

7.1 Ethics and Ownership

Name: _____ Class: _____ Date: _____

Total: 30 marks

KEY WORDS software licence 软件许可证 • shareware 共享软件 • copyright 版权 • ethics 伦理 • open source / foss

Objective

Build the skills to answer exam questions on **ethics and ownership** — professional ethics, copyright, and software licensing.

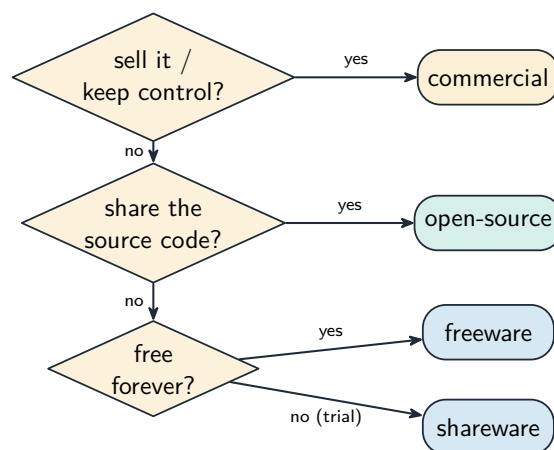
You must be able to:

- explain why a computing professional must act **ethically** 伦理, and the impact of acting ethically or not
- explain the need for **copyright** 版权 legislation
- describe the types of **software licence** and justify a licence for a given situation

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ Professional ethics



Software ownership is governed by the type of licence granted

A computing professional's work (software, data, networks) affects people who often cannot judge it themselves, so the profession follows shared **ethics**. Key principles: put the **public interest first**, be **honest** about your competence, keep data **confi-**

dential, avoid **conflicts of interest**, and respect **intellectual property** 知识产权 and privacy.

Acting **ethically** protects users and builds trust; acting **unethically** (skipping testing, hiding bugs, misusing data) can harm users and lead to dismissal, legal action and lost trust.

Many professionals join a **professional body** 专业团体 (such as the BCS) and follow its **code of conduct** 行为准则. Belonging shows a commitment to high standards, gives access to training and up-to-date guidance, and reassures employers and the public; **not** belonging can mean missing this guidance and being trusted less.

■ Copyright

Copyright is the creator's automatic legal right to control how an original work (code, images, music, documents) is **copied, distributed, modified and performed**. It rewards creators so more software is made. It does **not** cover a general idea or algorithm — those may be protected by a **patent** 专利.

■ Software licences

Licence	You may...	Source code	Cost
proprietary 专有	use under strict terms	hidden	paid
open source / FOSS 开源	use, view, modify, share	available	usually free
freeware	use for free	hidden	free
shareware	try free, then pay to keep	hidden	trial then paid

Justify by need: a company protecting its product → proprietary; a school wanting to install and adapt software freely → open source.

2 Practice

Now apply the methods above.

2.1 State **two** reasons ethics matters for a computing professional. [2]

2.2 State what **copyright** protects. [1]

2.3 Name the licence type where the **source code is available to view and modify**. [1]

2.4 Give one ethical principle a computing professional should follow. [1]

3 Exam-style questions

3.1 Explain one impact of a software developer acting **unethically**. [2]

3.2 (a) State one thing copyright **does** protect, and (b) one thing it does **not** protect. [2]

3.3 Compare **proprietary** and **open-source** software licences. [3]

3.4 A school wants software it can install free on all its PCs and adapt for its own use. State a suitable licence type and justify your choice. [2]

3.5 Explain **two** reasons a computing professional might join a **professional ethical body** (such as the BCS). [2]

3.6 A school introduces an AI tool that marks students' essays and suggests improvements.

(a) **Describe** two **social** impacts of students using AI to complete their homework. [4]

(b) **Describe** one **ethical** impact of the school using AI to mark work. [2]

(c) **Give** three ethical considerations for a student using their **personal** computer to connect to the school network. [3]

(d) The AI was trained on essays from one country only. **Explain** why this could make its marking unfair, and **state** what the developers should do about it. [3]

(e) A teacher argues that the school should publish how the AI reaches its decisions.

Explain one benefit and one drawback of doing so.

[2]

Solutions

2.1 Any two of: software affects people's safety/money; users must be able to **trust** professionals; poor/dishonest work can cause real harm.

2.2 The right to control how an **original work** (code, images, music, documents) is copied, distributed, modified and performed.

2.3 Open source (FOSS).

2.4 Any one: public interest first; honesty about competence; confidentiality; avoid conflicts of interest; respect intellectual property.

3.1 Any one impact, explained, e.g.: hiding a bug could **harm users** (a medical/banking system fails), and the developer may face dismissal or legal action and lost trust.

3.2 (a) e.g. the actual program code / an image / a document (an original work).
(b) A general **idea or algorithm** (which may instead be patented).

3.3 Proprietary: source code hidden, used under strict paid terms; open source: source available to view, modify and share, usually free; so open source allows adaptation while proprietary protects the developer's product.

3.4 Open source (FOSS) — it is free to install on every PC and the school may legally modify it for its own needs.

3.5 Any two of: to follow a shared **code of conduct** / ethical standards; access to **training** and up-to-date professional guidance; recognition and **trust** from employers and clients; networking with other professionals.

3.6 (a) Any two, developed. Students may stop developing their **own** writing and reasoning skills, because the tool does the difficult part for them. It can widen inequality: students who can afford the better tools gain an advantage over those who cannot. Also acceptable: teachers can no longer tell what a student actually knows, so support is misdirected; students may pass work off as their own, which is plagiarism.

(b) Any one, developed: the AI may be **biased** against certain writing styles or dialects and mark them down unfairly; or a student has no way to appeal to a human if the reasoning behind the mark is hidden.

(c) Any three: obtain **permission** before connecting a personal device; do not attempt to access other people's files or accounts; keep antivirus and operating system up to date so the network is not put at risk; do not install or share unlicensed software; respect the school's acceptable-use policy.

(d) Essays written in another country will use different conventions, vocabulary and cultural references, which the AI has not learned to reward, so equally good work is marked lower — the model is **biased** by its training data. The developers should train and test it on a **representative** range of student writing and check the marks it gives across those groups.

(e) Benefit: students and teachers can see **why** a mark was given, challenge it, and trust the system more. Drawback: publishing the method lets students **write to the algorithm** rather than write well, and may expose commercially sensitive details of the model.