Institute for Apprenticeships
& Technical Education

End-point assessment plan for Software Developer apprenticeship standard*

*this end-point assessment plan aligns with standard version 1.1

Apprenticeship standard reference number	Apprenticeship standard level	Integrated end-point assessment
ST0116	4	No

Contents

Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Software Developer apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Software Developer apprentices, their employers and training providers.

Full time apprentices will typically spend 24 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices must spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is deemed to be consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and can be evidenced to an EPAO.

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA should be completed within an EPA period lasting typically 6 months, after the EPA gateway.

The EPA consists of two discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Work-based project with questioning

- Fail
- Pass
- Distinction

Assessment method 2: Professional discussion underpinned by portfolio

- Fail
- Pass
- Distinction

Performance in the EPA will determine the overall apprenticeship standard grade of:

- Fail
- Pass
- Merit
- Distinction

EPA summary table

On-programme (typically, 24 months)	Training to develop the knowledge, skills and behaviours (KSBs in the occupational standard. Compiling a portfolio to underpin the professional discussion.
End-point assessment gateway	Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. English and mathematics at Level 2 achieved. Apprentices must submit: • A portfolio to underpin the professional discussion
End-point assessment (which will typically take 6 months)	Assessment method 1: **Work-based project with questioning** • Fail • Pass • Distinction Assessment method 2: **Professional discussion underpinned by portfolio** • Fail • Pass • Distinction Performance in the EPA will determine the overall apprenticeship standard grade of: • Fail • Pass • Merit • Distinction

Length of end-point assessment period

The EPA will be completed within an EPA period lasting typically of 6 months, after the EPA gateway.

Any supporting material which underpins an EPA assessment method must be submitted at the gateway.

Order of assessment methods

The assessment methods can be delivered in any order.

The result of one assessment method does not need to be known before starting the next.

Gateway

The apprentice should only enter the gateway once the employer is content that the apprentice is working at or above the occupational standard. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

The EPAO determines when all other gateway requirements have been met, and the EPA period will only commence once the EPAO has confirmed this.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

- Achieved English and mathematics at Level 1 and taken the tests for Level 2.
  For those with an education, health and care plan or a legacy statement, the apprenticeship's English and Mathematics minimum requirement is Entry Level 3. British Sign Language (BSL) qualifications are an alternative to English qualifications for those who have BSL as their primary language.

For the work-based project with questioning:

- The apprentice will scope out and provide a summary of what the project will cover including a stakeholder specification (refer to overview section of assessment method 1). The apprentice will submit this to the EPAO at the gateway. This should demonstrate that the work-based project will provide sufficient opportunity for the apprentice to cover the KSBs mapped to this method. The summary is not assessed and will typically be no longer than 500 words.
- The summary needs to outline the project plan, including high level implementation steps and associated timeframes, as well as the date the work-based project has to be submitted to the independent assessor, taking into account the deadlines stipulated within this end-point assessment plan.
- The EPAO will sign off the title of the work-based project in consultation with the employer within 2 weeks of the gateway ensure sufficient scope to meet the KSBs mapped to this method of assessment.

For the portfolio with professional discussion, the apprentice will be required to submit:

- A portfolio of examples to underpin the professional discussion.
- The format and structure of the portfolio should be agreed between the employer and the EPAO (e.g. hard copy or on-line).
- The content should be sufficient to evidence the apprentice can apply the knowledge, skills and behaviours required as mapped to the professional discussion.

- There should be at least one piece of evidence relating to each of the knowledge, skills and behaviours mapped to the professional discussion.
- Evidence should be mapped against the KSBs.
- Evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested.
- It is expected that there will typically be 10 pieces of evidence in total.
- The portfolio should contain evidence of work projects completed such as: written accounts of activities that have been completed, photographic evidence and work products, work instructions, safety documentation, technical reports, drawings, company policies and procedures as appropriate to the activities.
- Progress review documentation, witness testimonies, and feedback from colleagues and/ or clients should also be included.
- Reflective accounts and self-assessments must not be included as evidence.
- The evidence provided should be valid and attributable to the apprentice; the portfolio of evidence should contain a statement from the employer and apprentice confirming this.
- The apprentice's manager/mentor will typically support the development of the portfolio in accordance with company policy and procedures, although the EPAO will provide further guidance on the content.

