

Ethics and Ownership

Question 1

Sophie is about to start a new job as a junior software developer.

(a) She is worried about joining a new team of people.

(i) State one ethical action that Sophie can take to help her to feel more confident about starting work.

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 [1]

(ii) State two ethical actions that Sophie's manager can take to help Sophie to feel more confident about starting work.

1

 2
 [2]

(iii) State one ethical action that Sophie's new colleagues can take to help Sophie to feel more confident about starting work.

.....
 [1]

(b) Explain why Sophie is asked to sign a professional code of conduct before starting work.

.....

 [3]

Question 2

Annchi needs to decide which type of software licence to use for the game.

(i) Give two benefits to Annchi of using a commercial licence.

1

 2
 [2]

(ii) Give one benefit to the customers of the game being released using a commercial licence.

.....
 [1]

(iii) Describe one benefit to the customers of the game being released using a shareware licence.

.....

 [2]

Question 3

A software company produces software and distributes it under different software licences.

(a) Four descriptions of software licences are given. Write the type of software licence that best fits each description. Use a different type of licence for each description.

1. The software can be legally used, only after a fee has been paid.

Licence type

2. The source code comes with the software. If the software is modified, the edited source code must be released under the same conditions as the original software.

Licence type

3. The software is free for a trial period and then a fee is requested, or expected, if the user wants to continue to use the software.

Licence type

4. The source code comes with the software. The software is free to be downloaded, edited, and distributed, possibly without restriction.

Licence type [4]

Question 4

A software developer works in a team for a large software development company.

(a) Two principles of the ACM/IEEE Software Engineering Code of Ethics are:

- developers must act consistently with the public interest
- developers must act in the best interest of their client and employer.

Name and describe three other principles in the ACM/IEEE Software Engineering Code of Ethics.

Principle 1

Description

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Principle 2

Description

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Principle 3

Description

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..... [6]

Question 5

Frankie is a software developer. He is developing a program to manage customer records for a client with an online retail business. He must ensure that data stored about each customer are both secure and private

(d) One principle of the ACM/IEEE Software Engineering Code of Ethics is to always act in the best interest of the client. Explain how Frankie can ensure that he is acting in the best interest of his client.

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..... [3]

Question 6

Mica has created some software and has copyrighted it. She wants to stop other people from copying and changing it illegally.

(a) Identify two ways Mica can prevent illegal copies of the software being installed.

1

2
 [2]

(b) Identify one way Mica can distribute the software without the source code.

.....
 [1]

(c) Mica is releasing the software under a commercial licence.

(i) Give two benefits to Mica of using a commercial licence.

1

2
 [2]

(ii) Name two other types of software licence.

1

2
 [2]

Question 7

Hugo has produced a program (app) for mobile phones. He needs to decide whether to use an Open Source licence or to distribute the app as shareware. (a) Describe what is meant by Open Source licence and shareware.

Open Source

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Shareware

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 [4]

(b) Tick (✓) **one** box to indicate the licence Hugo should use. Justify your choice.

Open Source	
Shareware	

Justification
.....
.....
.....
.....[2]

Question 8

For each of the following scenarios, tick one box for each scenario to indicate whether you think the person’s behaviour is ethical or unethical. Justify your choice.

(a) Kevin is a software engineer who has recently started a job with a new company. He is using program code from his previous employer in his new employer’s programs

Ethical	
Unethical	

Justification
.....
.....
.....[2]

(b) Nadya is a software developer. She has accepted a new job. She has never worked with the programming languages used by this new company. Nadya is planning to increase her knowledge of these programming languages before she starts her new job.

Ethical	
Unethical	

Justification
.....
.....
.....[2]

(c) Maria finds that one of her team members has produced some inventive code. She presents this to her manager, stating that it was produced by the team. She does not mention the individual’s name.

Ethical	<input type="checkbox"/>
Unethical	<input type="checkbox"/>

Justification

.....

.....

.....[2]

Question 9

This question presents three scenarios. For each scenario, tick (✓) one box to show whether you think the person's behaviour is ethical or unethical. Justify your choice.

(a) Wendy is a software engineer who is developing a program for her company. Her friend, Noah, is developing a program for a different company. Wendy looks at the code that Noah is writing to get ideas for her own program.

Ethical	<input type="checkbox"/>
Unethical	<input type="checkbox"/>

Justification

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.....[2]

(b) Amit is fixing some bugs in the computer system of a large multinational company. He is asked to sign a confidentiality agreement. He sees some confidential information which contains the names of other multinational companies that have broken the law. He copies this information and releases it on the Internet.

Ethical	<input type="checkbox"/>
Unethical	<input type="checkbox"/>

Justification

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.....[2]

(c) Farah is providing a company with an estimate for the cost of writing a program. The company she works for is in financial difficulty so she increases the estimate by 10%.

