City & Guilds Level 3 End-point Assessment for Software Development Technician (9704-12)

Standard: ST0128

EPA Plan: Version 1.1
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EPA Pack for Providers and Employers

Version 1.0
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For external use

Version	Summary of changes	Section
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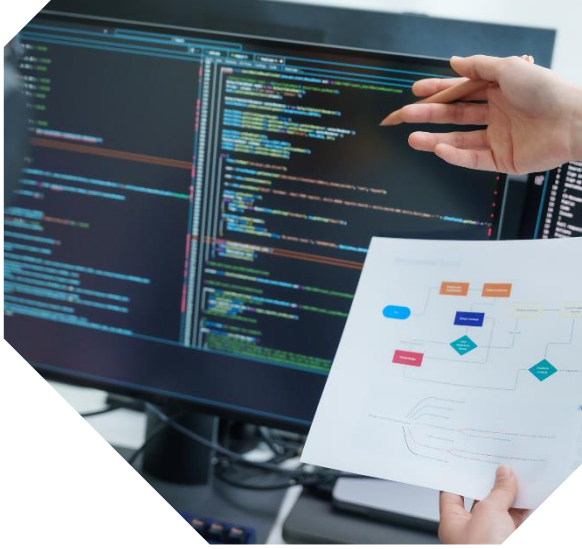
Contents



1. Apprenticeships

This pack will help providers and employers prepare apprentices for the End-point Assessment (EPA) of their City & Guilds Level 3 End-point Assessment for Software Development Technician (9704-12). It explains how apprentices will demonstrate the knowledge, skills and behaviours (KSBs) which they developed during their apprenticeship.

This pack must be used alongside the:

- Recording Forms for providers and employers
- EPA Documents Library, which includes the Manual for the End-point Assessment Service, information about the EPA Service, policies about malpractice and appeals, FAQS, and a video about EPA which can be shared with apprentices.

The City & Guilds Manual for the End-point Assessment Service includes information on:

- application, registration and booking
- assessment
- results and post results (including resits)
- fees
- quality assurance.

Full-time apprentices will typically spend 18 months on-programme working towards meeting the Standard, with a minimum of 20% off-the-job training. The employer should ensure that the apprentice has access to development opportunities to gain the KSBs, as outlined in the Standard, and must hold regular progress reviews with the provider and apprentice.

Once the apprentice has completed their training, they should be ready to go through 'Gateway' to EPA. See the Gateway and Assessment Instructions sections within this pack to understand what happens.

The EPA for this apprenticeship includes the following assessments which can be taken in any order, as requested by the apprentice:

- Project Report with Questioning
- Professional Discussion underpinned by Portfolio.

Preparing for EPA

In preparation for EPA, providers and employers should:

- read the Assessment instructions sections before reaching Gateway – the EPA Partnership Managers can help with any queries
- review which completed **Recording Forms and evidence** must be submitted, and when
- use the Recording Forms provided in the format laid out, unless indicated otherwise
- plan the venue and resources required for EPA – make sure the assessment environment is secure and comfortable, without interruptions
- use the EPA Pro portal to help manage the apprentice's progress through EPA
- for on-site assessment, arrange for a designated contact to be available on the day to ensure the correct resources are available.

To help apprentices prepare for EPA, providers and employers should:

- explain the assessments and Recording Forms to the apprentice – refer to details in the Assessment Instructions sections of this pack
- agree a realistic timeframe for submission of evidence that meets the EPA deadlines – any delays in submission of evidence will delay the assessments
- make sure the apprentice has the resources and time to prepare for, and undertake, EPA
- take the apprentice through some mock assessments
- share the EPA Preparation Guide with the apprentice, which includes information about system requirements for virtual meetings
- let City & Guilds know if access arrangements are required to support an apprentice through EPA. Information about City & Guilds access arrangements, including reasonable adjustments, is on the City & Guilds website under EPA Documents Library.

Authenticating the Apprentice's Work

The Independent End-point Assessor (IEPA) must ensure all decisions satisfy Validity, Authenticity, Currency and Sufficiency (VACS). For evidence produced outside controlled conditions, the apprentice will be required to:

- sign a declaration that the work is their own
- reference all sources.

The employer/provider should also aid authentication by:

- supplementary (oral) questioning to gauge familiarity with the topic

- looking out for any changes to the apprentice's usual writing style, unusual sources/examples or the use of US spellings or phrases that might indicate cutting and pasting from the internet
- requiring access to evidence of steps in the process, for example drafts, notes, planning etc.

City & Guilds have produced forms for use when reviewing evidence produced outside of controlled conditions. These forms include Declaration of Authenticity Forms which must be completed when submitting evidence. The forms are incorporated in the Recording Forms document.

City & Guilds Position Statement on Artificial Intelligence

The following guidance on artificial intelligence (AI) is designed to help candidates, teachers and assessors to complete NEAs, coursework and other internal assessments successfully. Please ensure familiarity with it.

Position Statement on AI | City & Guilds

Health & Safety and Codes of Practice

The importance of safe working practices, the demands of the Health and Safety at Work Act and any Codes of Practice associated with the industry **must** always be adhered to.

Following safe working practices is an integral part of all City & Guilds assessments, and it is the responsibility of the provider and employer to ensure that all the health and safety requirements are in place when apprentices are working on any projects or before apprentices begin any EPA.

Should an apprentice fail to follow correct health and safety practices and procedures during an EPA, the IEPA may advise the apprentice to stop and explain why.

Results Submission and Feedback

The IEPA will not provide feedback to the apprentice during or immediately following the assessment process. The provider will be informed by the City & Guilds EPA Team of the assessment results.

The IEPA will communicate the grade allocated for each assessment to the Lead Independent End-point Assessor (LIEPA) for quality assurance and sampling. The LIEPA will submit the results to the City & Guilds EPA Team.

Summary feedback will be provided to all apprentices after any grade determination has been carried out. The feedback will cover the areas against which insufficient evidence has been provided, leading to a 'Fail'. Our 'End-point Assessment Feedback' will also cover the areas against which the apprentice's evidence has resulted in the award of a Pass, Merit or Distinction.

If the apprentice has passed EPA, the City & Guilds EPA Team will issue the EPA Statement of Achievement to the provider confirming the grade achieved and will notify the Institute for Apprenticeships and Technical Education (IfATE) who will issue the apprenticeship certificate.

Statement of Achievement

A printed EPA Statement of Achievement will be issued to each successful apprentice.

Providers and employers with access can view and download PDF copies of the Statement 24 hours after the results are published. A PDF supports more efficient processing of funding claims by providing evidence of learner certification before the apprentice's paper certificate arrives.

The overall apprenticeship certificate will be issued by the IfATE.

Digital Credentials

A digital credential is a verified, visual representation of knowledge and skills earned in various learning environments. Please see an example below:

Digital credentials are issued and verified online, making it easy for individuals to demonstrate their competencies to employers, clients and peers online. Each digital credential has a unique URL that can be shared electronically via social media, in an email signature and on a CV. This is a complimentary service in addition to the paper certificate.

