

QUESTION 1.

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- 4 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.

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.

Paul carries out training on how to write games software in his spare time.

Ethical

Unethical

QUESTION 2.



6 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.

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QUESTION 3.



6 Raj has joined a software company as a trainee programmer. He was given the 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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(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	Client and Employer	Product	Judgement
Management	Profession	Colleagues	Self

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	Client and Employer	Product	Judgement
Management	Profession	Colleagues	Self

Possible action

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Issue 2

Description

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ACM/IEEE principle (Circle one only)

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|------------|---------------------|------------|-----------|
| Public | Client and Employer | Product | Judgement |
| Management | Profession | Colleagues | Self |

Possible action

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Question 7 begins on the next page.

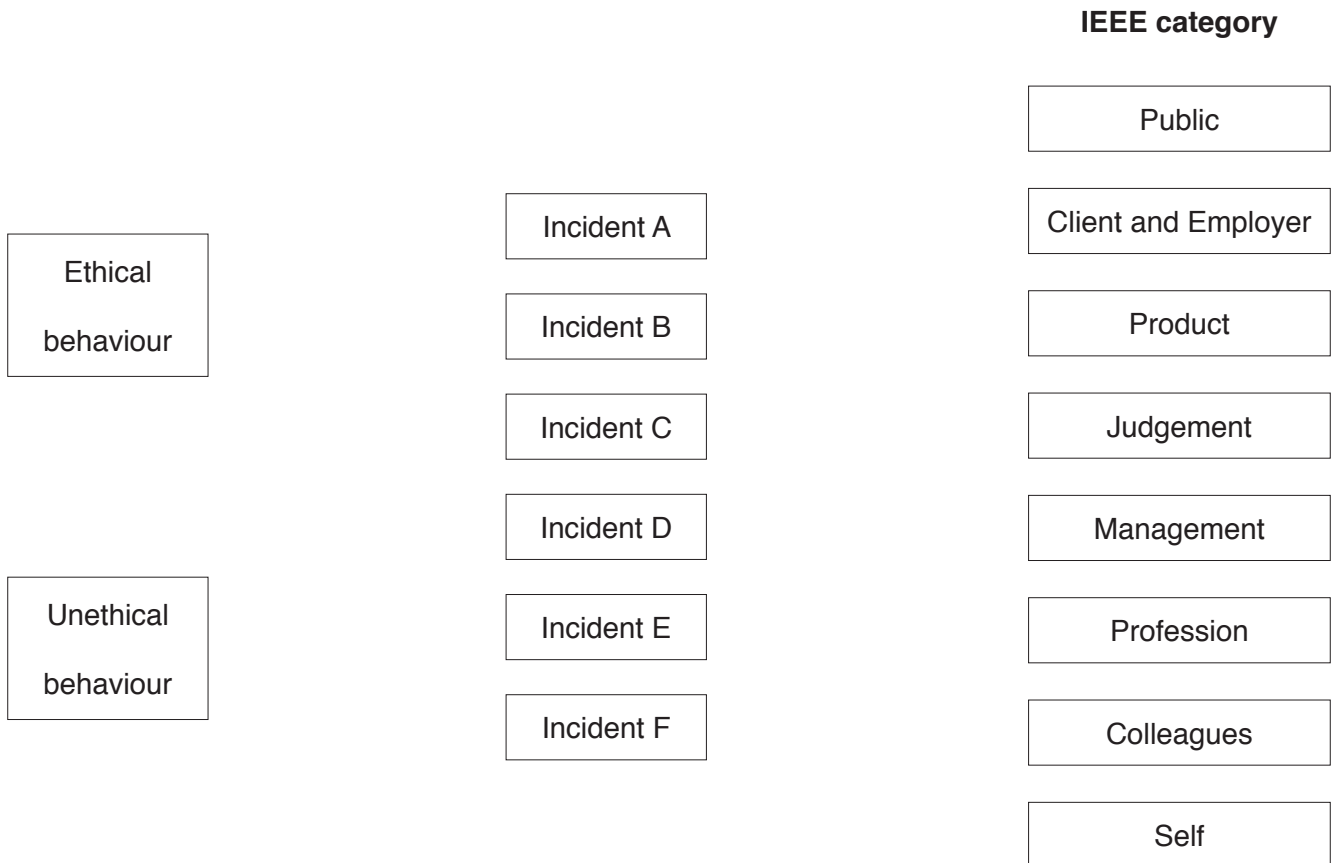
QUESTION 4.



- 5 The IEEE Software Engineering Code of Ethics uses eight key principles shown in the middle 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 5.



5 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 copies program code from his previous employer in his new employer's programs.

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

Justification

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- (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	<input type="checkbox"/>
Unethical	<input type="checkbox"/>

Justification

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- (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

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QUESTION 6.



5 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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(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 in the system that contains the names of other multinational companies that have broken the law. He copies this information and releases it on the Internet.

Ethical	
Unethical	

Justification

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(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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QUESTION 7.



3 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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(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

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(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

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QUESTION 8.



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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(b) The software development company uses data backup and disk-mirroring to keep their data secure.

Explain how data backup and disk-mirroring allow the company to recover from data loss.

Data backup

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Disk-mirroring

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QUESTION 9.



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

(a) State the difference between security and privacy.

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(b) Computer systems can be protected by physical methods such as locks.

Describe **two** non-physical methods used to improve the security of computer systems.

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- (c) A computer uses parity blocks to check the data that has been received is the same as the data that has been transmitted.

The following is an example of a parity block.

	Parity bit	Data						
	1	1	1	1	0	0	0	1
	0	0	0	0	1	1	1	0
	1	1	0	1	1	0	0	1
Parity byte	1	1	0	1	1	0	0	1

- (i) Describe how a parity block check can identify a bit that has been corrupted during transmission.

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- (ii) Give a situation where a parity block check **cannot** identify corrupted bits.

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