



# **BCS Digital Industries Apprenticeship**

## **Standard Specific Guidance for Training Providers**

### **Level 3 – Software Development Technician Apprenticeship**

**Version 3.0**  
**May 2018**

## Change History

Any changes made to the project shall be clearly documented with a change history log. This shall include the latest version number, date of the amendment and changes made. The purpose is to identify quickly what changes have been made.

Version Number and Date	Changes Made
Version 1.0 May 2017	Document Created.
Version 2.0 March 2018	Updated competencies and minimum requirements.
Version 3.0 May 2018	Updated work activities and removal of Typical Evidence.

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### Purpose of this Document

The purpose of this document is to provide useful information and suggested supporting documentation specific to the Software Development Technician Apprenticeship. It should be read in conjunction with the BCS General Guidance for Apprentices, Employers and Training Providers document and is designed to give training providers some tools to help them build their own program from training plan through to end-point assessment.

This guide will provide:

- supporting information around how to help the Software Development Technician apprentice meet and go beyond the standard;
- a number of useful documents to support the training provider in meeting their responsibilities in managing the apprenticeship from training plan through to the end-point assessment;
- evidence checklists to help the training provider support the apprentice in completing their summative portfolio;
- a template for completing the employer reference.

### Introduction

The BCS Level 3 Software Development Technician Apprenticeship is one of the suite of Digital Industries Apprenticeships that have been designed by the industry to address skills shortages and meet the ever-changing needs of UK employers.

The General Guidance for Apprentices, Employers and Training Providers provides the broad view on how to run an apprenticeship program to the BCS Digital Industries Standard. The collection of tables and templates contained within this document has been designed to give training providers the tools to build their program and to assist them in helping apprentices and employers towards the successful completion of each element of the end-point assessment.

The areas where a training provider should be involved in ensuring a successful outcome to the apprenticeship are:

- mapping and assessing work against the standard;
- advising the employer and the apprentice on which knowledge modules, vendor or professional certificates and other relevant training and activities are most appropriate for their requirements, and agreeing a suitable training plan;
- assisting the apprentice with applying knowledge in the workplace;
- acting as an advisor to the apprentice and the employer to ensure the program remains on track and any concerns are addressed;
- helping the apprentice to select evidence for their summative portfolio;
- supporting the apprentice through the synoptic project;
- confirming the apprentice's readiness for the end-point assessment.

The following series of checklists can be used by the training provider to help manage the process through to completion. Training providers may substitute their own processes and documentation as they see fit in order to effectively manage their key areas of responsibility as set out above.

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## **The Software Development Technician Apprentice**

The primary roles of a software development technician are to:

- work as part of a software development team;
- 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;
- interpret simple design requirements for discrete components of the project under supervision;
- implement code, which other team members have developed, to produce the required component;
- test that the specific component meets its intended functionality.

Job titles may be different across different organisations so the role may also be referred to as software development technician, junior developer, junior web developer, junior application developer, junior mobile app developer, junior games developer, junior application support analyst, junior programmer, assistant programmer and automated test developer.

## **Business Proficiencies**

The proficiencies that should be demonstrated by an apprentice in Software Development Technician are listed below.

### **Business skills**

- The apprentice can demonstrate an analytical and systematic approach to issue resolution.
- The apprentice can take the initiative in identifying and negotiating appropriate personal development opportunities.
- The apprentice can demonstrate effective communication skills.
- The apprentice can appreciate the wider business context, and how their role relates to other roles and to the business of the employer or client.

### **Complexity**

- The apprentice can apply a methodical approach to issue definition and resolution.

### **Autonomy**

- The apprentice can use discretion in identifying and responding to complex issues and assignments.

### **Influence**

- The apprentice can interact with and influence colleagues.
- The apprentice has working-level contact with customers, suppliers and partners.

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## **Knowledge Standards, Technical Competence and Behaviour and Relationship Standards**

Tables 1, 2 and 3 contain details of the topics that the training provider may decide to cover in their development plans and scheduled work activities in order to stretch the apprentice.