For further information, please visit the City & Guilds EPA Digital Credentials webpage and the general terms in respect of our privacy policy or contact digitalsupport@cityandguilds.com.

2. The Apprenticeship Standard

Occupation Summary

This occupation is found in organisations ranging from large multi-nationals, public sector bodies and government projects developing multi-billion-pound software solutions to support key projects, to small consultancy firms designing bespoke software solutions for clients.

The broad purpose of the occupation is to understand a client's requirements as provided in design specification and then build and test high-quality code solutions to deliver the best outcome.

Software development technicians are the supportive entry level team member helping to create computer programs. Some assist in developing the applications that allow people to do specific tasks on a computer or another device. Others assist in developing the underlying systems that run the devices or that control networks. For example, a software development technician may work to support a software developer or wider team on Transport ticketing systems, traffic light control systems, customer-facing websites for journey planning and account management, and internal websites for monitoring the status of train and road networks. They may assist in developing software to create bespoke asset management systems.

The software development technician may work on assisting software developer teams in devising innovative solutions to problems such as flood warning systems and creating products that enhance farmers' engagement with sustainable farming approaches. Organisations use software to ensure that their operations become ever more effective and robust, reducing the incidence of downtime by building quality-tested software solutions to give a better service. For example, in commercial organisations this can give them a competitive advantage by being able to analyse significant amounts of data quickly and efficiently to provide the business with information and management systems. This can save time and help the business spot profit-making opportunities. For public sector bodies the right software solution can drive up performance and help target scarce resources more effectively, ensuring that customer expectations are more likely to be met.

A software development technician typically works as a junior member of a software development team to build simple software components (whether web, mobile or desktop applications) to be used by other members of the team as part of larger software development projects or by end users. They will interpret simple design requirements for discrete components of the project under supervision. The approach will typically include implementing code – building on code that other team members have developed – to

produce the required component. The software development technician will also be engaged in testing that the specific component meets its intended functionality. In their daily work, an employee in this occupation interacts with software developers and may also assist the wider team in their interactions with internal and external parties, including users/customers (to understand their needs and evaluate the software developed through user testing). The software development technician may also interact under supervision with team members from a range of specialist fields, including designers, developers, engineers, analysts and project/delivery managers (to ensure the effective implementation of software solutions).

A software development technician is typically office-based, however field-based research and testing may require periods of time working in the environments of the clients whose needs they are seeking to meet. An employee in this occupation will be responsible for assisting in the development of software solutions across the full software development lifecycle, from research and development, through continuous improvement, to product/service retirement.

They will work under supervision on standalone project stages and as part of wider teams, reporting to a more senior member of their team.

Occupational Duties

This apprenticeship Standard has a number of duties which someone working in the role would typically be able to undertake. These duties are underpinned by a range of KSBs which a successful apprentice will be able to demonstrate:

Duty	KSBs
Duty 1 Follow clearly defined requirements to deliver software development activities and products	K1 K2 K3 K13 K14 K20 K21 K23 K24 S2 S10 S12 S15 S16 S18 S25 S30 B1 B2 B3 B5
Duty 2 Report progress against metrics on software development activities accurately throughout the stages of the software development lifecycle	K1 K2 K3 K4 K5 K6 K20 K25 S12 S15 S18 S19 S21 S26 S31 B1
Duty 3 Identify and report any impediments to progress in development activities to supervisors	K1 K2 K3 K4 K13 K15 K20 K23 K24 S1 S5 S6 S7 S9 S17 S18 S19 S22 S23 S25 S26 B1 B3 B4
Duty 4 Follow instructions to convert customer requirements to technical requirements	K1 K2 K4 K6 S2 S3

Duty	KSBs
Duty 5 Communicate outcomes from development activities to team members and other stakeholders both internal and external	K4 K20 K23 S1 S12 S32 B1
Duty 6 Identify and implement security features of a proposed design	K6 K7 K9 K10 K11 K12 K13 K14 S2 S5 S14 S15 S16 S17 S29
Duty 7 Write logical and maintainable software solutions in line with given specifications to meet the design requirements and organisational coding standards	K1 K7 K12 S11
Duty 8 Apply security principles and practice to the software development tasks assigned	K1 K8 K13 K14 K15 S5 S24 S25 B2
Duty 9 Maintain appropriate project documentation throughout the software development tasks	K1 K2 K3 K4 K19 K20 S12 S13 S18 S26 S32
Duty 10 Apply appropriate recovery techniques to ensure that the software solution being developed is not lost	S31 B2
Duty 11 Undertake unit testing of solutions, with appropriate levels of test code coverage, to identify and, where necessary, escalate issues	K1 K2 K13 K22 S4 S5 S6 S8 S17 S28
Duty 12 Contribute to testing the end-to-end software solution to ensure a high-quality output	K1 K2 K13 K22 S5 S6 S17 B2 B3 B4
Duty 13 Support delivery of deployment phases, including trials and final release	K1 K2 K3 K5 K6 K9 K20 K24 S18 S19 S23 S30 S31 S32
Duty 14 Identify the need for a suitable ‘bug fix’, appropriate to the severity and priority of the issue identified	K1 K2 K6 K7 K10 K11 K12 K14 K15 K21 K22 S15 S16 S17 S18 S20 S21 S22 S24 S27 B2 B3 B4

Duty	KSBs
Duty 15 Practice continuous guided self-learning to keep up to date with technological developments to enhance relevant skills and take responsibility for own professional development	K16 K17 K18 K24 B1 B5

Knowledge, Skills and Behaviours

Ref.	Knowledge, skills and behaviours	Assessment method
K1	Fundamentals of all stages of the software development lifecycle, including development, quality assurance, user acceptance testing and release.	Project Report with Questioning
K2	Roles and responsibilities within the software development lifecycle.	Project Report with Questioning
K3	Roles and responsibilities of the project lifecycle.	Project Report with Questioning
K4	Different communication methods, how to adapt appropriately to different audiences, including collaborative technologies such as discussion threads and document collaboration.	Professional Discussion underpinned by Portfolio
K5	The key similarities and differences between different software development methodologies, such as agile and waterfall.	Professional Discussion underpinned by Portfolio
K6	Principles of effective teamwork to produce software.	Professional Discussion underpinned by Portfolio
K7	Fundamentals of software design approaches and patterns, including when to identify reusable solutions to commonly occurring problems.	Project Report with Questioning
K8	Organisational policies and procedures relating to the tasks being undertaken, and when to follow them. For example, the storage and treatment of General Data Protection Regulation (GDPR) sensitive data.	Professional Discussion underpinned by Portfolio
K9	Fundamentals of computing systems, including physical, virtual and cloud technologies.	Professional Discussion underpinned by Portfolio
K10	Fundamental principles of algorithms, logic and data structures, eg how they work using a step-by-step solution to a problem, or rules to follow to solve the problem.	Professional Discussion underpinned by Portfolio
K11	Principles and uses of relational and non-relational (NoSQL) databases.	Professional Discussion underpinned by Portfolio

