

KK04 — Established and innovative approaches to software development

Development & Evaluation · Comprehensive exam study guide

STUDY DESIGN — YOU MUST KNOW

- the use of code repositories
- application programming interfaces (APIs) and libraries
- artificial intelligence-based (AI) assistants

Modern development reuses existing tools and code. Know what each approach is, plus an advantage and a risk — especially the security/quality considerations (which link to Cyber Security).

The three approaches

Approach	What it is	Benefit	Risk/consideration
Code repository	A store (often online, e.g. Git-based) for source code with version history.	Version control, collaboration, backup/recovery.	Access must be secured; secrets must not be committed.
API / library	Pre-built functions/services a program calls (a library is local code; an API is an interface to a service).	Saves time; reuses tested, reliable code.	Dependency on third-party quality/availability; security/licensing.
AI assistant	A tool that generates/explains/optimises code from prompts.	Speeds up writing and debugging.	Output must be tested/understood; privacy and IP concerns.

API vs library

A **library** is a collection of reusable code you include and call directly. An **API** (application programming interface) is a defined set of rules for interacting with an external service or component — you send requests and receive responses. Both promote reuse rather than rewriting code.

WATCH OUT

Reusing third-party code/APIs introduces a **dependency**: if it has a vulnerability or goes offline, your solution is affected (links to Cyber KK03).

Key definitions to memorise

Code repository	A managed store for source code that records version history and supports collaboration.
Library	A collection of reusable, pre-written code that a program can call.
API	An application programming interface: a defined way for software to request services from another component or system.

Exam technique

EXAM TIP

- For 'evaluate' questions, give a benefit AND a risk for each approach.
- Distinguish a library (local code you call) from an API (interface to a service).

COMMON MISTAKES

- Treating API and library as identical.
- Praising AI/APIs without mentioning testing/security risks.

Quick revision checklist

- I can describe the three approaches with a benefit and a risk of each.
- I can distinguish an API from a library.

Exam practice — questions & model answers

Q1. State one advantage of using a code repository during development.

State · 1 mark

Model answer

- It provides version control/collaboration and a backup of the code (1).

Q2. Explain one benefit and one risk of using a third-party API in a solution.

Explain · 2 marks

Model answer

- Benefit: it reuses tested functionality, saving development time (1).
- Risk: the solution depends on the third party's availability/security, which is outside the developer's control (1).

Q3. Distinguish between a library and an API.

Distinguish · 2 marks

Model answer

- A library is reusable code included and called directly in the program (1);
- an API is a defined interface for requesting services from an external component/system (1).