## Table 1 – Software Development Technician – Knowledge Standards

The knowledge standards define learning that must take place during the apprenticeship, **both through the activities and the apprentice's own independent learning**. The additional learning outcomes detailed in the table show how a training provider can stretch the apprentice's learning beyond the requirement as set out in the occupational brief. However, it is important to remember that stretching the apprentice in this way will only have a bearing on their final grading if the impact is demonstrated through their competence in the end-point assessment. These knowledge standards, therefore, show the additional learning that may support the apprentice in improving their overall competence. Technical knowledge and understanding is assessed throughout the apprenticeship through a combination of Ofqual regulated knowledge modules and specified vendor and professional qualifications. These must be passed before the end-point assessment can take place.

Knowledge standard	Expected requirement	Suggested learning outcomes to meet the standard and stretch the apprentice to exceed the minimum requirement
Understand the business context and market environment for software development.	<p>Know that software development is undertaken across many industries, but that whilst the processes and methods are broadly similar, the data and rationale can be very different.</p> <p>Understand that it is important to keep digital processes up to date and web systems responsive to user needs.</p> <p>Understand that some businesses are virtual web-based enterprises, whilst some use web and digital services to engage with clients and customers.</p>	<p>Understand the business context and market environment for software development:</p> <p>Understand how similar software development processes and methods are used across a range of industries but can be based on very different rationale.</p> <ul style="list-style-type: none"> <li>• data.</li> </ul> <p>Identify the factors that may lead to the development of different information systems within or across a range of industry sectors, including:</p> <ul style="list-style-type: none"> <li>• business requirements;</li> <li>• project timescales;</li> <li>• budgets;</li> <li>• resources and skills availability;</li> <li>• product and project risks.</li> </ul> <p>Explain why businesses need to keep digital processes up to date and web systems responsive to user needs.</p>

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		Explain the difference between virtual web-based enterprises and companies that use web and digital services with respect to customer and client engagement.
Understands the structure of software applications.	<p>Understand the underlying architecture of software applications.</p> <p>Understand the importance of linking software to databases to store new data inputs collected through applications and to present information choices to users.</p>	<p>Understand the structure of software applications and the particular context for the development platform (whether web, mobile, or desktop applications).</p> <p>Identify the different components that contribute to the underlying architecture of software applications.</p> <ul style="list-style-type: none"> <li>• code and libraries;</li> <li>• data;</li> <li>• application components;</li> <li>• application interfaces;</li> <li>- network and hardware platforms</li> <li>• reference to the OSI (Open Systems Interconnection) model.</li> </ul> <p>Describe the use of data sources in software applications for storage and retrieval of information.</p>
Understands all stages of the software development life cycle.	<p>Understand that software is developed through various phases referred to as the software development life cycle (SDLC).</p> <p>Understand the main phases of the software development life cycle and the main activities in each stage.</p>	<p>Understands all stages of the software development lifecycle.</p> <p>Recognise that there are several ways to represent the terminology and phases of the SDLC.</p> <ul style="list-style-type: none"> <li>• feasibility study;</li> <li>• requirements analysis;</li> <li>• design;</li> <li>• code development;</li> <li>• testing;</li> <li>• deployment / implementation;</li> <li>• maintenance.</li> </ul> <p>Summarise the phases of the SDLC.</p> <p>Identify the main activities of each of the phases of the SDLC in terms of inputs, activities and outputs.</p>

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		<p>Recognise the relationship between the phases of the SDLC and the roles within the software development team.</p>
<p>Understands the role of configuration management and version control systems and how to apply them.</p>	<p>Understand that code development needs to be managed and controlled using configuration management tools to store incremental developments of code as it is being developed.</p> <p>Understand that version control manages updates to code and also development of software for different platforms.</p>	<p>Understand the role of configuration management and version control systems and how to apply them.</p> <p>Explain how configuration management tools and techniques are used to control and manage the different software development artefacts through the phases of the SDLC and live operation, including:</p> <ul style="list-style-type: none"> <li>• requirements documentation;</li> <li>• code;</li> <li>• test scripts.</li> </ul> <p>Summarise the main features and benefits of version control for the development of code including:</p> <ul style="list-style-type: none"> <li>• change history;</li> <li>• concurrent working;</li> <li>• tracking and preventing conflicts;</li> <li>• traceability;</li> <li>• security.</li> </ul> <p>Explain how version control can be used for software and software artefacts.</p> <ul style="list-style-type: none"> <li>• that are being developed for use on multiple platforms;</li> <li>• where similar but slightly different versions need to be produced.</li> </ul>
<p>Understands how to test their code (e.g. unit testing).</p>	<p>Understand the different types of software testing (e.g. unit testing, integration testing, load testing etc.) and how to apply them.</p>	<p>Understand how to test code (e.g. unit testing):</p> <p>Recognise why testing is necessary, including principles of:</p> <ul style="list-style-type: none"> <li>• early testing;</li> <li>• risk reduction;</li> <li>• conformance to functional and non-functional requirements;</li> <li>• finding and reporting defects;</li> <li>• the difference between testing and debugging.</li> </ul> <p>Summarise the different levels of testing within the SDLC.</p> <ul style="list-style-type: none"> <li>• unit;</li> </ul>

