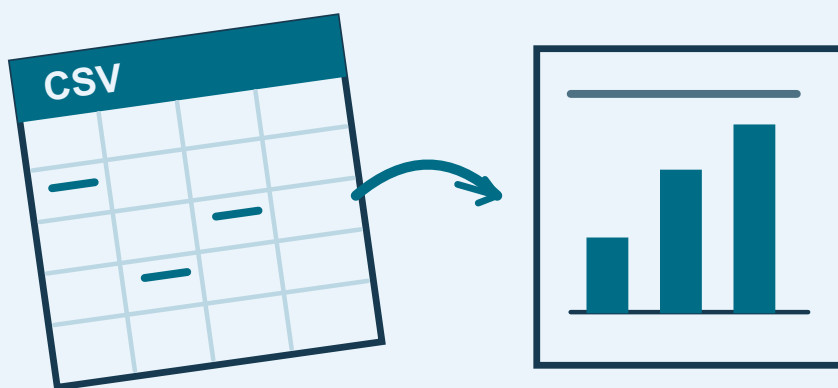




PYTHON AND DATA WORKFLOWS

Automate CSV Reporting with Python

Turn workshop exports into a repeatable monthly report with visible exceptions



Sanjaay Gowda T S

FREE SAMPLE / INTRODUCTION + CHAPTER 1 / EDITION 1.0.0

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About this free sample

Automate CSV Reporting with Python

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Run examples in a separate working folder using the supplied synthetic data. Review inputs and calculations before adapting the techniques to real operations. Model software, service access, subscriptions, ongoing updates and consulting are not included.

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Inside this free sample

Start here.....	4
1. Define the monthly question	5
Continue with the full guide	6

This free sample contains the introduction and Chapter 1 only. The closing link opens the complete guide. The companion project and worked solutions are supplied with the complete ebook.

Start here

The recurring report usually begins as a spreadsheet that someone knows how to repair. A renamed column, an extra footer and a duplicated export are manageable while the person is watching. Automation removes that person from the immediate calculation. Your task is to make their decisions explicit, preserve uncertainty and give the next reviewer enough evidence to repeat the result.

This book uses Harbor Workshop, a fictional repair business with North and South branches. Every organization, job, amount and date is invented for teaching. The monthly question is narrow: how many completed jobs did each branch record, how many labour minutes did those jobs contain, and what parts amount was recorded? These amounts are arithmetic fixtures, not accounting advice or evidence of commercial performance. The report does not calculate profit, tax, utilization or employee productivity.

You will build a Python standard-library program. The supplied JSON contains a small CSV string so the same fixture travels safely between machines. That wrapper is a teaching interface; the CSV rules still matter. Run the project from its folder with the following commands, then keep a copy of the original output before changing a fixture.

```
python main.py --input example-input.json
python -m unittest discover -s tests -v
```

Read the result before reading the implementation. Three accepted September jobs should survive. The August job belongs outside the period. A negative labour value is rejected. Both occurrences of a duplicated identity are rejected. The North branch parts total is the string 12.60, preserving an explicit two-decimal representation.

The chapters follow the calculation from definition to operation. Each exercise changes one condition that could otherwise produce a plausible but wrong report. Exercise solutions explain what to inspect, rather than asking you to memorize a single output. The project is intentionally small enough to read completely. It does not connect to a live business, schedule a task or send a report.

1. Define the monthly question

Write the grain before the code

The input grain is one completed job record. The output grain is one branch within one calendar month. A row is not automatically a job: duplicated rows may describe the same job, and an empty branch does not create a useful group. Put the grain in the report contract so a future contributor cannot quietly reinterpret a row as a line item or a technician visit.

Harbor's contract identifies five fields in a fixed order. `job_id` is a stable business identity, `branch` is the grouping label, `completed_on` is a date, `labour_minutes` is a nonnegative whole number, and `parts_amount` is a nonnegative decimal with at most two fractional digits. The reporting period is `YYYY-MM`. The example uses a single unspecified teaching currency; mixing currencies is outside its contract.

