Pomodoro technique.

* Skills You’ll Learn:
* - Time manipulation with time or datetime
* - GUI with tkinter
* - Sound or notifications (optional)

## Markdown to HTML Converter

Convert .md files into valid HTML.

* Skills You’ll Learn:
* - File reading/writing
* - Regex (optional)
* - String manipulation

# Advanced Projects

## Chat Application (Local or Socket-Based)

A simple client-server chat app using sockets.

* Skills You’ll Learn:
* - socket module
* - threading
* - Network communication

## File Organizer

Automatically organizes files in a directory by type.

* Skills You’ll Learn:
* - os, shutil, and pathlib
* - Regex for file types
* - Automation logic

## Portfolio Website with Flask or Django

A personal website to showcase your projects.

* Skills You’ll Learn:
* - Web frameworks (Flask or Django)
* - Routing, templating
* - Hosting (optional)

## Face Detection App

Detect and mark faces in photos or webcam.

* Skills You’ll Learn:
* - OpenCV
* - Image processing
* - Real-time webcam access (optional)

## Custom Web Scraper + Excel Report

Scrape data from a website and save it in Excel format.

* Skills You’ll Learn:
* - BeautifulSoup or Scrapy
* - requests
* - openpyxl or pandas