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Computing for Study and Research

The student's practical handbook: files, writing, spreadsheets, sources and safety

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A note on this book

This is the practical companion to Computer Science Foundations: not how computers work in theory, but how a student uses one well — organising files, writing documents, working spreadsheets, finding and judging sources, presenting results, and keeping work safe. Master these habits in your first year and every later

course becomes easier.

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Chapter 1

Files, Folders and Finding Things

Students lose more marks to lost files than to hard questions. This chapter builds the simple system — naming, folders, versions and backup — that makes loss nearly impossible.

Names that find themselves

Name files so a stranger could file them: course, topic, date, version — Statistics-Notes-2026-03-04-v2. Avoid 'final', 'final2' and 'really-final': versions get numbers, and only one file is ever the current one. The date format year-month-day sorts itself in any folder.

A folder tree that stays small

One folder per course, inside it one per kind — Notes, Assignments, Readings, Data. Deep trees hide things; wide trees confuse. Four levels is plenty for a degree. Put the tree where your backup reaches it, and keep the desktop for today only.

Backup — the 3-2-1 habit

Keep three copies of important work, on two different media, with one copy elsewhere (cloud or a drive kept at a different house). The rule sounds heavy until the first laptop dies the week of submission — an event so common it should be treated as scheduled.

Searching what you kept

A kept file you cannot find is a lost file with extra steps. Search by name fragments, by date, by words inside documents. Consistent names make all three work; the five seconds spent naming a file well are repaid the first time you search under pressure.

Key points

- Name files: course, topic, date, version number.
- One folder per course; a few kinds inside.
- Backup 3-2-1: three copies, two media, one elsewhere.

Exercises

1. Rename five real files of yours by this chapter's scheme.

2. Draw your folder tree for this year's courses.

3. Write your backup plan naming the two media and the elsewhere copy.

Chapter 2

Writing Documents Well

Word processors reward students who use their structure instead of fighting them. This chapter covers styles, headings, references and the drafting habits that turn writing from wrestling into composition.

Styles, not manual decoration

Apply heading and body styles instead of making text big and bold by hand. Styles give consistent looks, automatic contents lists, and one-place changes: alter the Heading style once and forty headings obey. Examiners may never praise your styles; they will feel their order on every page.

Structure before sentences

Outline first — headings and one line per section — then draft under the headings. A document whose structure is sound can survive weak sentences; beautiful sentences cannot rescue a document with no structure. Research writing adds its own skeleton: question, method, results, discussion.

References as you go

Record every source fully at the moment you use it — author, year, title, where published — in a references section or a manager tool. The student who 'will add references at the end' is choosing an evening of detective work and a real risk of accidental plagiarism.

Drafting and revising

Write the first draft for yourself, revise for the reader: cut what does not serve the argument, check every number against its source, read aloud to catch the sentences that trip. Save versions as you revise, so courage is cheap — you can always return.

Key points

- Use styles; get contents lists and consistency free.
- Outline structure before drafting sentences.
- Capture references at the moment of use.

Exercises

1. Convert a page of manually formatted headings to styles.

2. Outline an essay you owe, headings plus one line each.

3. Write three full references for sources you used this week.

Chapter 3

Spreadsheets — Tables That Calculate

The spreadsheet is the student's laboratory: marks, budgets, survey data and trial results all pass through it. This chapter teaches formulas, tidy data, charts and the checking habits that keep a sheet honest.

Cells, formulas and copying

A cell holds a value or a formula beginning with '='. Formulas reference cells, not typed numbers, so changing an input updates every result: =B2*C2 survives a price change; =40*250 must be hunted down and retyped. Copying a formula adjusts its references — a blessing to understand, a trap to ignore.

Tidy data in sheets

One row per observation, one column per variable, headings in the first row, no merged cells in data areas, no colour as the only carrier of meaning. Tidy sheets can be sorted, filtered, summarised and exported to statistics tools; decorative sheets can only be admired, briefly.

Functions that do the work

SUM, AVERAGE, COUNT, MIN, MAX handle description; IF handles decisions; sorting and pivot-style summaries handle pattern-finding. Learn these few deeply rather than fifty shallowly — they cover nearly all student work, including the statistics of the companion volumes.

Checking a sheet

Test formulas on numbers you can verify by hand; add totals that must reconcile; ask what happens at zero, at blank, at the largest value. The most dangerous spreadsheet error is the plausible one — a total slightly wrong that nobody questions because the sheet 'did the maths'.

Key points

- Formulas reference cells, never typed constants.
- Keep data tidy: one row per observation.
- Hand-check formulas on small cases before trusting them.

Exercises

1. Build a marks sheet computing each student's average from four scores.
2. Explain what breaks if prices are typed inside formulas.
3. Hand-verify one formula in a sheet you already own.