Question	Contract answer	Why the answer matters
Which month?	Completion month	Booking and completion can differ
Which population?	Valid unique jobs	Duplicates inflate totals
Which labour unit?	Whole minutes	Hours need a declared conversion
Which amount?	Recorded parts amount	It is not a profit calculation

Make the denominator visible

A branch total of three jobs says little without the disposition counts. If ten records were parsed and seven rejected, the total represents a restricted population. The companion therefore reports parsed, accepted, outside-period and rejected records separately. These quantities answer different questions. Outside-period rows are valid records that do not answer this month's question. Rejected rows failed a condition needed to decide whether they should participate.

Choose the reporting cutoff before reviewing the totals. A late export can change September after a manager has already reviewed it. In this lesson, the input snapshot is the cutoff: rerunning the identical snapshot produces the same result. A real process needs an agreed policy for corrections and revised editions of a report.

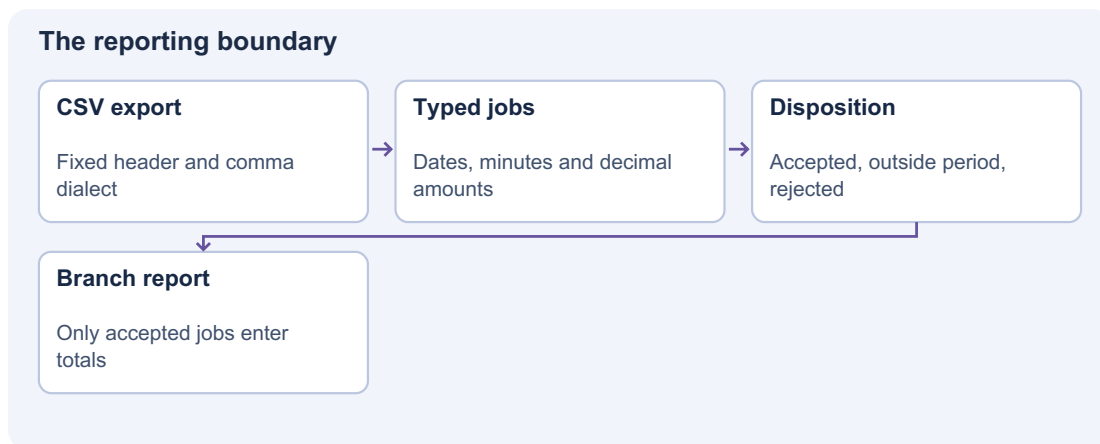


Figure 1. Every parsed job receives a visible disposition before branch totals are calculated.

Exercise: change the question safely

Suppose someone asks for jobs booked during September. Describe the new source field, revised inclusion rule and regression case needed before changing the report. Do not substitute `completed_on` because it already exists. A convenient column is not evidence that the requested event was recorded. Write down what your current export cannot establish and what additional data would be required.

Review lab: a misleadingly complete export

Imagine that the export contains every September job except one branch's last afternoon. The program can validate all supplied rows and still miss those absent records. Compare the source export's stated coverage with an independent operational count before calling the report complete. Do not add an assumed missing job to make the totals reconcile. The correct response to missing coverage is to obtain the missing source or qualify the report's population. This check belongs outside row validation because an absent record cannot carry a reason code. A useful review record distinguishes completeness of the export from validity of the rows actually received.

Continue with the full guide

This free sample ends after the introduction and Chapter 1. The complete guide contains nine teaching chapters, worked exercise solutions, primary references and a separate Python companion project. The full PDF, reflowable EPUB and project files are supplied together.

Use the complete guide to work through the remaining exercises and inspect the supplied examples. The companion code and fictional data are separately MIT licensed; the complete ebook has the single-reader terms described on its product page.

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