Ref.	Knowledge, skills and behaviours	Assessment method
K12	Basic principles of software designs and functional/technical specifications.	Project report with questioning
K13	Key principles of software testing frameworks and methodologies.	Project Report with Questioning
K14	Principles of pattern recognition such as looking for similarities among and within problems.	Project Report with Questioning
K15	Fundamentals of breaking down a complex problem or system into smaller, more manageable parts.	Project Report with Questioning
K16	The importance of valuing differences and understanding the protected characteristics named in the Equality Act 2010.	Professional Discussion underpinned by Portfolio
K17	Basic principles of emerging technology trends and innovations such as Internet of Things (IoT), artificial intelligence (AI) and augmented reality (AR).	Professional Discussion underpinned by Portfolio
K18	Awareness of legal and regulatory requirements and their practical application to the role for example, data protection, security, intellectual property rights (IPR), data sharing, marketing consent, personal data definition.	Professional Discussion underpinned by Portfolio
K19	Fundamental approaches to actions such as sequence, selection and iteration.	Project Report with Questioning
K20	Basic principles of software project planning, including: • risks and dependencies • integration • prioritisation of tasks • escalation of problems • quality • time • end user experience	Project Report with Questioning

Ref.	Knowledge, skills and behaviours	Assessment method
K21	Basic principles of processes and protocols used to ensure internet security, including concepts of security assurance.	Professional Discussion underpinned by Portfolio
K22	Key principles of testing for all components (including software, hardware, data), interfaces and the resulting service.	Professional Discussion underpinned by Portfolio
K23	Basic principles of digital tools and their use in business: • management and presentation tools • evaluation tools and techniques such as project management tools	Project Report with Questioning
K24	Role and importance of Industry Standards and where to find them (eg ISO standards, IETF RFCs).	Professional Discussion underpinned by Portfolio
K25	Software development approaches, for example object oriented, event driven or procedural.	Professional Discussion underpinned by Portfolio
S1	Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether web, mobile or desktop applications) under supervision.	Project Report with Questioning
S2	Apply appropriate, secure development principles to specific software components at all stages of development.	Project Report with Questioning
S3	Support development of effective user interfaces.	Professional Discussion underpinned by Portfolio
S4	Make simple connections between code and defined data sources as specified.	Professional Discussion underpinned by Portfolio

Ref.	Knowledge, skills and behaviours	Assessment method
S5	Test simple code and analyse results to correct errors found using unit testing under supervision.	Project Report with Questioning
S6	Conduct a range of test types under supervision, such as functional and non-functional.	Professional Discussion underpinned by Portfolio
S7	Apply structured techniques to problem solving, including carrying out simple debug of code.	Project Report with Questioning
S8	Follows organisational and industry good coding practices (including for naming, commenting etc).	Professional Discussion underpinned by Portfolio
S9	Solve logical problems, seeking assistance when required (including appropriate mathematical application).	Professional Discussion underpinned by Portfolio
S10	Support the creation of simple software documentation and visuals to effectively communicate understanding of the program.	Project Report with Questioning
S11	Define functional and non-functional requirements such as use cases, storyboards, user stories, performance and accessibility.	Project Report with Questioning
S12	Work within operational requirements such as health and safety, budgets, brands and normal business protocols.	Professional Discussion underpinned by Portfolio
S13	Develop user interfaces as appropriate to the organisation's development standards and the type of software development being developed.	Professional Discussion underpinned by Portfolio
S14	Build scripts in line with work instructions for deployment into the relevant environment.	Project Report with Questioning
S15	Follow simple software designs and functional/technical specifications in line with work instructions.	Project Report with Questioning
S16	Follow simple testing frameworks and methodologies in line with work instructions.	Project Report with Questioning
S17	Follow company, team or client approaches to continuous integration, version and source control as instructed.	Professional Discussion

Ref.	Knowledge, skills and behaviours	Assessment method
		underpinned by Portfolio
S18	Support the communication of software solutions and ideas to technical and non-technical stakeholders.	Professional Discussion underpinned by Portfolio
S19	Apply algorithms, logic and data structures in line with work instructions.	Project Report with Questioning
S20	Follow work instructions to contribute to building a given design while remaining compliant with security and maintainability requirements.	Professional Discussion underpinned by Portfolio
S21	Apply techniques to break down complex problems.	Professional Discussion underpinned by Portfolio
S22	Demonstrate how key performance indicators (KPIs) can be used to frame and measure desired outcomes.	Project Report with Questioning
S23	Implement secure code in appropriate languages of different types which is maintainable, readable and functional.	Professional Discussion underpinned by Portfolio
S24	Design simple software solutions to meet a requirement using tools and techniques, such as waterfall and agile.	Professional Discussion underpinned by Portfolio
S25	Work in a shared code base with appropriate etiquette and tools, such as modularity and data definition.	Professional Discussion underpinned by Portfolio
S26	Use simple debugging techniques, such as interactive debugging, print debugging and remote debugging.	Project Report with Questioning
S27	Implement test plans under supervision to show that a test plan is implementable in practice and implementation conforms to the plan.	Professional Discussion underpinned by Portfolio
S28	Develop and use simple acceptance criteria.	Professional Discussion underpinned by Portfolio

Ref.	Knowledge, skills and behaviours	Assessment method
S29	Apply and maintain procedures and security controls to ensure confidentiality, integrity and availability.	Professional Discussion underpinned by Portfolio
S30	Use collaboration tools and technologies for source and version control to enable working together on common projects, regardless of physical location.	Professional Discussion underpinned by Portfolio
S31	Follow instructions to ensure client data is held securely under supervision, eg not using personally identifiable information in test systems and making sure personal actions comply with ICO regulations.	Professional Discussion underpinned by Portfolio
S32	Use collaboration tools and technologies for writing technical documentation for, and adapting to, specific audience(s), eg technical, non-technical, internal and external.	Professional Discussion underpinned by Portfolio
B1	Use critical thinking skills when undertaking work tasks.	Professional Discussion underpinned by Portfolio
B2	Committed to guided Continuous Professional Development (CPD).	Professional Discussion underpinned by Portfolio
B3	Work independently and take responsibility within tightly defined parameters.	Project Report with Questioning
B4	Maintain a productive, professional and secure working environment.	Project Report with Questioning
B5	Team player, for example working collaboratively, keeping others informed using effective communication, recognising personal and professional limitations and seeking advice when necessary.	Professional Discussion underpinned by Portfolio
B6	Self-motivated, for example manages own time effectively, takes responsibility to complete the job.	Project Report with Questioning

Overall Grade

This End-point Assessment is graded Fail, Pass, Merit or Distinction. The EPA will be assessed and graded by the IEPA.

Information about how each assessment is graded can be found in the Assessment Instructions sections of this pack. The apprentice will fail an assessment method if they do not meet the assessment criteria.

Grades from the individual assessments will be combined to determine the overall grade.

All assessment methods are weighted equally in their contribution to the overall EPA grade. Performance in the EPA will determine the apprenticeship grade of Fail, Pass, Merit or Distinction.

To gain an overall EPA 'Pass', apprentices must achieve a pass in both assessment methods.