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		<ul style="list-style-type: none"> <li>• integration;</li> <li>• system;</li> <li>• acceptance.</li> </ul> <p>Describe how unit testing follows the fundamental test process consisting of:</p> <ul style="list-style-type: none"> <li>• test planning, monitoring and control, including maintaining traceability between requirements and testing artefacts;</li> <li>• test analysis and design;</li> <li>• test implementation and execution;</li> <li>• evaluating exit criteria and reporting.</li> </ul> <p>Identify the different types and techniques for software testing that are available and why they would be used, including:</p> <ul style="list-style-type: none"> <li>• functional testing;</li> <li>• non-functional testing;               <ul style="list-style-type: none"> <li>- security</li> <li>- performance</li> <li>- reliability</li> </ul> </li> <li>• reviews and static analysis;</li> <li>• white box testing (structure-based);</li> <li>• black box testing (specification-based).</li> </ul> <p>Recognise the tool types used to support software testing and their main purpose.</p> <ul style="list-style-type: none"> <li>• test management;</li> <li>• static testing;</li> <li>• test execution;</li> <li>• performance / load / stress testing.</li> </ul>
Recognises that there are different methodologies that can be used for software development.	Understand that there are a wide range of variations of software development methodologies including waterfall and Agile-based methods and how to apply them.	<p>Recognise that there are different methodologies that can be used for software development:</p> <p>Identify the main features of sequential development methods and approaches.</p> <ul style="list-style-type: none"> <li>• Waterfall.</li> </ul>

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		<p>Identify the main features of iterative (incremental) development methods and approaches.</p> <ul style="list-style-type: none"> <li>• Agile.</li> </ul> <p>Distinguish between the use of different software development methodologies and approaches, considering their suitability and application to the project.</p> <ul style="list-style-type: none"> <li>• Agile;</li> <li>• Waterfall.</li> </ul>
Understands the particular context for the development platform (whether web, mobile or desktop applications).	Understand that software development needs to reflect the platform the software will be deployed onto (e.g. web, mobile or desktop) and that software may be for a single platform or increasingly multiple platforms.	<p>Explain the features of the following platforms in context of software development, deployment and underlying architecture.</p> <ul style="list-style-type: none"> <li>• web;</li> <li>• desktop;</li> <li>• mobile;</li> <li>• server;</li> <li>• cloud.</li> </ul> <p>Distinguish the characteristics of software development that are impacted by the deployment of software.</p> <ul style="list-style-type: none"> <li>• on multiple platforms;</li> <li>• to a single platform.</li> </ul>
Understands their role within their software development team.	Understand the various roles that exist within software development teams and how these relate to each other (e.g. business analyst, requirements engineer, software designer, software developer, software tester, software project manager, software release engineer etc.).	<p>Understands the roles within the software development team:</p> <p>Describe the main roles within software development teams.</p> <ul style="list-style-type: none"> <li>• requirements engineer;</li> <li>• business analyst;</li> <li>• software designer;</li> <li>• software developer;</li> <li>• software tester;</li> <li>• software project manager;</li> <li>• software release engineer.</li> </ul> <p>Distinguish how the different roles relate / work with each other and their key accountabilities, in order to complete specific activities and tasks.</p>