The portfolio is not directly assessed. It underpins the professional discussion and therefore should not be marked by the EPAO. Independent Assessors should review the portfolio of examples in preparation for the professional discussion but are not required to provide feedback after this review.

In cases where the apprentice is working in a confidential environment, the employer may insist that the independent assessor (on behalf of the EPAO) reviews the portfolio at the employer's premises only and that the portfolio is not made available for review away from those premises. In such cases, the EPAO and independent assessor should use their discretion to make suitable arrangements to verify to their satisfaction that the portfolio was completed and available for review at the gateway. Detailed arrangements for satisfactory portfolio review by the independent assessor must be agreed with the employer as part of their arrangement with the EPAO.

Assessment methods
Assessment method 1: Work-based project with questioning
(This assessment method has 2 components.)

Assessment method 1 component 1: Project report

Overview

The project is compiled after the apprentice has gone through the gateway.

The work-based project should be designed to ensure that the apprentice's work meets the needs of the business, is relevant to their role and allows the relevant KSBs to be demonstrated for the EPA.

The aim of the project is to research and develop a software solution to meet the requirements provided in a specification provided to their employer by a customer or other stakeholder with the end to end software development lifecycle as its guiding principle. The employer will provide the customer or other stakeholder specification from their day-to-day business activities.

Therefore, a summary of what the project will cover must be submitted to the EPAO at the gateway. The summary must include the chosen stakeholder specification. The employer will ensure the project has a real business application and the EPAO will ensure it meets the requirements of the EPA (including suitable coverage of the KSBs assignment to this assessment method). The EPAO will sign the project off within 2 weeks of the gateway.

The rationale for this assessment method is:

It is occupationally relevant to the role and duties of a Software Developer to undertake projects based on specifications. Software Developers work in a project-based environment and are responsible for developing software solutions across the full lifecycle of from research and development, through continuous improvement, to product/service retirement. They may work both autonomously and as part of wider teams. This method of assessment will reflect real work practices.

Delivery

Apprentices will conduct and submit a project in the form of a project report.

The project report is compiled after the apprentice has gone through the gateway process. The apprentice will conduct their project and submit a project report to the EPAO after a maximum of 9 weeks following EPAO sign off of the project's summary and stakeholder specification. The project will typically take 7 weeks and the report will typically take a further 2 weeks to write.

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

Whilst completing the project, the apprentice should be subject to normal workplace supervision.

The project may be based on any of the following:

A customer or stakeholder specification requiring the apprentice to respond to any of the following:

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

6

The project report should be in the form of an electronic report comprising narrative, one or more coded artefacts, and visual infographics as necessary. NB: coded artefacts may consist of numerous lines of code in one language or be made up of multiple code languages.

As a minimum all project reports must include the following sections:

- an introduction
- the scope of the project (including key performance indicators)
- a project plan
- consideration of legislation, regulation, industry and organisational policies, procedures and requirements
- analysis and problem solving in response to challenges within the project
- research and findings
- project outcomes explained by referencing artefacts within the appendices to convey the software solution and design of the software development outputs
- recommendations and conclusions
- an explanation of how the stages of the Software Development Lifecycle which are involved in the project have been evidenced e.g.
    - Planning
    - Analysis
    - Design
    - Implementation/Build
    - Test
    - Deploy
    - Maintain

The project report has a maximum word limit of 4,500. A tolerance of plus or minus 10% is allowed.

Appendices, references, diagrams etc. will not be included in this total. The appendices must include 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

The project must map, in an appendix, how it evidences the relevant KSBs for this assessment method.

The apprentice will need to consider the availability of company and external resources required to complete the project. They must also ensure they are fully aware of the KSBs the project is intended to assess as that is what the grading of the project will be based on.

The apprentice may work as part of a team which could include technical internal or external support however the report will be the apprentice's own work and will be reflective of their own role and contribution.

Regard needs to be given to confidentiality and security requirements to ensure that proprietary commercially sensitive coding data is not compromised. Similarly, where required the EPAO must ensure that appropriate security clearance procedures and policies are agreed at the gateway. Where redaction of key information is necessary it should not materially compromise the ability of the independent assessor to reliably assess the project report.

When the project is submitted, the employer and the apprentice should verify the submitted work is that of the apprentice.