To gain an overall EPA 'Merit', apprentices must achieve a pass in one assessment method and a distinction in the other assessment method.

To achieve an overall EPA 'Distinction', apprentices must achieve a distinction in both assessment methods.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment 1: **Project Report with Questioning**	**Assessment 2:** **Professional Discussion underpinned by Portfolio**	**Overall grading**
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

3. Gateway

The EPA period will only start when the **employer** is satisfied that the apprentice is consistently working at, or above, the level of the Standard. The apprentice must be able to evidence that they fully demonstrate the Occupational Standard and required level of professional competence in an authentic workplace context. In making this decision, the employer could take advice from the provider, but the ultimate decision is made solely by the employer.

If there is a **provider** working alongside the employer, they should support the apprentice's preparation for Gateway.

The apprentice must have completed the following Gateway requirements:

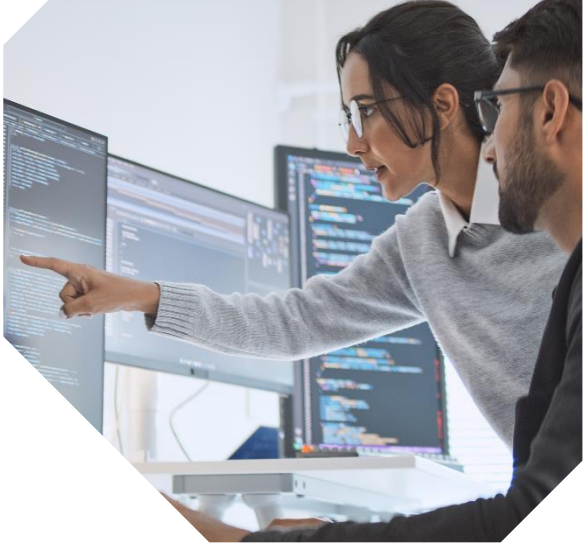
- Achieved Level 2 English and mathematics
- Submit a portfolio of evidence and a signed and dated evidence reference matrix

The following should be completed on the EPA Pro platform:

- Gateway Declaration Form signed by the apprentice
- Gateway Declaration by the provider, on behalf of the employer and tutor, confirming that the apprentice has completed at least 12 months on-programme

City & Guilds will confirm when all the Gateway requirements have been met.

The Assessment Instructions sections provide details about the evidence which must be submitted at Gateway.



4. Timetable for End-point Assessment

The EPA period is typically completed within three months of the EPA Gateway, starting when City & Guilds has confirmed that all Gateway requirements have been met.

Further information about the booking process and timelines can be found in the City & Guilds Manual for the End-point Assessment Service.

A planning meeting is not a requirement of the Assessment Plan for this Standard. The EPA Partnership Managers can provide additional guidance.

Ongoing during on-programme	Evidence and forms
Provider and employer • Reviews progress as part of their regular performance management process and ensures apprentice's performance is on track • Identifies any gaps and creates a plan with the apprentice • Enrols apprentice on EPA Pro and provides 'expected date ready for EPA'	N/A
Apprentice • Completes the English and maths components of the apprenticeship • Compiles a portfolio of evidence	N/A
Gateway process	**Evidence and forms**
Employer • Reviews progress and ensures the apprentice is ready for EPA • Reviews evidence to confirm that it is appropriate and sufficient to meet the Standard	Signs: • Declaration of Authenticity (Portfolio of Evidence)
Apprentice • Must have been on programme for a minimum of 12 months and one day • Completes and submits evidence and forms	Signs: • Declaration of Authenticity (Portfolio of Evidence) Submits to provider: • Apprentice Gateway Declaration

	• Portfolio of evidence
Provider – on EPA Pro • Books EPA on the EPA Pro portal, in line with City & Guilds' booking timelines in the EPA Manual • Makes City & Guilds aware of any additional needs of the apprentice so that they can review reasonable adjustments – see the current policy on the City & Guilds website, under EPA Documents Library • Completes Provider Gateway Declaration **on behalf of the employer and tutor** • Uploads evidence and forms onto EPA Pro	Completes on EPA Pro: • Provider Gateway Declaration Signs: • Declaration of Authenticity (Portfolio of Evidence) Uploads onto EPA Pro: • Apprentice Gateway Declaration • Portfolio of evidence • Evidence reference matrix (Portfolio of Evidence)
City & Guilds EPA Gateway Team • Formally confirms when the Gateway requirements have been met	N/A
City & Guilds EPA Team • Agrees on a mutually convenient date for the EPA events with the provider and IEPA	N/A
End-point Assessment	**Evidence and forms**
Apprentice • Completes End-point Assessments	Submits to provider: • Project report • evidence reference matrix (Project Report)
Employer • Ensures the apprentice has access to the resources required for the assessments (see the Resources section)	Submits to provider: • Declaration of Authenticity (Project Report)
Provider • Submits evidence and forms	Uploads onto EPA Pro: • Project report • Declaration of Authenticity (Project Report)
IEPA • Reviews project report and portfolio of evidence prior to EPA events • Carries out End-point Assessments	Completes: • IEPA recording forms • End-point Assessment feedback form

• Marks each assessment, communicates the results to the LIEPA • Provides feedback for assessments in EPA Pro	
LIEPA • Samples and quality assures assessments • Confirms overall grade to EPA Team	Reviews: • IEPA recording forms • End-point Assessment feedback form
City & Guilds EPA Team • Communicates the results to the provider via EPA Pro • Processes the overall result if the apprentice has passed all the assessments and advises IfATE, who issue the certificate. The data will be provided to IfATE once a month, on the fourth working day of the month.	N/A

Summary Timescales

Readers should check the previous Timetable and the Assessment Instruction sections of this document for the detailed requirements for each stage.

Further information on EPA Service Timelines can be found on www.cityandguilds.com.

On programme	Enroll apprentice on EPA Pro, including 'expected date ready for EPA' Compile portfolio of evidence
Gateway process	Provider submits evidence and forms on EPA Pro and provides (optional) planning meeting dates
Gateway	Assessment components can only be booked after Gateway has been approved
Project Report with Questioning	Project report to be submitted four weeks from the project start date
Professional Discussion	A copy of the portfolio of evidence should be brought by the apprentice to the Professional Discussion

End-point Assessment completed

5. End-point Assessment Resources

Assessment method	Resources required
Project Report with Questioning	• Access to a computer with video-conferencing software which is tested prior to the assessment starting. The video-conferencing software will be advised at the point of booking. • Access to hard copies of the apprentice's project report
	• A suitable quiet room, free from distractions and interruptions in which the questioning component can take place
Professional Discussion	• Access to a computer with video-conferencing software which is tested prior to the assessment starting. The video-conferencing software will be advised at the point of booking. • Access to hard copies of the apprentice's portfolio of evidence
	• Quiet room, free from distractions and interruptions

6. Assessment Information: 700 Project Report with Questioning

Overview

Apprentices will conduct and submit a work-based project in the form of a project report (component 1). This will be followed by questioning from the IEPA (component 2), approximately two weeks after the project report has been submitted.