Ethical	
Unethical	

Justification

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.....[2]

Question 10

This question presents three scenarios. Tick (✓) one box for each scenario to indicate whether you think the person's behaviour is ethical or unethical. Justify your choice.

a) Mason is using his work computer to book a holiday whilst at work

Ethical	
Unethical	

Justification

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.....

.....[2]

(b) Ethan is supervising a trainee. The trainee asks Ethan for a reference for another job. Ethan does not want to lose the trainee, so refuses to give him a reference.

Ethical	
Unethical	

Justification

.....

.....

.....[2]

(c) Margarita finds that one of her team members has produced some inventive code. She presents this to her manager, praising the individual by name

Ethical	
Unethical	

Justification
.....
.....
.....[2]

Question 11

5 Arnold is a software developer. He has created a computer game for people to download over the Internet. Arnold is considering releasing the game as a piece of commercial software.

(a) (i) Describe what is meant by a commercial licence.
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..... [2]

(ii) Name and describe one other type of licence that Arnold can consider using.
Licence type
Description
.....
..... [3]

(b) Users need to enter their name and email address to create an account. The information is stored in a database on Arnold’s computer. Give three ways that Arnold can ensure users’ details are kept secure.
1
2
3 [3]

Question 12

Raj has joined a software company as a trainee programmer. He was given the company's Code of Conduct document during his induction training. The handbook has a section headed 'Ethical Behaviour'.

(a) Describe what is meant by ethics.

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.....[2]

(b) Raj is assigned to work as a new member of a development team. In his first week, Raj feels uncomfortable working with one of his colleagues. He is unfamiliar with the programming language used by the team. Next week, he will be working on the site of one of the company's clients with a colleague. Raj is very nervous about working in an unfamiliar workplace. Raj has a review with his manager after his first three weeks.

The Code of Conduct document was produced by the Human Resources section. It closely follows the ACM/IEEE Software Engineering Code of Ethics that uses these eight key principles:

Public Management	Client and Employer Profession	Product Colleagues	Judgement Self
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There are issues Raj will want to raise with his manager.

- Describe two of these issues.
- Circle the key ACM/IEEE principle this comes under.
- Suggest what action should be taken to demonstrate ethical behaviour.

Issue 1

Description

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ACM/IEEE principle (Circle one only)

Public Management	Client and Employer Profession	Product Colleagues	Judgement Self
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Possible action

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Issue 2

Description
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ACM/IEEE principle (Circle one only)

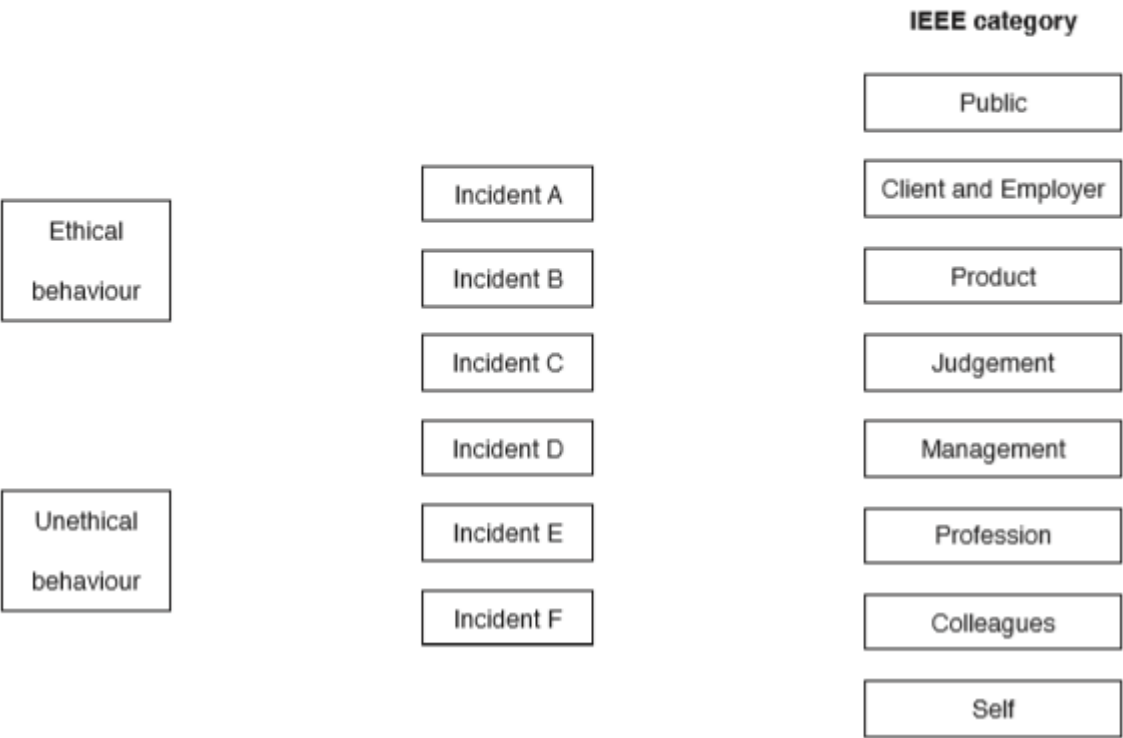
Public Management	Client and Employer Profession	Product Colleagues	Judgement Self
Possible action			
.....			
..... [6]			

Question 13

5 The IEEE Software Engineering Code of Ethics uses eight key principles shown in the right-hand column of the following diagram.

