data Rebellion

88 Python Project Ideas for Automating Your Life

By Grayson Stanton

Introduction

Let Your Computer Do the Work For You

One day at work I was given a task: get a bunch of data from a website into a spreadsheet. Sounds simple enough. Only problem was this data was spread out across hundreds of web pages. The traditional solution was to grit your teeth and copy + paste the thousands of individual data points into Excel over the course of a week. But somehow I wasn't all that excited about getting carpal tunnel, crossed eyes, and gangrene-of-the-mind all in one go. I needed another option.

I had a little programming experience at that point, and though I had never applied it at work, it seemed like there had to be some way to automate this mind-numbing task with Python. I wasn't sure if it was possible for *me* to write this script, with my limited experience and resources, but facing the mass brain cell death the alternative promised, it seemed reasonable to at least explore this Pythonic possibility.

Turned out it wasn't terribly hard, even for a relative beginner, and in a couple days time I was taking it easy in my cubicle, sipping some chamomile tea as I watched my basic little Python-powered web scraper vacuum up all that sweet, sweet data, hundreds of times faster than I ever could have and with none of the mistakes.

Since then I've found a lot of other uses for Python in both professional and personal life. It's an extremely powerful and accessible tool, so much so that, with a little grit and determination, even beginners can quickly build useful things. And fortunately, once you've got some basics down, the best way to improve at programming is to jump right in and work on an actual project. It could be something useful. It could be something fun. Whatever it is, you just have to actually care about it.

However...it's not always easy coming up with good project ideas, especially if you're new to all this. That's why in the following pages I'll be presenting to you 88 automation-oriented Python project ideas. Many of them I read about online, while others are ones myself or others I know have performed. The scope of project possibilities is endless, but I'm confident you'll find something relevant to you in at least one of these categories.

That said, carefully consider the consequences of these projects upfront, being aware of all applicable laws, rules, and regulations, and perform them at your own risk. With great power comes great responsibility, and Python can certainly give you some measure of power.

If you ever feel like you need to take a step back and familiarize yourself with the basics, check out my free Intro to Python "course" or my Resources page for other options.

Best of luck and feel free to email me at grayson@datarebellion.com if you have any questions. And if you do get an idea, let me know what it was and how it went.

- *Grayson*

Working with Files

Basic File Operations

These days almost everyone has to deal with large numbers of files at some point, whether it's a music library, expense reports at the office, or pictures from the vacation to Bugtussle, KY. And sometimes these unwieldy file collections need a lot of work. Below are some ways Python can preserve your time and sanity by automating basic file operations:

1) **Rename files** - Include additional info in the names, make them easier to sort by, standardize them by a certain naming convention, or make them more appropriate for external use.
2) **Move files** – Organize files into different folders based on file name, type, or other criteria. Good for cleaning out a messy Downloads or Pictures folder.
3) **Change file types** - Convert files to a different file type. For example, you could convert all images in a folder from PNG to JPG.
4) **Zip files** - Convert files or folders to zip files, perhaps for purposes of sending or backing up.
5) **De-duplicate files** – Get rid of duplicate pictures, even if the duplicates have different names.
6) **Alter files** – For example, change the image dimensions for each of a large collection of images.
7) **Backup files** – Schedule certain folders to be automatically backed up to the cloud. Useful for writers or people with unreliable computers, among others.

Working with Office Files

Nothing is more like salt in the wound of your childhood dreams than wrestling with Microsoft Office files for 40+ hours a week. Thankfully, many kind-hearted developers out there have worked to make Python eminently capable of automating a great variety of office-related file tasks you might throw at it. Let's look at some possibilities:

8) **Merge multiple files and file types** – Extract data from multiple files, regardless of file types, and merge that data into one convenient document. For example, you could take just the relevant data from several spreadsheets and PDFs and generate one convenient report.
9) **Populate templates** – Similar to the above, instead of filling out a template manually, you could automate its population and even add in some error checking capabilities.
10) **Data entry** – Any repetitive data entry-related task can likely be automated to some extent.
11) **Formatting –** Most elements and their properties (text, tables, colors, shapes, etc.) in files like Word docs and Powerpoints can be created and customized via Python.
12) **Spreadsheet operations** – Anything you can do in a spreadsheet, or multiple spreadsheets, you can do with a Python script.
13) **Error checking** – Review documents for spelling or calculation errors.
14) **File uploads/imports and downloads/exports**

The Web

Alerts

Knowledge is power. But acquiring that knowledge in a timely, efficient manner is the real trick. Thankfully, Python is capable of sending emails, texts, slack messages, and other forms of communication to alert you to any event that Python is capable of detecting. Here are some such web-based alert ideas:

15) **Tap lists** - Monitor local bars and restaurants for changes in their tap lists.

16) **Ice cream** – Get an alert when local ice cream shops stock your favorite rare flavor.