The project report is compiled and submitted after the apprentice has gone through the Gateway process.

The employer will ensure the project has a real business application and that the apprentice has sufficient time and the necessary resources to plan and undertake the project.

The purpose of the questioning component is to check the knowledge and skills shown in the work-based project and explore the underpinning reasoning where the supporting notes may be insufficiently detailed or ambiguous. This component will take the form of questioning to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve questions that focus on coverage of the work-based project report.

Rationale

Software development technicians operate in a project-based environment and will be familiar with reporting on software development activities in their day-to-day work. The questioning component will allow real work to be used to demonstrate some KSBs which may otherwise take too long to be observed or assessed. This will enable the apprentice to draw out KSBs that have arisen during the project in more depth.

Grading	X/P/D To gain a **Pass** the apprentice must achieve all of the Pass criteria. To gain a **Distinction** the apprentice must achieve all of the Pass criteria and all of the Distinction criteria.
Type of assessment	Work-based project
Duration	**Project report**: Four weeks to compile **Questioning**: 40 minutes
Location	**Project report**: The apprentice should undergo standard workplace supervision. **Questioning**: Online using video conferencing
Resources	Access to a computer with video-conferencing software A suitable quiet room, free from distractions and interruptions in which the questioning component can take place

Assessment Specification

Description	Coverage	KSBs	Grade
Work-based project report with questioning	Software development lifecycle	K1, K2, K3, K20, K23 S2, S15, S22 B3	X/P/D
	Software testing	K13 S5, S7, S16, S26	
	Development	K7, K10, K12, K14, K15, K19 S1, S11, S14, S19	
	Software support	S10 B4, B6	

Assessment Instructions

Duration

Component 1: Project report

The project report is compiled after the apprentice has gone through Gateway. The apprentice has **four weeks** from the project start date to complete and upload the project report. The start date for the project is chosen by the apprentice during Gateway.

Component 2: Questioning

The questioning component will last for **40 minutes**, plus or minus 10% at the discretion of the IEPA.

The assessment will include time for:

- introductions between the apprentice and IEPA
- overview of what will happen and when, summarising the purpose, structure and confidentiality of the assessment
- identity checks to be made
- any questions from the apprentice
- the apprentice to be put at ease and confirm they are ready for the assessment
- list the timings for each stage of the assessment, including any breaks.

Delivery

Component 1: Project report

Apprentices will conduct and submit a project in the form of a report. The project is compiled after the apprentice has gone through Gateway.

The project will be based upon a customer or stakeholder specification requiring the apprentice to respond to any of the following:

- a specific problem
- a recurring issue
- an idea/opportunity.

As a minimum all projects must include the following sections:

- an introduction
- the scope of the project (including key performance indicators)
- analysis and problem solving in response to challenges within the project
- research and findings
- project outcomes, including artefacts comprising examples of relevant coding undertaken and visual infographics conveying the software solution and design of the software development outputs sufficient to demonstrate the KSBs assigned to this method
- recommendations and conclusions

- an explanation of how the stages of the software development lifecycle which are involved in the project have been evidenced eg:
    - planning
    - analysis
    - design
    - implementation/build
    - test
    - deploy
    - maintain.

The employer will ensure the apprentice has sufficient time and the necessary resources, within this period, to plan and undertake the project.

The project report has a word limit of **3000**. A tolerance of plus or minus 10% is allowed.

Appendices, references and diagrams can be addended to the report, and apprentices are advised that they must addend artefacts, such as examples of code, and may include infographics and visualisations to show how the software project outcomes are given effect, as supplementary information to the report.

Any additional supplementary information will **not** form part of the maximum word limit of 3000 words.

The project must map, in an appendix or in the evidence reference matrix provided by City & Guilds, how it evidences the relevant KSBs for this assessment method.

The apprentice should complete their project unaided. When the project report is submitted, the employer and the apprentice must verify that the submitted project is the apprentice's own work.

Selecting the project title/scope

The employer is responsible for supporting the apprentice to identify a project title/scope that:

- is relevant to the business context in which they are in
- meets the minimum assessment requirements, stated under Component 1: Project report
- is realistic and proportionate to complete within the timeframe of four weeks from the project start date
- allows the apprentice to demonstrate all of the KSBs assigned to this assessment method.

To support identification of the scope, City & Guilds have provided a number of exemplar project titles and briefs. These titles are intended to support the employer and apprentice to identify a suitable work-based project that is appropriately sized and complex enough to cover the knowledge, skills and behaviours required for this assessment method.

The exemplar project titles have been designed to meet the minimal assessment requirements of the EPA and encompass examples from the broad range of sectors in which software development technicians are employed.

The employer should work with the apprentice to identify a project title that best suits their working conditions. Where possible, the exemplars can be used or adapted to meet the conditions of the individual apprentice. However, in most instances, the employer will be required to determine a specific title/brief that relates to the working conditions of the apprentice. In such an instance, the exemplars should be used to guide the employer of the type of information that would be useful to support the apprentice and allow them to successfully undertake the project.

Project title	Scope
Website enhancement	You work for a small web development company that provides support to small and medium-sized enterprises (SMEs). The company has an existing customer with a website built using a content management system to showcase their products and services. As part of the development team, you have been tasked with designing, developing and testing a component to allow blogs to be added to the website that can be updated by nominated staff within the company.
Application extension	You work in a development team for the IT department of a large organisation. The IT department has developed a bespoke asset management system for its remote users. The system tracks devices and their specifications that are allocated to users. The organisation wants to develop an automated reporting extension to this system. You have been tasked with designing, developing and testing this extension.
Security module development	You work in a development team for a mid-sized software company that develops security software to protect websites from malicious attack. The software can be extended by creating new modules that perform a specific task. Each module is implemented by following a standard design pattern and uses a common API. You have been tasked with designing, developing and testing a module to validate that the user of the website is in a specific country in order to prevent unauthorised access.
AI development	You work in a sales engineering team for a large IT consultancy supporting global clients. One client has requested that a proof-of-concept tool is built to demonstrate how artificial intelligence could help with their data analysis requirements. You have been tasked with designing, developing and testing a standalone component that demonstrates importing a large database, analysing the data using a generally available AI tool and presenting the results visually. The database should contain more than 10,000 records.

Component 2: Questioning

The questioning component will be conducted using the project report as a basis. The IEPA will conduct the questioning and assess responses provided by the apprentice.

The apprentice will have two weeks' notice of the questioning taking place.

A minimum of **10** questions will be asked relevant to the areas of the report that require more detail or explanation.

The IEPA will make all grading decisions holistically, based on the project report and answers to questioning.

Assessment location

Employers and providers should ensure that the location of an assessment is prepared for the individual assessment activities, and that any equipment and/or resources are available for the apprentice to use.

For this assessment, the following resources are required:

- a suitable quiet room, free from distractions and interruptions in which the questioning component can take place
- access to a computer with video-conferencing software.

KSBs and Grading Descriptors

A mapping table detailing KSBs assessed using this method and grading descriptors can be found in Appendix 1.

