

Chapter 10: Ethics and ownership

⇒ Definition of ethics

- Ethics is the field of moral science
- Ethics are the moral principles by which any person is guided
- Ethics are the rules of conduct recognised in a particular profession or area of human life.

⇒ The computing professional

- any professional is expected to act ethically
- each organisation has a code of conduct that includes ref to ethical pro
- For example: British Computer Society (BCS) gives guidance under four headings:
 - Public Interest
 - Professional Competence and Integrity
 - Duty to relevant authority
 - Duty to the profession

⇒ Code of Ethics for IEEE-CS/ACM

1. Public - software engineers shall act consistently with the public interest.
2. Client and Employer - software engineers shall act in a manner that is in the best interest of their client and employer consistent with P.I
3. Product - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible. Meets requirements, delivered within time
4. Judgement - software engineers shall maintain integrity and independence in their professional judgement
5. Management - software engineering managers and leaders should promote an ethical approach to the management of the software development and maintenance

6. Profession - software engineers should advance the integrity and reputation of the profession, consistent with the P.I

7. Colleagues - software engineers shall be fair to and supportive of their colleagues.

8. Self - software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

Points to be noted:

- Public interest or Public good is a key concern
- The codes present fundamental principles
- The professional is expected to exercise their own judgement
- The professional should seek advice if unsure

⇒ The public good

→ IEEE-CS/ACM has reference to

- the health, safety and welfare of the public
- the public interest
- the public good
- public concern

→ Public concern:

- social media sites allowing ~~abuse~~ abusive or illegal content to be transmitted.
- search engines providing search results with no concern about the quality of the content.

⇒ Ownership and Copyright

→ Copyright is a formal recognition of ownership. If an individual creates and publishes something that has an element of originality, the individual can claim copyright. If many individuals are working together in an organisation then the organisation can claim the copyright.

→ Copyright can apply to: literary work, musical composition, film, work of art, music recording, radio or TV broadcast, computer program.

→ The justification for copyright.

→ creation takes time and effort and requires original thinking so the owner should have the chance to earn money for it.

→ it is unfair for someone else to reproduce the work and make money from it without any payment to the original creator.

→ Copyright is applicable across countries also.

→ Copyright laws

→ requirement for registration recording the date of creation of work.

→ a defined period when copyright will apply.

→ a policy to be applied if an individual holding copyright dies.

→ an agreed method for indicating the copyright, ex. © symbol

⇒ Software Licensing

→ Commercial software

→ it is created and sold by a company aiming for profit.

→ if you buy a software you do not become the owner of it, the ownership remains with the vendor. As a buyer you have paid for the end-user license that allows you to use the software.

→ it is normal to pay for a software

→ A fee can be paid for each individual copy of the software

→ A company might have the option to buy a site licence which allows a defined number of copies to be running at any one time.

→ special rates might be available for educational use.

→ Two types of commercial softwares

→ Shareware

→ Freeware

→ Shareware - it is made available on trial basis for a limited time

it can be the full software or a limited version. A beta test version of new software might be considered to come in the shareware ^{category}

→ Freeware - might be a limited version or an earlier version, but without a limit to use.

→ Advantages of comm soft - software available for immediate use.

There will be continuous maintenance and support provided,

freeware can often offer sufficient functionality to serve a user's limited needs.

→ Open or Free Licensing

→ Open-source software

- it allows collaborative development
- it is available free of charge
- the source code is provided
- the user is free to use, modify, copy and distribute the software.

→ Free-software

- The software is not provided for free, there is a small distribution cost
- this is also open source
- it has a feature copyleft which means if someone edits the code the edited version should be made available to other users

→ Advantages of Open or Free licencing

- Full functionality needed is provided at most nominal cost
- the software provides the required functionality with just a few modifications to the source code.
- A consortium of developers are collaborating in producing a new software suite.
- The future development of the software or the continuous provision of the existing software is controlled by the user.

⇒ Artificial Intelligence (AI)

→ Problem Solving

- Playing chess, it can process so many options for a possible sequence of moves
- expert system, developed to aid medical diagnosis.

→ Linguistics

- Voice recognition and voice synthesis techniques.
- Ex. when you call a helpline and a computer asks you questions it can understand your needs and transfer the call to the appropriate person.

→ Perception

- The robots with sensors fitted who react to change in their environment, depending on the info received from the sensors.
- A development of this is driverless cars.

→ Reasoning

- When a program has been able to draw inferences (conclusions)
- The best examples concerning the proving of mathematical theorems.

→ Learning

- Machine learning is said to take place if a system that has a task to perform is seen to improve its performance as it gains experience.
- The AI system has access to 'experience' in the form of a massive set of data.
- Example: "cookies", when a user visits a website the website stores the info and advertises related products next time.
- Example: a mail filters incoming emails and sorts it in terms of spam and normal.