17) **Movie showings** – Detect when local theaters have new showtimes during certain discounted times, and for movies with sufficient Rotten Tomatoes scores in your favorite genres.

18) **Reddit popularity** - Alert yourself when your Reddit posts get a certain amount of upvotes.

19) **Manga** – Get an alert when a new chapter of your favorite manga is released.

20) **Online shopping** - Alert yourself when a product becomes available for online order or in-store pickup, or when the price drops.

21) **Reviews** - Get alerts on any new reviews of your books or other products.

22) **PR monitoring** - Monitor websites to see if your company is getting any attention.

23) **Course updates** – Know when a new post or file has appeared on a course website.

24) **Job hunting** – Certain employers rarely have job openings and so are tedious to constantly check up on. Have Python alert you as soon as an opening gets posted.

25) **Apartments** - Know whenever an apartment or other form of housing that meets your specifications appears on any number of sites.

26) **Public transit** – Be notified of what time you need to leave work to catch the bus or train at the station nearest your office.

27) **Charging stations** - Get notifications of open electric car charging stations via their APIs.

28) **Weather** - Use weather website APIs to alert yourself to storms, extreme weather, or other events or conditions of interest.

29) **Immigration applications** - Notify yourself when immigration applications open up (yes someone apparently needed this for a competitive application and it worked).

30) **Government activities** - Get alerts when data of interest appears on government websites. For example, if you're a journalist, you might be interested to know when certain people visit government institutions, assuming the visitor logs are available online.

31) **Tap water maintenance** – Get a notification if any tap water maintenance is happening in your area, assuming that info is posted on the provider's website.

32) **Jailbird alert** - Get an alert if a friend or relative appears in jail.

The Web

Responses

Sometimes alerts aren't good enough. Either you don't want to lift so much as a finger to do something, or something needs to be done so fast that those fingers of yours don't cut it. Take it to the next level and have Python perform actions and respond to events on the web for you.

33) Classes, appointments, and reservations – Have Python make them for you the second they become available, regardless of time of day. College classes, gym classes, restaurant reservations, campsite reservations, and counseling appointments are all fair game.

34) Online shopping – If you're feeling brave, you don't have to stop at having Python just alert you to product appearances or price changes. Instead, have the program buy it for you. You could even have it buy you random products every so often, just as a fun little surprise.

35) Event tickets – Similar to the above suggestions, you can have Python monitor ticketing sites for concerts and other events and have tickets purchased as soon as they go live.

36) Web contests – Automate the applications. You probably still won't win, but at least you won't have wasted the time.

37) Birthday wisher – Have Python scan your Facebook friends' accounts for birthday occurrences each day and drop "Happy Birthday" comments for you.

38) Personal finance – Monitor your accounts and transactions, extract just the data you're interested in, and get sent custom reports regularly or in response to certain events.

39) Algorithmic trading

Web Scraping and Other Operations

A web scraper is a program that extracts data from the web. Not all of these ideas are strictly web scrapers, but the idea is that they automate some web-based process at a scale that would be tedious or infeasible to perform manually. Many websites don't offer data export functions or APIs and display their data in a limited or otherwise inconvenient way. Or sometimes the website's fine but you just need to perform some action many, many times over. Here are a handful of examples.

40) Contact info - Scrape contact info from websites for use in marketing campaigns.

41) Company info - Scrape financials or other company info for analysis or predictive modeling.

42) Job search – Crawl multiple job sites and record the positions that meet your criteria.

43) Job applications - Fill out similar job application forms automatically for different positions.

44) Social media removal – Automate deletion of your comments and other data from Facebook, Slack, and other sites. Be aware though that this may not remove it from their databases.

45) Newsletters – Compile relevant articles into a weekly newsletter automatically.

46) Order shipping checker - Cross check product orders on your end with the orders in a given warehouse's system to verify that things are running smoothly.

The Physical World

Making Stuff Smarter

Automation doesn’t have to be confined to the digital realm. With the right equipment and interfaces, you can extend your Python programming capabilities across the material plane, sometimes with surprising ease. Raspberry Pi computers, in particular, are often quite useful here. Below are a just a handful of ideas for bending your environment to your programmatic will.

47) Brew your coffee – With the “Internet of Things” on the rise, appliances are increasingly connecting to networks. If your office coffee machine is sufficiently advanced, try remotely triggering the office coffee machine to start brewing so that your coffee is finished by the time you walk into the break room.

48) Speed cameras – Monitor neighborhood traffic and automatically send your local police station emails to alert them of speeding infractions.

49) Watering plants – Automate the watering of your house plants, lawn, or even an entire greenhouse based on temperature, soil moisture, and/or weather forecasts.

50) Composting - Monitor temperature and moisture of compost piles, and get alerts when either are out of balance.

51) Door activity - Monitor opening and closing of doors with magnetic sensors and Raspberry Pi.