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		<p>Recognise the key external roles and processes that interface to the roles within the software development team.</p> <ul style="list-style-type: none"> <li>• customers;</li> <li>• end-users;</li> <li>• operation's processes and personnel;</li> <li>• service management processes and personnel.</li> </ul> <p>Recognise that collaborative approaches are especially important in Agile development and DevOps practices.</p>
Understands how to implement code following a logical approach.	<p>Understand and apply the fundamental principles and concept of software coding, including abstraction, logic, algorithms and data representation.</p> <p>Understand how to write software code in order to solve problems.</p> <p>Understand how to create and debug programs.</p>	<p>Understand how to implement code, following a logical approach.</p> <p>Explain the fundamental concepts of programming.</p> <ul style="list-style-type: none"> <li>• procedural vs. object-oriented vs. functional programming;</li> <li>• compiled vs. interpreted.</li> </ul> <p>Demonstrate the core constructs used when writing code.</p> <ul style="list-style-type: none"> <li>• classes;</li> <li>• objects;</li> <li>• methods;</li> <li>• variables;</li> <li>• logic operators;</li> <li>- AND</li> <li>- OR</li> <li>- NOT</li> <li>- NAND</li> <li>- NOR</li> <li>- XOR</li> <li>• control structures.</li> <li>- iteration</li> <li>- selection</li> <li>- sequence</li> </ul> <p>Explain and demonstrate how algorithms are used.</p> <ul style="list-style-type: none"> <li>• encryption;</li> </ul>

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		<ul style="list-style-type: none"> <li>• searching;</li> <li>• sorting.</li> </ul> <p>Explain and demonstrate how data structures are used and how data is represented in software code.</p> <ul style="list-style-type: none"> <li>• types of data;             <ul style="list-style-type: none"> <li>- integer</li> <li>- floating</li> <li>- Boolean</li> <li>- character</li> <li>- string</li> </ul> </li> <li>• variables;</li> <li>• lists, stacks, arrays.</li> </ul> <p>Describe how to write software code in order to solve problems.</p> <ul style="list-style-type: none"> <li>• describe how programs are structured;             <ul style="list-style-type: none"> <li>- instructions</li> <li>- sub-routines</li> <li>- pseudocode</li> <li>- data definitions and links</li> <li>- comments</li> </ul> </li> <li>• describe modularity and the rational re-use of code.             <ul style="list-style-type: none"> <li>- design patterns</li> <li>- library functions</li> <li>- frameworks</li> </ul> </li> </ul> <p>Understand the fundamental concept of Test Driven Development (TDD).</p>
Understands how their code integrates into the wider project.	<p>Understand the roles and activities needed at each stage of the software development.</p> <p>Understand how software components are managed and controlled and how these are brought together into software solutions.</p> <p>Understand what team-working aspects are</p>	<p>Understand how code integrates into the wider project.</p> <p>Describe the activities undertaken in the following stages of software development:</p> <ul style="list-style-type: none"> <li>• design;</li> <li>• code development;</li> <li>• testing.</li> </ul>