Tom is employed as a tester with a software company. He is keen to become a trainee programmer.

The middle column in the diagram labels six incidents which have happened to Tom this week. The table that follows the diagram describes each incident.



Incident	Description
A	Tom has received some phishing emails. He reported this to the bank they were supposed to have come from.
B	Tom has asked his manager if they will pay for him to attend a programming course.
C	Tom is testing beta versions of new games software at work. He copies the software on to CD-Rs and sells them to his friends.
D	Tom has completed the application forms to join the Chartered Institute for IT.
E	Tom finds it difficult to work with one of his colleagues. His way of dealing with this has been to refuse to speak with the colleague.
F	Tom's manager had considered the testing of a new game was completed. Tom reported to his manager that he thought there were still bugs which needed to be rectified.

(a) Draw a line on the diagram to link each of the six incidents to either ethical behaviour or unethical behaviour. [2]

(b) Consider each incident you have identified as **ethical behaviour**.

Draw a line from each incident to indicate the IEEE category it maps to. [4]

Question 14

5 Three types of software licensing and four descriptions are shown in the table below.

Put a tick (✓) in each row to match each description to the appropriate type of software licensing.

Description	Type of software		
	Open source	Shareware	Commercial
Software is purchased before it can be used			
Source code comes with the software			
Software is provided free on a trial basis			
The software can be modified by the user			

[4]

Question 15

A team of software engineers is developing a new e-commerce program for a client.

State three of the principles of the ACM/IEEE Software Engineering Code of Ethics. Illustrate each one, with an example, describing how it will influence their working practices.

1

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2

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3

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.....[6]

Question 16

A company needs new software to manage its accounts. It is evaluating two different options. One option is open source software and the other is commercial software.

(a) Explain what is meant by open source software.

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.....[2]

(b) Explain what is meant by commercial software.

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.....[2]

(c) The company has decided to purchase commercial software.

Identify four benefits to the company in choosing the commercial software option.

1

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2

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3

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4

.....[4]

Question 17

Paul works part-time for a large software company. The company sells security software to a number of banks. He also runs his own software company that produces and sells computer games.

Six statements about computer ethics are shown below.

Draw lines to indicate whether each statement describes ethical or unethical behaviour.

Statement	
To save time, Paul fakes the test results when testing the bank security software.	
Paul uses the software developed in his day job to help write some of the games software routines.	
To allow him to concentrate on his games software, Paul has frequently turned down job opportunities in his day job.	Ethical
To make the games software more realistic, Paul uses password protection code used in the bank security software.	
Because his work load is increasing, Paul is now using overseas companies to write some of the routines used in his games software.	Unethical
Paul carries out training on how to write games software in his spare time.	

[6]

Question 18

- 5 Bobby is a senior programmer at a software house which produces intruder detection software. He also runs his own software company which develops and sells various computer applications.

The following table shows seven activities which Bobby carries out.

Put a tick (✓) in the appropriate column to identify if the activity is ethical or unethical.

Activity	Ethical	Unethical
gives away passwords used in the intruder detection software		
uses source code developed at the software house for the software he develops for his own company		
insists that staff work to deadlines		
turns down training opportunities offered by his employer		
writes and sells software that reads confidential data from client computers		
fakes test results of safety-critical software		
has the software applications developed overseas for sale in his own country		

[7]

Question 19

- 10 The managers of an engineering company are about to buy new software. They need to decide whether to buy off-the-shelf or custom-written software. They have drawn up a list of five statements.

(a) Complete the table below by ticking (✓) the **True** or **False** column for all **five** statements.

Statement	True	False
custom-written software takes a long time to develop		
custom-written software is not fully tested		
custom-written software will not have any technical backup		
off-the-shelf software is usually cheaper because costs are shared		
off-the-shelf software is always compatible with other software		

[4]

(b) For each type of software, describe one further benefit.

off-the-shelf

.....

custom-written

.....[4]

Question 20

(c) An expert system can be built from either an expert system shell (off-the-shelf software) or it can be custom-written.

Describe two differences between off-the-shelf software and custom-written software.

1

2

.....[2]

Question 21

- (a) A large engineering company has made available for the first time off-the-shelf word processors, spreadsheets and communication software.

Describe the impact on the company and its staff following the introduction of all of this software.

[4]

- (b) The company has decided to purchase some new software to extend its use of computer technology across the company.

The management is considering either off-the-shelf packages or custom-written software.

Discuss the benefits and drawbacks of each type of software.

Off-the-shelf

Benefit

Drawback _____

Custom-written

Benefit

Drawback _____

_____ [4]