Grading

This assessment will be graded Fail, Pass or Distinction. The IEPA is fully responsible for making the grading decision. The results will not be shared with the apprentice on the day of the assessment.

7. Assessment Information: 701 Professional Discussion underpinned by Portfolio

Overview

The Professional Discussion is a structured conversation between the apprentice and the appointed City & Guilds IEPA. It focuses on the apprentice's portfolio of evidence, covering both the content produced and the methods used. This enables the End-point Assessment to include the full range of technical skills, knowledge and understanding, as well as the underpinning behaviours. The discussion can draw on broader experience from the workplace, but the initial and the primary focus is on the work presented in the portfolio.

Rationale

The Professional Discussion is an effective method to elicit KSBs, particularly foundational behaviours. It allows for a range of examples to be brought forward during the two-way conversation and ensures that excellence can be achieved and acknowledged.

Grading	X/P/D To gain a **Pass** the apprentice must achieve all of the Pass criteria. To gain a **Distinction** the apprentice must achieve all of the Pass criteria and all of the Distinction criteria.
Type of assessment	Professional Discussion
Duration	60 minutes
Permitted materials	A copy of the apprentice's portfolio of evidence
Location	Online using video conferencing
Resources	Access to a computer with video-conferencing software A suitable quiet room, free from distractions and interruptions

Assessment Specification

Description	Coverage	KSBs	Grade
Professional Discussion	Systems and support	K9, K11, K17 B2	X/P/D
	Software testing	K22 S6	
	Working legally and securely	K8, K16, K18, K21, K24 S8, S12, S20, S23, S29, S31	
	Development	K5, K25 S3, S4, S9, S13, S17, S21, S24, S25, S27, S28, S30, S32 B1	
	Communication and collaboration	K4, K6 S18 B5	

Assessment Instructions

Duration

The Professional Discussion will last for **60** minutes, plus or minus 10% at the discretion of the IEPA.

Further time may be granted for apprentices with appropriate needs, in-line with the EPAO's Reasonable Adjustments policy.

The assessment will include time for:

- introductions between the apprentice and IEPA
- overview of what will happen and when, summarising the purpose, structure and confidentiality of the assessment
- identity checks to be made
- any questions from the apprentice
- the apprentice to be put at ease and confirm they are ready for the assessment
- list the timings for each stage of the assessment, including any breaks.

Delivery

The apprentice will prepare a portfolio of evidence during the on-programme phase of their apprenticeship to support the Professional Discussion and submit it at Gateway in line with City & Guilds requirements. The IEPA will use the contents of the portfolio to identify discussion areas for the Professional Discussion.

The portfolio is not directly assessed. It underpins the Professional Discussion and therefore will not be marked by the IEPA.

The employer/training provider and apprentice must ensure the content of the portfolio covers the relevant KSBs and grading descriptors mapped to this assessment method, as indicated in the mapping table in Appendix 2.

The Professional Discussion will be undertaken by the same IEPA who has assessed the portfolio of evidence. They will also make the final grading decision.

Apprentice guidance

The apprentice should be made aware of the following information in advance of the Professional Discussion.

Structure of the assessment

The apprentice:

- will be asked questions that relate specifically to the KSBs listed under this assessment method in the EPA pack.
- will be asked a range of questions. Some of these questions will aim to target multiple KSBs, while others may focus more specifically on a single KSB statement.
- may be asked a follow-up question to explore a further aspect of their response, or to allow them opportunity to meet a higher-grade criterion.
- is permitted to ask for the question to be repeated if needed.

Preparation for the assessment

- In advance of the discussion, the apprentice is encouraged to familiarise themselves with the KSBs to be assessed via this assessment. Clear mapping of these KSBs to evidence within their portfolio will help the apprentice to prepare for the discussion and will support their responses to the questions asked.
- The apprentice should have their portfolio of evidence and mapping available and to hand during the discussion. The IEPA will also have access to this and can be directed to view specific sections of it if the apprentice feels relevant to do so as part of their response to a question.

Guidance on submitting the portfolio of evidence

The portfolio is a concise collection of the apprentice's best pieces of evidence selected from the breadth of available evidence. It should efficiently demonstrate the apprentice's performance in relation to the KSBs and grading descriptors and showcase their highest quality work.

The IEPA uses the portfolio to familiarise themselves with the apprentice's work in preparation for the Professional Discussion. The apprentice can use it to provide tangible evidence to support their accounts of their work during the discussion.

The apprentice and the IEPA should have access to their own copies of the portfolio throughout the Professional Discussion and both can refer to it as needed.

The portfolio of evidence requirements are as follows:

- It must contain evidence related to the KSBs that will be assessed by the Professional Discussion.
- There should be at least one piece of evidence relating to each of the KSBs mapped to the Professional Discussion.
- Evidence must be clearly mapped, in an annex (i.e. the Evidence Reference Matrix – Portfolio of Evidence provided in the 9704-12 Software Development Technician Recording Forms document), against the KSBs allocated to this assessment method.
- Evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested
- The portfolio of evidence should contain **10** discrete pieces of evidence in total.
- Where the number of pieces of evidence is excessive, the IEPA will return the portfolio without being reviewed. City & Guilds will contact the provider asking for the evidence to be revised and resubmitted. In exceptional circumstances it may be required to move the EPA date to accommodate the submission of portfolio evidence and allow the IEPA to review the portfolio in preparation for the EPA event.

Types of evidence

The evidence in the portfolio must be chosen to provide valid proof for the specified criteria being assessed. Evidence sources may include:

- written accounts of activities that have been completed
- photographic evidence – A set of digital images showing a completed product from a number of angles and close-ups of relevant details. Where relevant, before and after images and stages in development should be included.
- work products
- work instructions
- safety documentation

- technical reports
- workplace policies and procedures as appropriate to the activities
- progress review documentation
- witness testimonies – Evidence from a relevant witness (the witness can range from a manager to a customer) giving their account of what the apprentice has done in their job role. Testimonies must include:
    - their relationship with the apprentice
    - their name and job title
    - evidence that was generated on programme
    - approximate date of work-based examples
    - clear examples of direct observation where the apprentice has demonstrated competency against the standard while on programme.
- feedback from colleagues and/or clients
- video clips **(maximum total duration 10 minutes in which the apprentice must always be in view and identifiable)**.

NB: Reflective accounts and self-assessments must not be included as evidence.

This is not a definitive list; other relevant sources of evidence sources are acceptable.

All evidence must be of the apprentice's own work and, for any group work, must clarify and focus only on their contribution.

Where necessary, confidentiality and data protection requirements must be adhered to, eg permissions for use of video/images containing identifiable third parties (eg clients), anonymisation of documentation and permissions from clients when submitting designs and plans commissioned by them.

Note: The submission of a fully completed evidence reference matrix is mandatory. Failure to do so means that the IEPA will return the portfolio without being reviewed.

In the case where evidence has been referenced in the evidence reference matrix but is not present within the portfolio, the IEPA will request the missing evidence from the provider.