Chapter 4

Finding and Judging Sources

The internet puts a library and a rumour mill in the same box. This chapter teaches searching with intent and judging what you find — the skill on which all research writing quietly depends.

Searching with intent

Phrase searches find exact words; adding terms narrows; removing them widens. Search scholarly indexes for studies, official sites for statistics, and the open web for orientation — then follow references from good sources to better ones, the oldest and still best search algorithm.

Who is speaking?

For every source ask: who wrote it, for whom, funded by whom, and how would they know? A university press, a government statistics office and an anonymous page are three different kinds of witness. Prefer primary sources — the study itself, the law itself — over summaries of summaries.

Cross-checking

Any fact that matters should survive two independent sources. When sources disagree, the disagreement itself is a finding: definitions, dates or methods differ, and your job is to discover which. Never average two contradictory figures into a comfortable fiction.

Citing what you use

Quote sparingly, paraphrase honestly, cite everything borrowed — ideas as well as words. Keep the full reference at capture time, per Chapter 2. Good citation is not decoration; it is the map that lets your reader audit your road.

Key points

- Follow references from good sources to better ones.
- Ask of every source: who speaks, and how would they know?
- Facts that matter need two independent witnesses.

Exercises

1. Find the primary source behind a statistic quoted in a news story.

2. Judge three websites on one topic with this chapter's questions.

3. Resolve a disagreement between two sources on one fact, and document how.

Chapter 5

Presentations and Posters

Research unshared is research unfinished. This chapter covers talks, slides and posters — the forms in which students present work — and the discipline of designing for the audience's eyes rather than the speaker's memory.

Slides are scenery, not script

A slide carries a title that states a point, one visual or a few words, and nothing else. If the audience can read your talk from the screen, they will — and stop listening. Your spoken words carry the argument; the slides carry its landmarks.

One idea per slide

Ten slides of one idea each beat three slides of five ideas. Design for the back row: large type, high contrast, few colours used consistently. Charts from your analysis belong here — the honest ones, axes intact, from your statistics volumes.

The talk itself

Open by stating your question and your answer in one minute; spend the middle on method and evidence; close by repeating the answer and its limits. Practise aloud against a clock — a talk that fits in rehearsal fits on the day; one that was never timed does not.

Posters — the standing talk

A poster must work at two distances: title and conclusion readable across the room, detail rewarding at arm's length. Arrange the same skeleton as a paper — question, method, results, conclusion — in columns the eye can travel without a map.

Key points

- Slides carry landmarks; your voice carries the argument.
- Design for the back row; rehearse against a clock.
- State question and answer in the first minute.

Exercises

1. Cut one of your old slide decks to one idea per slide.
2. Write the one-minute opening of a talk on your current project.
3. Sketch a poster's layout for a study you know.

Chapter 6

Safety, Honesty and Your Digital Life

The final chapter protects the work and the worker: passwords, phishing, backups of accounts, academic honesty in a digital age, and the professional face a student shows the world online.

Accounts and passwords

A unique strong password per important account, a password manager or a written record kept safely, and a second factor wherever offered. Your email account is the master key — password resets flow through it — so guard it first and best.

Phishing and fraud

Urgency, threats and unexpected links are the fraudster's uniform. Reach services by their own addresses, never by a message's link; verify payment requests through a second channel. The pause described in the Foundations volume is a professional skill, not a personality trait.

Academic honesty

Submitting work that is not yours — copied, bought or generated and passed off — is fraud against your own education, and institutions punish it as such. Use tools, including AI assistants, as tutors and editors where your institution permits, cite what you borrow, and keep drafts: your working files are the proof of honest authorship.

Your professional presence

Assume anything posted can be read by a future employer, examiner or collaborator. A tidy public profile naming your field and institution is an asset that compounds; careless posts are debts that do the same. Build the presence your future self will thank you for.

Key points

- Guard the email account first; it is the master key.
- Urgency plus a link equals suspicion — pause and verify.
- Keep drafts: they are the proof of honest authorship.

Exercises

1. List your accounts and mark which share passwords; fix the worst three.

2. Write the checks you will run on any urgent money message.

3. Draft a three-line professional profile of yourself as a student researcher.

Appendix — Worked Examples and Practice

From Chapter 1 — Files, Folders and Finding Things

Worked example: 'essay.docx', 'essay new.docx' and 'essay FINAL.docx' in one folder cannot tell their owner which to submit. Renamed as Essay-v1, Essay-v2, Essay-v3 with dates, the newest is unambiguous, the history is kept, and the submitted copy can be frozen as Submitted-v3 — never edited again, so what was marked is always recoverable.

From Chapter 2 — Writing Documents Well

Worked example: a 3,000-word essay with hand-made headings needs forty separate fixes to change its look, and its contents list must be typed by hand — wrong by submission day. The same essay on styles: change two style definitions, regenerate the contents in one click, and spend the saved hour on the argument, where the marks live.