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	<p>needed to ensure effective delivery of software projects.</p>	<p>Outline the activities undertaken in the following stages of software development:</p> <ul style="list-style-type: none"> <li>• feasibility study;</li> <li>• requirements analysis;</li> <li>• deployment / implementation.</li> </ul> <p>Understand software development activities for the following roles:</p> <ul style="list-style-type: none"> <li>• requirements engineer;</li> <li>• business analyst;</li> <li>• software designer;</li> <li>• software developer;</li> <li>• software tester;</li> <li>• software release engineer.</li> </ul> <p>Describe the key business concepts and artefacts that must be considered during a software development project.</p> <ul style="list-style-type: none"> <li>• processes and procedures;</li> <li>- business process management as it relates to business involvement in development</li> <li>- release management</li> <li>• documentation;</li> <li>• training;</li> <li>• support;</li> <li>• service levels.</li> </ul> <p>Describe how software development is conducted within governance structures and the role of the project manager.</p> <p>Understand how effective team-working contributes to the effective delivery of software projects.</p> <ul style="list-style-type: none"> <li>• decision making;</li> <li>• conflict resolution;</li> <li>• collaboration;</li> <li>• communication;</li> <li>• peer review and retrospectives.</li> </ul>
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<p>Understands how to follow a set of functional and non-functional requirements.</p>	<p>Understand the differences between functional and non-functional requirements and how these are used to drive software development activities.</p> <p>Understand how to review requirements and consider the testability of each requirement.</p>	<p>Understand how to follow a set of functional and non-functional requirements.</p> <p>Understand how to follow a set of functional and non-functional requirements.</p> <p>Understand the difference between functional and non-functional requirements and how these are used to drive software development activities.</p> <ul style="list-style-type: none"> <li>• how to review requirements;</li> <li>• how to assess their validity;</li> <li>• how they are used as input to software design;</li> <li>• how they are used during testing to ensure adequate test coverage.</li> </ul> <p>Identify the different types of non-functional requirements, and the reasons they are important to the end-product of software development.</p> <ul style="list-style-type: none"> <li>• availability;</li> <li>• capacity;</li> <li>• performance;</li> <li>• scalability;</li> <li>• reliability;</li> <li>• maintainability;</li> </ul> <p>Recognise common ways in which software requirements can be expressed.</p> <ul style="list-style-type: none"> <li>• requirements documents – clear, unambiguous;</li> <li>• user stories;</li> <li>• use case diagrams;</li> <li>• process models / flow diagrams;</li> <li>• UML diagrams.</li> </ul> <p>Describe the qualities of good requirements and the impact of poor requirements.</p>
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		Explain how to determine the correct level of test coverage based on each requirement / type of requirement.
Understands the end-user context for the software development activity.	Understand the needs of the user and the environment that the software will be used in (e.g. by a doctor in a hospital, or by a consumer through a website, or by an engineer in a manufacturing plant).	<p>Understand the end-user context for the software development activity.</p> <p>Understand and recognise the relationship between the user and the environment in which the software will be used.</p> <p>Understand the individual business and external constraints and dependencies that need to be taken into account when developing software.</p> <ul style="list-style-type: none"> <li>• compliance;</li> <li>• ethics;</li> <li>• governance;</li> <li>• legality.</li> </ul> <p>Describe the methods used to identify end-user needs.</p> <ul style="list-style-type: none"> <li>• questionnaires;</li> <li>• user interviews;</li> <li>• contextual enquiry;</li> <li>• focus groups;</li> <li>• personas;</li> <li>• customer journey mapping.</li> </ul>
Understands how to connect their code to specified data sources.	<p>Understand the importance of seamlessly connecting applications to databases that can be used to:</p> <ul style="list-style-type: none"> <li>• store new information (e.g. orders or customer information);</li> <li>• extract and display stored data (e.g. on products, pricing etc.).</li> </ul>	<p>Appreciate the importance of seamlessly connecting applications to databases and understand types of data storage and their applications.</p> <p>Explain the purpose of data storage for storing new information (orders or customer information).</p> <ul style="list-style-type: none"> <li>• orders;</li> <li>• customer information.</li> </ul> <p>Explain the purpose of data storage for extracting and displaying data.</p> <ul style="list-style-type: none"> <li>• products;</li> <li>• pricing.</li> </ul> <p>Explain the concept and key features of databases and data stores.</p>

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		<ul style="list-style-type: none"> <li>• relational databases;</li> <li>• SQL and NoSQL;</li> <li>• data files;</li> <li>• data structures (tables, records, fields, definitions);</li> <li>• document;</li> <li>• key-value.</li> </ul>
Demonstrates knowledge of database normalisation.	<p>Understand that normalisation is a method of reducing the complexity of multiple database tables into smaller and well-structured relations.</p> <p>Understand that a key principle of normalisation is to ensure that information or data should be stored only once.</p>	<p>Demonstrate knowledge of database normalisation.</p> <p>Explain the purpose and importance of effective data modelling and normalisation.</p> <p>Demonstrate the principle of normalisation, that information or data should be stored only once.</p>
Understands why there is a need to follow good coding practices.	<p>Understand that good coding practices aid the efficiency and quality of coding development.</p> <p>Understand that there are a range of published open standards and organisational standards, where to source these and how to apply them.</p>	<p>Understand why there is a need to follow good coding practices.</p> <p>Explain the importance of good coding practice.</p> <ul style="list-style-type: none"> <li>• quality of coding development.</li> <li>- design documentation</li> <li>- structure of code</li> <li>- consistent design and structure</li> <li>- secure code</li> </ul> <p>Explain the purpose of good software coding principles and practices.</p> <ul style="list-style-type: none"> <li>• the basic common principles;</li> <li>- DRY (don't repeat yourself)</li> <li>• defensive programming;</li> <li>• commenting;</li> <li>• refactoring;</li> <li>• patterns / anti-patterns.</li> </ul> <p>Understand that there are a range of open and organisational coding standards and where to source them.</p>
Understands the principles of	Understand the issues associated with	Understand the principles of good interface design.