52) Alarm system – Automatically arm your alarm system at certain times of day.

53) Curtains - Open and close curtains based on time of day.

54) Lights – Control lighting based on time of day or other factors.

55) Fans - Turn fans on and off in response to room temperatures.

56) Humidifier – Make your humidifier smarter by having it only turn on after a certain humidity threshold is crossed.

57) Gutter heater - Control a gutter heater based on outdoor temperature to efficiently prevent the formation of icicles.

58) Monitoring temperature – For example, you could monitor the temperature in an IT closet and get an alert when it gets too hot.

59) Help desk printer monitoring - Monitor multiple printers and get relevant alerts instead of walking around and checking the ink, toner, paper, paper jams, and other things manually.

60) Router – Have your router reset upon login or on some other basis.

61) Packaging - Automate creation and printing of package labels if you perform manufacturing/logistics work.

Relationships and Other Fun Things

Relationships

Yes, Python can even help with your love life. In theory at least. Results may vary.

62) Tinder – Automate Tinder swiping and messaging.

63) OkCupid – Browse profiles and automatically bookmark high-percentage matches for viewing.

64) Favoriting/Liking – Automate the favoriting of your friend's tweets or your significant other's Instagram pictures.

65) SO at home alert – Get an alert when your significant other arrives at home based on their smart phone connecting to your home wifi network.

66) Casual texting - Automate simple random texts to your significant other if they demand an inconvenient frequency of communication from you.

67) Late at work excuses – Automatically send a text to your SO with a random excuse for why you are late coming home if you are still logged into your work computer.

68) Apologies that scale – Have a script send an text/email saying you're sorry a million times over some time period if your significant other says they'll only forgive you if you apologize a million times (or if you're just really sorry).

Other Fun Things

Whether you want to goof around or get out of working to have more time for goofing around, Python's got your back.

69) Fantasy sports – Have Python manage your Fantasy sports teams for you.

70) Video games - Especially easy to automate are the online clicker games. Someone also used Python once to dodge the lightning in Final Fantasy X.

71) Sharing comics - Display a random Dilbert comic upon login, or post a random Calvin and Hobbes or XKCD comic to your Twitter account or Slack channel on a daily basis.

72) Desktop background - Get a new, random desktop background upon every login, perhaps from your favorite Subreddit.

73) Login greeter – Be greeted upon login with an inspiring message and a rousing song.

74) Time keeper - Have your computer speak the time out loud every hour.

75) Look like you're working – Write a script that presses keys every once in a while so you don't get logged out at work and monitoring software doesn't detect you as being idle.

76) Meeting listening aid – Be alerted and given a transcript of recent conversation when your name is mentioned in a web meeting that you are supposed to be listening to.

77) Work absence excuses - If you aren't logged in at work, have a script email your boss a random reason for coming in late or not at all.

Conclusion

Other

And here's everything that didn't quite fit elsewhere. Not really much more to it than that.

78) Birthday gifts – Automate a majority of your gift-giving for the year all at once. First buy gift cards upfront and store the gift card codes digitally. Then have your program send people happy birthday emails, gift card codes included, when their birthdays come around.

79) Meal and grocery planning – Put together a database that contains different meal options and their required ingredients. Then have Python email you a schedule of randomly chosen meals for the coming week, as well as the exact ingredients you need to buy at the store.

80) Chore reminder - Remind kids to do chores via automated texts.

81) Payment reminder - Remind clients to pay invoices via automated emails.

82) Writing Productivity Tracker – Have your keystrokes tracked and productivity calculated as words per hour.

83) Google Calendar – Automate the creation of calendar entries.

84) Pricing updates – Automate the process of manually updating product pricing on your company website based on a spreadsheet you receive regularly containing the data.

85) Timesheet - Log your work hours and/or send a weekly summary email to your boss.

86) Progress reports – For example automate daily ticket progress reports for your boss.

87) Server Updates - Automate tedious updates for custom servers.

88) Mapping – If you do any GIS work, Python can help speed up the creation of maps.

Machine Learning: Supercharge your automation projects

Every one of these projects can be coded without any fancy math or AI algorithms. In some cases though, machine learning can be an extremely powerful tool and can significantly enhance the utility of certain projects or even make new projects possible. If this sounds interesting and you're up for the challenge, you might want to check out scikit-learn, a popular machine learning library for Python.

Bon Voyage

Show's over folks. I hope now you have at least one new project idea to try out. And if you have multiple, pick just one to pursue for now, whichever one seems like the most fun.

Obviously these are just 88 ideas, not 88 project blueprints, and if you're a beginner, the gap between a vague idea and a working program can seem like a chasm. In this case, try to break the problem down into as many small, concrete steps as you can, and focus on one at a time.

And if you do get stuck you can reach out to me, the fine folks at StackOverflow, Reddit, or any number of other places on the web. So good luck, and never forget, "Fortune favors the bold."