From Chapter 3 — Spreadsheets — Tables That Calculate

Worked example: scores 62, 71, 58, 79 in B2:E2. =AVERAGE(B2:E2) gives 67.5 — check by hand: 62+71+58+79 = 270, and 270/4 = 67.5. Agreement between hand and sheet on a small case is the licence to trust the sheet on four hundred rows.

From Chapter 4 — Finding and Judging Sources

Worked example: two sites give a country's literacy rate as 62 and 75 per cent. Checking definitions resolves it: one counts adults 15+, the other youths 15–24, whose schooling is better. Both were 'right'; the lesson is that a rate without its definition is a riddle, and citing the definition is part of citing the number.

From Chapter 5 — Presentations and Posters

Worked example: a slide titled 'Results' holding six bullet points becomes three slides — 'Yields rose with compost', 'The rise was largest on poor soils', 'Costs ate half the gain' — each title a finding, each slide one chart. The audience now remembers three results instead of six fragments, and the speaker has three clear minutes instead of one crowded one.

From Chapter 6 — Safety, Honesty and Your Digital Life

Worked example: a student accused of submitting copied work produces dated drafts, notes and earlier versions from her folder system — the working trail of Chapter 1 — and the case closes in one meeting. Honest process leaves evidence; keep yours, not from fear, but because organised work proves itself.

Further Practice — Review and Discussion

Work through these prompts in writing; they are the revision spine of this book. Answer in full sentences, with examples from your own place of study wherever the prompt allows.

Chapter 1 — Files, Folders and Finding Things

- Explain in your own words, with one example: Name files: course, topic, date, version number.
- Explain in your own words, with one example: One folder per course; a few kinds inside.
- Explain in your own words, with one example: Backup 3-2-1: three copies, two media, one elsewhere.

Discussion: where does the subject of this chapter — files, folders and finding things — touch your own community, farm, school or workplace? Write one page, naming real places and real constraints, and end with one question you would research next.

Chapter 2 — Writing Documents Well

- Explain in your own words, with one example: Use styles; get contents lists and consistency free.
- Explain in your own words, with one example: Outline structure before drafting sentences.
- Explain in your own words, with one example: Capture references at the moment of use.

Discussion: where does the subject of this chapter — writing documents well — touch your own community, farm, school or workplace? Write one page, naming real places and real constraints, and end with one question you would research next.

Chapter 3 — Spreadsheets — Tables That Calculate

- Explain in your own words, with one example: Formulas reference cells, never typed constants.
- Explain in your own words, with one example: Keep data tidy: one row per observation.
- Explain in your own words, with one example: Hand-check formulas on small cases before trusting them.

Discussion: where does the subject of this chapter — spreadsheets — tables that calculate — touch your own community, farm, school or workplace? Write one page, naming real places and real constraints, and end with one question you would research next.

Chapter 4 — Finding and Judging Sources

- Explain in your own words, with one example: Follow references from good sources to better ones.
- Explain in your own words, with one example: Ask of every source: who speaks, and how would they know?
- Explain in your own words, with one example: Facts that matter need two independent witnesses.

Discussion: where does the subject of this chapter — finding and judging sources — touch your own community,

farm, school or workplace? Write one page, naming real places and real constraints, and end with one question you would research next.

Chapter 5 — Presentations and Posters

- Explain in your own words, with one example: Slides carry landmarks; your voice carries the argument.
- Explain in your own words, with one example: Design for the back row; rehearse against a clock.
- Explain in your own words, with one example: State question and answer in the first minute.

Discussion: where does the subject of this chapter — presentations and posters — touch your own community, farm, school or workplace? Write one page, naming real places and real constraints, and end with one question you would research next.

Chapter 6 — Safety, Honesty and Your Digital Life

- Explain in your own words, with one example: Guard the email account first; it is the master key.
- Explain in your own words, with one example: Urgency plus a link equals suspicion — pause and verify.
- Explain in your own words, with one example: Keep drafts: they are the proof of honest authorship.

Discussion: where does the subject of this chapter — safety, honesty and your digital life — touch your own community, farm, school or workplace? Write one page, naming real places and real constraints, and end with one question you would research next.

Glossary of Key Terms

Version — A numbered state of a document in its history.

Style — A named set of formatting rules applied to text of one kind.

Formula — A spreadsheet instruction computing a cell's value from others.

Primary source — The original study, law or record, not a summary of it.

Phishing — Fraudulent messages luring victims to reveal credentials or pay.

Second factor — An additional proof of identity beyond a password.

Plagiarism — Presenting borrowed words or ideas as one's own.

Backup — Copies of work kept so loss of one device loses nothing.

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