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good interface design.	<p>designing and developing interactive systems.</p> <p>Understand the main techniques and technologies used for interface design.</p> <p>Appreciate the importance of usability when developing interactive systems.</p>	<p>Explain human computer interaction and understand the issues associated with interactive systems.</p> <ul style="list-style-type: none"> <li>• usability / ease of use and intuitive design;</li> <li>• graphical user interfaces (GUI) for different types of devices;</li> <li>• ergonomic design.</li> </ul> <p>Describe the key concepts and processes of good user interface design.</p> <ul style="list-style-type: none"> <li>• design principles;</li> <li>• design patterns;</li> <li>• tools;</li> <li>- wireframes</li> <li>- prototypes</li> <li>• techniques and methods.</li> <li>- A/B testing</li> </ul> <p>Explain the importance of usability when developing interactive systems.</p> <p>Describe the fundamental considerations for developing an accessible system and the purpose of the Web Accessibility Initiative (WAI).</p>
Understands the importance of building-in security to software at the development stage.	<p>Understand what is meant by 'building security in' and that this includes:</p> <ul style="list-style-type: none"> <li>• the key steps in the design process to identify and incorporate security requirements into software development;</li> <li>• the key techniques for defensive programming such as input checking.</li> </ul>	<p>Understand the importance of building security in to software at the development stage.</p> <p>Describe the following types of security issues and the scale and nature of threats that can impact software development.</p> <ul style="list-style-type: none"> <li>• common security attacks;</li> <li>• security versus resilience;</li> <li>• social engineering.</li> </ul> <p>Explain what is meant by 'building security in', in terms of secure software development and creating a secure end-product, and why it is important.</p> <ul style="list-style-type: none"> <li>• the role coders play in determining a secure software end-product;</li> </ul>

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		<ul style="list-style-type: none"><li>• the impact they can have on security by not building security in;</li><li>• why building security in at the start is better than trying to retrofit later.</li></ul> <p>Describe proactive security approaches during software design and development.</p> <ul style="list-style-type: none"><li>• security development lifecycle (SDLC);</li><li>• defensive design / defensive programming;</li><li>• test creation and execution;</li><li>• permission setting and role-based access;</li><li>• physical infrastructure and security.</li></ul> <p>Explain approaches to make software more secure.</p> <ul style="list-style-type: none"><li>• security scanning;</li><li>• penetration testing;</li><li>• fuzzing;</li><li>• load testing.</li></ul>
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These expected requirements are met through the delivery of the BCS Ofqual regulated knowledge modules and vendor training courses, details of which are contained in the course syllabi.

### Table 2 – Software Development Technician – Technical Competency Standards

The competency standards have been defined to demonstrate that the knowledge learnt has been applied in real work tasks, activities and projects in a business environment.

Competencies are assessed throughout the apprenticeship through a combination of the employer reference, the synoptic project and a summative portfolio completed by apprentices from records of the work activities in which they have been involved.

The training provider should assist the employer to identify suitable work tasks, activities and projects within the scope of their normal business activities for the apprentice to practice what they have learnt and to demonstrate the competencies below.

The BCS Apprenticeship is mapped to an internationally recognised skills framework and to work activities in which a Software Developer Technician apprentice would be involved.

