

Explain the way a code review works.

(2)

State **one** way that a code review helps programmers to produce robust software.

(1)

A team of developers is using an audit trail when working on a program.

State **two** advantages of keeping an audit trail.

(2)

Robust software must be free from vulnerabilities before it is released to users. Programming bugs are one type of vulnerability.

State **two other** types of vulnerability.

(2)

Explain the differences between a manual code review and an automated code review

(3)

## ANSWERS

1. A **code review** involves looking at another developer's code to ensure the code is robust (can handle unexpected inputs without crashing and not vulnerable to hacking attacks), is easy to maintain because it has been written using good programming practices (meaningful variable names, comments, white space)
2. A **code review** helps programmers produce robust software by identifying and fixing issues before the code is released.
3. An **audit trail** is a record of events or actions within a system, recording who did what and when. Two advantages of maintaining an audit trail are ensuring transparency and accountability.
4. Poor programming practices that allow hackers or malware to gain access to a system. Weak authentication (poor passwords) making it easy for unauthorised people to access a system. Out of date (or no) anti-malware software. A poorly set up firewall (or no firewall at all).
5. Manual code reviews involve human developers reading through the code line by line. Humans can understand the broader context of the program and can use their experience to spot potential problems. Manual code reviews are more time-consuming.  
In an automated code review, automated tools scan the code automatically. They can only pick up issues they have been programmed to spot. They don't understand the context of the program but are quicker to perform and therefore cheaper.  
Best practice would use a combination.