Marking

The independent assessor will review and mark the project report in a timely manner, as determined by the EPAO, and without extending the EPA unnecessarily. Similarly, all quality control processes will also be conducted in a timely manner, as determined by the EPAO.

Supporting material

EPAOs will produce the following material to support this assessment method:

- independent assessor training materials
- grading guidance
- outline of the assessment method's requirements
- marking materials
- guidance document for employers and apprentices on the process/timescales for the assessment method as well as a description of the purpose
- guidance document for independent assessors on how to carry out the assessment

Assessment method 1 component 2: Questioning

Overview

This component will take the form of questioning, based on the project report, which must be appropriately structured 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 will focus on the content of the project report.

The rationale for this assessment method is:

This will allow real work to be used to demonstrate some KSBs which may take too long to observe to be assessed and the assessment of a disparate set of KSBs. This will enable the apprentice to draw out KSBs that have arisen during the project, in more depth.

Delivery

The independent assessor will conduct questioning and assess responses provided by the apprentice.

The questioning must last for 60 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer.

During this method, the independent assessor must generate their own questions in addition to the use of the question bank.

The questioning will be conducted using the project report as a basis. The independent assessor must ask a minimum of 12 questions, using their discretion to target the questions where they think is most relevant and appropriate to explore occupational competence.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the questioning.

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

Venue

The questioning should take place in a quiet room, free from distractions and influence.

The questioning can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises)
- online using video conferencing

The questioning may be conducted face-to-face or via an electronic platform e.g. video conferencing.

EPAOs must ensure appropriate methods to prevent misrepresentation are in place

Other relevant information

A structured question bank must be developed by EPAOs. The question bank must be of sufficient size to prevent predictability and the EPAO must reviewed regularly (at least once a year) to ensure that it, and its content, are fit for purpose.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of questioning and reaching consistent judgement.

EPAOs will produce the following material to support this assessment method:

- independent assessor training materials
- grading guidance
- question bank
- outline of the assessment method's requirements
- marking materials
- guidance document for employers and apprentices on the process/timescales for the assessment method as well as a description of the purpose
- guidance document for independent assessors on how to carry out the assessment

Assessment method 2: Professional discussion underpinned by portfolio

Assessment method 2 component 1: Professional discussion

Overview

This assessment will take the form of a professional discussion which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve the questions that will focus on coverage of the KSBs mapped to this method of assessment.

The rationale for this assessment method is:

This assessment method was selected as a valid way to draw out KSBs, especially the behaviours, which would be less likely to naturally occur in the project with questioning. It is commonplace for people in this occupation to engage in detailed technical discussions, so this assessment method

mirrors their day to day work. This will allow some KSBs which may not naturally occur in every workplace or may take too long to observe to be assessed and the assessment of a disparate set of KSBs.

Delivery

The independent assessor will conduct and assess the professional discussion.

The professional discussion must last for 60 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer.

During this method, the independent assessor must generate their own questions, but should use an EPAO generated question bank to support their development of appropriate questions.

The portfolio is submitted to the EPAO at gateway. The independent assessor should have at least two weeks to review the contents of the portfolio in order to generate appropriate questions. A copy can be retained by the apprentice and brought by them to the professional discussion.

This is a 1:1 conversation in an appropriate environment (a quiet room free from distraction).

The portfolio will be used by the apprentice to refer to exemplify a point. Questioning will be used to authenticate evidence, experience and competence.

Video conferencing can be used to conduct the professional discussion, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

The assessor will ask a minimum of 12 open questions. Questions must be generated by the independent assessor in addition to those from the question bank. Follow up questions will then be used to draw out further evidence or where clarification is required.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional discussion.

The independent assessor will make all grading decisions.

Venue

The professional discussion should take place in a quiet room, free from distractions and influence.

The professional discussion can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises)
- online using video conferencing

Other relevant information

A question bank must be developed by EPAOs. The question bank must be of sufficient size to prevent predictability and the EPAO must reviewed regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of professional discussion and reaching consistent judgement.

EPAOs will produce the following material to support this assessment method:

- independent assessor training materials
- grading guidance
- question bank
- outline of the assessment method's requirements
- marking materials
- guidance document for employers and apprentices on the process/timescales for the assessment method as well as a description of the purpose
- guidance document for independent assessors on how to carry out the assessment

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for reasonable adjustment and what reasonable adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA grade.

