

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 开源

Objective

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

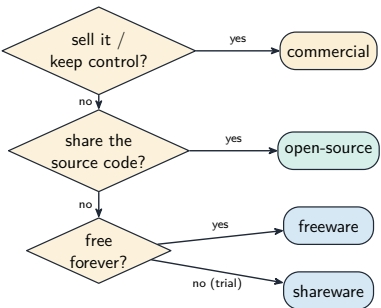
You must be able to:

- 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

Each answer shows the steps, then the **result**.

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)
- 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