All the evidence submitted must be in a format that can be opened by the IEPA; where evidence cannot be opened, eg evidence that is linked to an e-portfolio or embedded within a document, the portfolio will be returned without being reviewed. In exceptional circumstances it may be required to move the EPA date to accommodate the submission of the missing portfolio evidence and allow the IEPA to review the portfolio in preparation for the EPA event.

Selecting evidence

Before selecting the evidence to form the portfolio, the apprentice should consider the following:

- the grading descriptors and relevant KSBs to be covered by the portfolio
- the type of evidence that can be presented (see above)
- the amount of evidence that should be presented
- the currency of evidence (evidence must have been produced whilst the apprentice was undertaking their apprenticeship).

To assemble the portfolio the apprentice should consider all the evidence they have available that shows they have met the requirements being assessed. Evidence collected towards the end of their apprenticeship programme, as they become independent in their work, is likely to provide the most holistic evidence – ie covering a number of KSBs and grading descriptors at once. From this, they should select evidence that most efficiently meets all the relevant grading descriptors and KSBs, and which demonstrates their best performance. While there may be some overlap between the evidence collected, multiple pieces of evidence showing coverage of the same grading descriptors and KSBs should not normally be submitted for EPA.

Confirming the evidence selection

When the apprentice has selected the evidence to form their portfolio, this must be reviewed by the employer/training provider to ensure:

- all assessment requirements have been met
- it is in line with any requirements relating to the type and amount of evidence required and ensure the evidence originated on programme
- there is **no** unnecessary duplication of evidence against the same KSBs and grading descriptors
- the work selected represents the best evidence available in relation to the grading descriptors and KSBs
- the clarity of any images or scanned evidence is sufficient to determine the quality of the original evidence
- authenticity of evidence has been established.

Preparing evidence for submission

Evidence being uploaded for EPA must be presented as follows:

- each piece of evidence must have a header containing the name of the apprentice together with the date the evidence was produced, and an evidence reference number. It is good practice, where possible, to add a handwritten/e-signature although this is not mandatory.
- each piece of evidence must be referenced to the KSB(s) it is being submitted against on an evidence reference matrix form (An evidence reference matrix form can be found in the **9704-12 Software Development Technician Recording Forms** document).

This is to ensure that each piece of evidence is cross-referenced to each relevant KSB. Presenting the evidence in this way also formally confirms that it is the apprentice's own work.

Assessment location

Employers and providers should ensure that the location of an assessment is prepared for the individual assessment activities, and that any equipment and/or resources are available for the apprentice to use.

For this assessment, the following resources are required:

- a suitable quiet room, free from distractions and interruptions in which the questioning component can take place
- access to a computer with video-conferencing software.

KSBs and Grading Descriptors

A mapping table detailing KSBs assessed using this method and grading descriptors can be found in Appendix 2.

Grading

The Professional Discussion will be graded Fail, Pass or Distinction. The IEPA is fully responsible for making the grading decision. The results will not be shared with the apprentice on the day of the assessment.

Resits and Retakes

Apprentices who fail one or more assessments will be offered the opportunity to take a resit or retake.

- A resit is where the apprentice takes the assessment again without the need for new learning.
- A retake is where the employer determines new learning is needed first.

A resit is typically taken within **two months** of the EPA outcome notification. The timescale for a retake is dependent on how much re-training is required and is typically taken within **three months** of the EPA outcome notification.

All assessment methods must be taken within a three-month period, otherwise the entire EPA will need to be resat/retaken.

Resits and retakes are not offered to apprentices wishing to move from pass to a higher grade. Where any assessment method must be resat or retaken, the apprentice will be awarded a maximum EPA grade of Distinction.

700 Project Report with Questioning

If the resit or retake relates to the Project Report with Questioning assessment method, the apprentice will need to revise their project report in line with the IEPA's feedback and submit it prior to the questioning element. This could be the original project report with additional/amended content included.

The apprentice will be given three weeks to rework and submit the amended project. The IEPA will then have two weeks to review it.

During the Project Report with Questioning resit, the apprentice will need to be able to demonstrate the pass descriptors they previously met, **not just** the pass descriptors they **failed** during the original assessment.

Please refer to the Assessment Instructions: Project Report with Questioning, in this pack.

701 Professional Discussion underpinned by Portfolio

If the resit or retake relates to the Professional Discussion, the IEPA will question the apprentice on the same subject areas but using a different set of questions.

The Professional Discussion will be carried out in the same way as the original assessment. The IEPA may review the portfolio of evidence to ensure all the KSBs are evidenced. They will choose different questions.

If the apprentice fails the professional discussion underpinned by a portfolio of evidence, they may choose to submit additional and/or amended evidence against the failed KSBs and grading descriptors **only**. This could be a mixture of new evidence and evidence previously submitted. It is **not** necessary to resubmit the full portfolio.

Additional/amended evidence must be clearly referenced in the evidence reference matrix. During the professional discussion resit/retake, the apprentice will need to demonstrate the descriptors (Pass/Distinction) they previously met, not just the descriptors they failed during the original assessment.

In the event of a resit/re-take, the apprentice must submit a new set of recording forms, which must indicate any additional and/or amended evidence.

Please refer to the Assessment Instructions: Professional Discussion in this pack.

Submission must include

A new set of recording forms for the resit or retake should be submitted. These must refer to the version of recording forms originally submitted.

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- handle and store any EPA Assessment Materials securely at all times;
- ensure that:
    - any EPA Assessment Materials are made accessible to Apprentices only during formal EPA assessment as governed by the assessment conditions specified for the individual Apprenticeship Standard;
    - whilst the portfolio of an Apprentice may contain EPA assessment results referenced to the EPA assessment taken from time to time, they do not at any time contain the EPA Assessment Materials, unless otherwise stated in the

individual Apprenticeship Standard; and the content of any EPA Assessment Materials is not made public in any format, whether in part or in full, at any time;

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- seek written permission from City & Guilds if they wish to convert any EPA Assessment Materials for storage, retrieval and delivery in electronic form (ie, using some form of e-assessment or e-learning system) from time to time; and
- provide access, on request, to City & Guilds to any system(s) on which any EPA Assessment Materials appear, are stored or delivered from time to time.