Grading

Assessment method 1: Work-based project with questioning

KSBs	Fail Does not meet the pass criteria	Pass All pass criteria are to be met to gain a pass	Distinction All pass and distinction criteria are to be met to gain a distinction
K2 K6 K9 K11 S1 S4 S6 S7 S10 S11 S12 S16 B2 B3		Explains the roles and responsibilities of all people working within the software development lifecycle, and how they relate to the project (K2) Outlines how teams work effectively to produce software and how to contribute appropriately (K6)	Compare and contrast the requirements of a software development team, and how they would ensure that each member (including themselves) were able to make a contribution (K6)

		Outlines and applies the rationale and use of algorithms, logic and data structures. (K9, S16)	Evaluates the advantages and disadvantages of different coding and programming techniques to create logical and maintainable code (S1)
		Reviews methods of software design with reference to functional/technical specifications and applies a justified approach to software development (K11, S11, S12)	Analyses the software to identify and debug complex issues using a fix that provides a permanent solution'. (S7)
		Creates logical and maintainable code to deliver project outcomes, explaining their choice of approach. (S1)	Evaluates different software development approaches in order justifying the best alignment with a given paradigm. (for example, object oriented, event driven or procedural) (S11)
		Analyses unit testing results and reviews the outcomes correcting errors. (S4)	
		Identifies and creates test scenarios which satisfy the project specification (S6)	
		Applies structured techniques to problem solving to identify and resolve issues and debug basic flaws in code (S7)	
		Reviews and justifies their contribution to building, managing and deploying code into the relevant environment in accordance with the project specification (S10)	
		Establishes a logical thinking approach to areas of work which require valid reasoning and/or justified decision making' (B2)	
		Describes how they have maintained a productive, professional and secure working environment throughout the project activity (B3)	

Assessment method 2: Professional discussion with Portfolio

KSBs	Fail Does not meet the pass criteria	Pass All pass criteria are to be met to gain a pass	Distinction All pass and distinction criteria are to be met to gain a distinction
K1 K3 K4 K5 K7 K8 K10 K12 **S2 S3 S5 S8 S9 S13 S14 S15 S17** **B1 B4 B5 B6 B7 B8 B9**		Describes all stages of the software development lifecycle (K1) Describes the roles and responsibilities of the project lifecycle within their organisation, and their role (K3) Describes methods of communicating with all stakeholders that is determined by the audience and/or their level of technical knowledge. (K4, S15) Describes the similarities and differences between different software development methodologies, such as agile and waterfall (K5) Suggests and applies different software design approaches and patterns, to identify reusable solutions to commonly occurring problems (include Bespoke or off-the-shelf) (K7) Explains the relevance of organisational policies and procedures relating to the tasks being undertaken, and when to follow them including how they have followed company, team or client approaches to continuous integration, version, and source control (K8 S14) Applies the principles and uses of relational and non-relational databases to software development tasks (K10) Describes basic software testing frameworks and methodologies (K12) Explains, their own approach to development of user interfaces (S2) Explains, how they have linked code to data sets (S3)	Compares and contrasts the different types of communication used for technical and non-technical audiences and the benefits of these types of communication methods (K4, S15, B7) Evaluates and recommends approaches to using reusable solutions to common problems. (K7) Evaluates the use of various software testing frameworks and methodologies and justifies their choice. (K12)

13

		Illustrates how to conduct test types, such as Integration, System, User Acceptance, Non-Functional, Performance and Security testing including how they have followed testing frameworks and methodologies (S5, S13)	
		Creates simple software designs to communicate understanding of the programme to stakeholders and users of the programme (S8)	
		Creates analysis artefacts, such as use cases and/or user stories to enable effective delivery of software activities (S9)	
		Explains, how they have interpreted and implemented a given design whilst remaining compliant with security and maintainability requirements (S17)	
		Describes, how they have operated independently to complete tasks to given deadlines which reflect the level of responsibility assigned to them by the organisation'. (B1)	
		Illustrates how they have worked collaboratively with people in different roles, internally and externally, which show a positive attitude to inclusion & diversity. (B4)	
		Explains how they have established an approach in the workplace which reflects integrity with respect to ethical, legal, and regulatory matters and ensures the protection of personal data, safety and security. (B5)	
		Illustrates their approach to meeting unexpected minor changes at work and outlines their approach to delivering within their remit using their initiative. (B6)	
		Explains how they have communicated effectively in a variety of situations to both a technical and non-technical audience. (B7)	
		Illustrates how they have responded to the business context with curiosity to	

| | | explore new opportunities and techniques with tenacity to improve solution performance, establishing an approach to methods and solutions which reflects a determination to succeed (B8) | |
| | | Explains how they reflect on their continued professional development and act independently to seek out new opportunities (B9) | |

Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

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

Work-based project with questioning	Professional discussion with portfolio	Overall grading
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit or re-take any failed assessment methods only.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

The timescales for a re-sit/re-take is agreed between the employer and EPAO. A re-sit is typically taken within two months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within four months of the EPA outcome notification.

All assessment methods must be taken within a six-month period, otherwise the entire EPA will need to be re-sat/re-taken, unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to merit/distinction or merit to distinction.

Where any assessment method must be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of distinction.

Roles and responsibilities

Role	Responsibility
Apprentice	As a minimum, apprentices should: • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • undertake 20% off-the-job training as arranged by the employer and training provider • understand the purpose and importance of EPA • undertake the EPA including meeting all gateway requirements
Employer	As a minimum, employers should: • work with the training provider (where applicable) to support the apprentice in the workplace to provide the opportunities for the apprentice to develop the KSBs • arrange and support a minimum of 20% off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and so is ready for EPA • select the EPAO • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • remain independent from the delivery of the EPA • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer specific documentations as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allow appropriate opportunity for the KSBs to be met • ensure the apprentice is well prepared for the EPA • ensure the apprentice is given sufficient time away from regular duties to prepare for and complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place • where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used on a daily basis

EPAO	As a minimum, EPAOs should:
	• make all necessary contractual arrangements, including agreeing the price of the EPA
	• understand the occupational standard
	• appoint administrators (and invigilators where required) to administer the EPA as appropriate
	• provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
	• provide adequate information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA
	• arrange for the EPA to take place, in consultation with the employer
	• conform to the requirements of this EPA plan and deliver its requirements in a timely manner
	• develop and provide appropriate assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders
	• have no direct connection with the apprentice, their employer or training provider. In all instances including when the EPAO is the training provider (i.e. HEI) there must be no conflict of interest
	• have policies and procedures for internal quality assurance (IQA), and maintain records of regular and robust IQA activity and moderation for external quality assurance (EQA) purposes
	• conform to the requirements of the nominated external quality assurance provider (EQAP)
	• conform to the requirements of the Register of End-Point Assessment Organisations (RoEPAO)
	• deliver induction training for independent assessors, and for invigilators and markers where used
	• undertake standardisation activity on this apprenticeship standard for all independent assessors before they conduct an EPA for the first time, if the EPA is updated and periodically as appropriate (a minimum of annually)
	• manage invigilation of apprentices in order to maintain security of the assessment in line with their malpractice policy
	• verify the identity of the apprentice being assessed
	• use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard
	• request certification via the Apprenticeship Service upon successful achievement of the EPA

	• develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • appoint suitably qualified and competent independent assessors • provide details of the independent assessor's name and contact details to the employer • have and apply appropriately an EPA appeal process
Independent assessor	As a minimum, an independent assessor should: • have the competence to assess the apprentice at this level and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence up to date knowledge and expertise of the subject matter • deliver the end-point assessment in-line with the EPA plan • comply with the IQA requirements of the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances including when the EPAO is the training provider (i.e. HEI) • attend induction training • attend standardisation events when they begin working for the EPAO, before they conduct an EPA for the first time and a minimum of annually on this apprenticeship standard • assess each assessment method, as determined by the EPA plan, and without extending the EPA unnecessarily • assess against the KSBs assigned to each assessment method, as shown in the mapping of assessment methods and as determined by the EPAO, and without extending the EPA unnecessarily • make all grading decisions • record and report all assessment outcome decisions, for each apprentice, following instructions and using assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard
Training provider	As a minimum, the training provider should: • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as listed in the occupational standard