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Appendix 1 − KSBs and Grading Descriptors for Project Report with Questioning

Theme KSBs	Pass	Distinction
Software development lifecycle K1, K2, K3, K20, K23 S2, S15, S22 B3	Explains the fundamentals of all stages of the software development lifecycle in their project (K1) Identifies roles and responsibilities within the software development lifecycle and contrasts them with the roles and responsibilities of the project lifecycle (K2, K3) Demonstrates the basic principles of software project planning, including risks and dependencies, integration, prioritisation of tasks, escalation of problems, quality, time and end user experience (K20) Demonstrates the basic principles of digital tools and their use in business, such as management and presentation tools, and evaluation tools and techniques such as project management tools (K23) Applies appropriate, secure development principles to specific software components at all stages of development in the project (S2) Demonstrates following simple software designs and functional/technical specifications in line with work instructions (S15) Demonstrates how key performance indicators (KPIs) can be used to frame and measure desired outcomes (S22) Demonstrates how they work independently and take	Evaluates the secure development principles used within the project by reference to specific software components throughout the stages of development (S2) Evaluates the principles followed, and the tools used in the project planning and development stages and how the tools support organisational performance (K20, K23)

Theme KSBs	Pass	Distinction
	responsibility within tightly defined parameters (B3)	
Software testing K13 S5, S7, S16, S26	Explains the key principles of software testing frameworks and methodologies (K13) Explains how they test simple code and analyse results to correct errors found using unit testing under supervision (S5) Explains how they apply structured techniques to problem solving, including carrying out simple debug of code (S7) Explains how they have followed simple testing frameworks and methodologies in line with work instructions (S16) Describes simple debugging techniques, such as interactive debugging, print debugging and remote debugging (S26)	Critically analyses testing frameworks and methodologies (K13, S7)
Development K7, K10, K12, K14, K15, K19 S1, S11, S14, S19	Explains the fundamentals of software design approaches and patterns, including when to identify reusable solutions to commonly occurring problems in the project (K7) Describes the fundamental principles of algorithms, logic and data structures (K10) Identifies basic principles of software designs and functional/technical specifications within the project (K12) Describes the principles of pattern recognition such as looking for similarities among and within problems (K14) Demonstrates the fundamentals of breaking down a complex problem	**N/A**

Theme KSBs	Pass	Distinction
	or system into smaller, more manageable parts (K15) Utilises fundamental approaches to actions such as sequence, selection and iteration (K19) Writes simple code for discrete software components following an appropriate logical approach to agreed standards under supervision (S1) Explains how they have defined functional and non-functional requirements such as use cases, storyboards, user stories, performance and accessibility (S11) Explains building scripts in line with work instructions for deployment into the relevant environment (S14) Applies algorithms, logic and data structures in line with work instructions (S19)	
Software support S10 B4, B6	Describes how they support the creation of simple software documentation and visuals to effectively communicate understanding of the program (S10) Explains how they maintain a productive, professional and secure working environment (B4) Explains how they are self-motivated, for example manages own time effectively, takes responsibility to complete the job (B6)	**N/A**

Appendix 2 − KSBs and Grading Descriptors for Professional Discussion

Theme KSBs	Pass	Distinction
Systems and support K9, K11, K17 B2	Explains the fundamentals of computing systems, including physical, virtual and cloud technologies (K9) Explains the principles and uses of relational and non-relational (NoSQL) databases (K11) Outlines the basic principles of emerging technology trends and innovations (K17) Reflects on their progress in the organisation with reference to their CPD record and identifies areas for future development/participation (B2)	Analyses emerging technology trends and innovations (K17)
Software testing K22 S6	Describes the principles of testing for components, interfaces and the resulting service (K22) Describes how they have conducted a range of test types under supervision (S6)	**N/A**
Working legally and securely K8, K16, K18, K21, K24 S8, S12, S20, S23, S29, S31	Describes the organisational policies and procedures relating to the tasks being undertaken, and when to follow them (K8) Outlines the importance of valuing differences and understanding the protected characteristics named in the Equality Act 2010 (K16) Explains legal and regulatory requirements and outlines their practical application to the role of software developer (K18) Explains the basic principles of processes and protocols used	Evaluates their contribution to ensuring software design solutions include secure principles (K21, S20, S23, S29) Critically evaluates the importance of coding standards (organisational or industry) in a team environment as well as working individually with reference to their projects (S8)

Theme KSBs	Pass	Distinction
	to ensure internet security (K21) Explains the role and importance of industry standards and where to find them (eg ISO standards, IETF RFCs) (K24) Explains how they follow organisational and industry good coding practices (including for naming, commenting etc) (S8) Explains how they work within operational requirements such as health and safety, budgets, brands and normal business protocols (S12) Justifies their interpretation and implementation of work instructions to contribute to building a given design while remaining compliant with security and maintainability requirements (S20) Explains how they have implemented secure code in languages of different types which is maintainable, readable and functional (S23) Outlines how they apply and maintain procedures and security controls to ensure confidentiality, integrity and availability (S29) Explains how they follow instructions to ensure client data is held securely under supervision (S31)	
Development K5, K25 S3, S4, S9, S13, S17, S21, S24, S25, S27, S28, S30, S32 B1	Outlines the key similarities and differences between different software development methodologies (K5) Compares and contrasts different software development approaches, for example object	Evaluates the different software development methodologies and justifies the choice of methodology used with reference to their projects and the organisation (K5)

Theme KSBs	Pass	Distinction
	oriented, event driven or procedural (K25) Describes how they have supported the development of effective user interfaces (S3) Makes simple connections between code and defined data sources as specified (S4) Explains how they solve logical problems, seeking assistance when required (S9) Demonstrate how they have developed user interfaces as appropriate to the organisation's development standards and the type of software development being developed (S13) Explains how they follow company, team or client approaches to continuous integration, version and source control as instructed (S17) Discusses how they apply techniques to break down complex problems (S21) Explains how they design simple software solutions to meet a requirement, justifying their choice of tools and techniques (S24) Describes how they work in a shared code base using selected tools and following the defined etiquette and tools (S25) Explains how they implement test plans under supervision to show that it is implementable in practice and conforms to the plan (S27) Explains how they develop and use simple acceptance criteria. (S28) Outlines how they use collaboration tools and technologies for source and	Analyses different approaches to user interface development with reference to their organisation's functional/technical standards and software type, justifying their choice for the project (S13) Analyses techniques to break down complex problems, identifying how approaches to their application vary dependent on the software context (S21) Evaluates their contribution to building a given software design solution and their approach to working collaboratively (K6, **S17**, **S25**, **S30**)

Theme KSBs	Pass	Distinction
	version control to enable working together on common projects, regardless of physical location and for writing technical documentation for, and adapting to, specific audience(s) (S30, S32) Reflects on their use of critical thinking skills when undertaking work tasks (B1)	
Communication and collaboration K4, K6 S18 B5	Describes different communication methods, how to adapt in response to different audiences, including collaborative technologies such as discussion threads and document collaboration (K4) Outlines the principles of effective teamwork to produce software (K6) Describes how they support the communication of software solutions and ideas to technical and non-technical stakeholders (S18) Describes how they are a team player, for example working collaboratively, keeping others informed using effective communication, recognising personal and professional limitations and seeking advice when necessary (B5)	Evaluates their contribution to building a given software design solution and their approach to working collaboratively (**K6**, S17, S25, S30)

Who we are

As part of the City & Guilds Group, we believe in a world where people and organisations have the confidence and capabilities to prosper, today and in the future.

As workplaces evolve, so do we. That's why we set the standard for skills that transform lives, industries, and economies.

About City & Guilds

Founded in 1878 to develop the knowledge, skills, and behaviours needed to help businesses thrive, we offer a broad and imaginative range of products and services that help people achieve their potential through work-based learning. We believe in a world where people and organisations have the confidence and capabilities to prosper, today and in the future. So we work with like-minded partners to develop the skills that industries demand across the world.

City & Guilds Group

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