	- conduct training covering any knowledge, skill or behaviour requirement agreed as part of the Commitment Statement (often known as the Individual Learning Plan). - monitor the apprentice's progress during any training provider led on-programme learning - advise the employer, upon request, on the apprentice's readiness for EPA - remain independent from delivery of the EPA. Where the training provider is the EPA (i.e. a HEI) there must be procedures in place to mitigate against any conflict of interest

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- appoint independent assessors who will need to have at least 3 years of experience and have the technical skills to undertake Software Development.
- appoint independent assessors who have current significant experience gained in the last three years or significant experience of the occupation/sector.
- appoint independent assessors who are competent to deliver the end-point assessment
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time
- ensure independent assessors attend standardisation events on an ongoing basis and at least once per year for this standard

Affordability

Affordability of the EPA will be aided by using at least some of the following practice:

- using an employer's premises
- remote assessment
- the project is work-based and consequently the outputs from the project could be revenue generating work for the organisation.

Professional body recognition

Professional body recognition is not relevant to this occupational apprenticeship.

Mapping of knowledge, skills and behaviours (KSBs)
Assessment method 1: Work-based project with questioning

Knowledge
K2 roles and responsibilities within the software development lifecycle (who is responsible for what).
K6 how teams work effectively to produce software and how to contribute appropriately.
K9 principles of algorithms, logic and data structures relevant to software development for example: Arrays, Stacks, Queues, Linked Lists, Trees, Graphs, Hash Tables, Sorting Algorithms, Searching Algorithms, Critical sections and race conditions.
K11 software designs and functional/technical specifications.

Skills
S1 create logical and maintainable code.
S4 test code and analyse results to correct errors found using unit testing.
S6 identify and create test scenarios.
S7 apply structured techniques to problem solving, can debug code and can understand the structure of programmes to identify and resolve issues.
S10 build, manage and deploy code into the relevant environment.
S11 apply an appropriate software development approach according to the relevant paradigm (for example object oriented, event driven or procedural).
S12 follow software designs and functional/technical specifications.
S16 apply algorithms, logic and data structures.

Behaviours
B2 Applies logical thinking. For example, uses clear and valid reasoning when making decisions related to undertaking work instructions.
B3 Maintains a productive, professional, and secure working environment.

Assessment method 2: Professional discussion with portfolio

Knowledge
K1 all stages of the software development lifecycle (what each stage contains, including the inputs and outputs).
K3 the roles and responsibilities of the project lifecycle within your organisation, and your role.
K4 how best to communicate using the different communication methods and how to adapt appropriately to different audiences.
K5 the similarities and differences between different software development methodologies, such as agile and waterfall.

K7 software design approaches and patterns, to identify reusable off-the-shelf solutions to commonly occurring problems.
K8 organisational policies and procedures relating to the tasks being undertaken, and when to follow them. For example, the storage and treatment of GDPR sensitive data.
K10 principles and uses of relational and non-relational databases.
K12 software testing frameworks and methodologies.

Skills
S2 develop effective user interfaces.
S3 link code to data sets.
S5 conduct a range of test types, such as Integration, System, User Acceptance, Non-Functional, Performance and Security testing.
S8 create simple software designs to effectively communicate understanding of the program.
S9 create analysis artefacts, such as use cases and/or user stories.
S13 follow testing frameworks and methodologies.
S14 follow company, team or client approaches to continuous integration, version and source control.
S15 communicate software solutions and ideas to technical and non-technical stakeholders.
S17 interpret and implement a given design whist remaining compliant with security and maintainability requirements.

Behaviours
B1 Works independently and takes responsibility. For example, has a disciplined and responsible approach to risk, and stays motivated and committed when facing challenges.
B4 Works collaboratively with a wide range of people in different roles, internally and externally to the team, with a positive attitude to inclusion & diversity.
B5 Acts with integrity with respect to ethical, legal and regulatory ensuring the protection of personal data, safety and security.
B6 Shows initiative and takes responsibility for solving problems within their own remit, being resourceful when faced with a problem to solve.
B7 Communicates effectively in a variety of situations to both a technical and non-technical audience.
B8 Shows curiosity to the business context in which the solution will be used, displaying an inquisitive approach to solving the problem. This includes the curiosity to explore new opportunities, and techniques; the tenacity to improve methods and maximise performance of the solution; and creativity in their approach to solutions.
B9 Committed to continued professional development