The following table sets out these competencies and the expected requirements against the work activities that might be demonstrated at and beyond the minimum expectation. The format is explained below:

Competency standard	Expected requirement	Work activities demonstrating the minimum expected level of competence	Work activities demonstrating competence beyond the minimum expected
<i>This column contains the competency as it is listed in the apprenticeship standard.</i>	<i>This column shows the expected requirements listed in the occupational brief for a successful outcome.</i>	<i>This column shows recognised work activities that demonstrate that the apprentice is meeting the expected requirement.</i>  <i>The apprentice should be able to demonstrate all of these activities.</i>	<i>This column shows recognised work activities that demonstrate that the apprentice exceeds the expected requirement.</i>  <i>These activities are additional to the expected activities and it is not required that an apprentice will demonstrate competence at this level in every activity.</i>

The Software Development Technician competency standard, requirements and activities demonstrating competence follow:

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Competency standard	Expected requirement	Work activities demonstrating the minimum expected level of competence
<b>Logic:</b> Writes simple code for discrete software components following an appropriate logical approach to agreed standards (whether web, mobile or desktop applications).	Apprentices can write code to achieve the desired functionality using the appropriate tools and methods applicable to their organisation.	Designs moderately complex programs and program modifications from supplied specifications, using agreed standards and tools, to achieve a well engineered result.  Documents all work in accordance with agreed standards.

Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Security:</b> Applies appropriate secure development principles to specific software components at all stages of development.	Apprentices can apply security principles to all work within the development lifecycle.  Apprentices understand the importance of up-to-date software.	Applies procedures to assess compliance of hardware and software configurations to policies, standards, legal and regulatory requirements.

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Development Support:</b> Applies industry-standard approaches for configuration management and version control to manage code during build and release.	<p>Apprentices understand the business context and drivers during development.</p> <p>Apprentices can communicate with customers, internal and external, to explain their work with the appropriate language relevant to their audience.</p> <p>Apprentices understand the importance of version control at every stage within the development life cycle.</p>	<p>Uses the appropriate operating systems, hardware, tools and/or paper documents to maintain the configuration management system, including the configuration management database (CMDB). Ensures that necessary data, forms and configuration items (CIs) are available for use by all authorised personnel.</p> <p>Assists in the configuration of software and equipment for the systems testing of platform-specific versions of one or more software products.</p>

Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Data:</b> Makes simple connections between code and defined data sources as specified.	Apprentices can link to a range of database types and embed data queries within their code.	<p>Plans, designs and conducts tests of programs; corrects errors and re-tests to achieve an error-free result.</p> <p>Determines what information is required and specifies search criteria.</p> <p>Works with clients/users on development projects to make effective use of (object) database management systems (O/DBMS), query languages, other DB tools and techniques. Interprets installation standards to meet particular project needs and produces database components as required.</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Test:</b> Functionally tests that the deliverables for that component have been met or not.	Apprentices can test and analyse their code to identify errors as soon as possible in the coding process and on an interactive basis.  Apprentices can design manual tests for their product.  Apprentices understand expected results and acceptance criteria during testing.	Reviews requirements and specifications and defines test conditions.  Analyses test requirements, designs and builds simple test case suites, test scripts, and test procedures, with expected results.  Checks test results, and documents test failures and successes compared with pre-determined criteria in accordance with agreed standards.

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Analysis:</b> Follows basic analysis models such as use cases and process maps.	Apprentices can read and understand data to ensure they know and can meet the customers' requirements.  Apprentices can identify and represent required functionality (e.g. use cases).  Apprentices can identify and represent activity workflow (e.g. process maps).	Gains awareness of the context of object and data management within the IT function and within the employer's business.

Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Development lifecycle:</b> Supports the software developers at the build and test stages of the software development lifecycle.	Apprentices can work as part of a team that understand their process within the development lifecycle.  Apprentices can show initiative during development and take responsibility for their own work.  Apprentices can work flexibly to assist with other members of the team during development.	Assists as part of a team on design of components of larger systems.  Creates, amends and keeps track of programs in accordance with the design.



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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Quality:</b> Follows organisational and industry good coding practices (including for naming, commenting, etc.).	Apprentices can identify and follow standards and good practice that can improve programming efficiency, style and quality, including: <ul style="list-style-type: none"> <li>programming standards, both organisational and external;</li> <li>generic best practices including readability, reusability, maintainability;</li> <li>Best practice approaches of different paradigms and language.</li> </ul>	Designs simple programs and program modifications from supplied specifications, using agreed standards and tools, to achieve a well-engineered result.  Documents all work in accordance with agreed standards.  Documents all work using required standards, methods and tools, including prototyping tools where appropriate.

Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Problem Solving:</b> <ul style="list-style-type: none"> <li>solves logical problems, seeking assistance when required (including appropriate mathematical application);</li> <li>responds to the business environment and business issues related to software development.</li> </ul>	Apprentices can use at least one problem-solving tool and technique to identify and resolve programming issues.  Apprentices can apply structured problem-solving methods.  Apprentices can apply problem-solving techniques to programming activities.  Apprentices can demonstrate they know how and where to seek assistance appropriate to the stage of development.	Assists users in making more effective use of desk-top systems, products and services. Makes initial diagnosis of any problems and advises known solutions where applicable.

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Communication:</b> Clearly articulates the role and function of software components to a variety of stakeholders (including end users, supervisors etc.).	<p>The apprentice should be able to use a minimum of three tools to communicate:</p> <ul style="list-style-type: none"> <li>• oral;</li> <li>• face-to-face;</li> <li>• remote;</li> <li>• diagrammatic.</li> </ul> <p>The apprentice should be able to document work done in accordance with agreed procedures.</p> <p>The apprentice must be able to explain three types of communication styles to ensure cultural awareness and appropriateness for customer are taken into account.</p>	<p>Typically, by telephone, email, or instant messaging, provides customers with routine information on the features, operational requirements, products and services supported.</p> <p>Provides guidance and assistance to less experienced colleagues in the execution of routine tasks and ensures that all safety, security, clerical and administrative procedures are completed correctly.</p> <p>Documents work using the required standards, methods and tools.</p>

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Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>Environment:</b> Operates effectively in their own business's, their customers' and the industry's environments.	Apprentices can demonstrate working within operational requirements such as health and safety, budgets, brands and normal business protocols.	Undertakes all work in accordance with agreed safety, technical and quality standards, using appropriate methods and tools.

Competency standard	Expected requirement	Work activities demonstrating expected level of competence
<b>User Interface:</b> Develops user interfaces as appropriate to the organisation's development standards and the type of component being developed.	<p>Apprentices understand the fundamental concepts of human-computer interaction or user experience design, the development practices leading to a high-quality user interface, and the programming techniques required to construct a graphical user interface.</p> <p>Apprentices understand how to interact with screen or UI designers to ensure the logic layer integrates with the user interface.</p> <p>Apprentices understand how to interact with testers to optimise the user interface.</p>	Designs simple applications using templates and tools to specify user/system interfaces, including for example: menus, screen dialogues, wireframes, boned rigs, inputs, reports, validation and error correction procedures, and processing rules.

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Criteria for demonstrating <b>Significantly</b> higher competencies.		
Understands and applies a wide range of tools and methods	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Accurately and appropriately applies and effectively implements the right tools and methods in a variety of different situations	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A sophisticated user - fully exploits the functionality/capability of the tools and methods	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Extensive and deep understanding of different tools and methods and how and why they can be applied in different contexts	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Deals confidently and capably with a high level of interrelated and interdependent factors in their work	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Initial assessment (holistic summary of all evidence found)		
<p>This competence has been demonstrated at the following level.</p> <p>Significantly higher = all 5 areas have been met            Pass = all activities demonstrated in the What category, but not all 5 areas met for the significantly higher grade</p>	<input type="checkbox"/> Significantly higher  <input type="checkbox"/> Pass	

## Table 3 – Generic Behaviour and Relationship Standards

The behaviour and relationship standards have been defined to demonstrate that the apprentice applies the good behaviours and interpersonal skills that are needed in a business environment. Behaviours and business relationship skills are assessed throughout the apprenticeship through a combination of the employer reference, the synoptic project and a summative portfolio, which is completed by apprentices from records of the work activities in which they have been involved. The training provider could assist the apprentice by offering some additional soft-skills training over and above their apprenticeship. The apprenticeship standard sets out the attributes required within the occupation brief, which can be accessed via the Apprenticeship section of [www.bcs.org](http://www.bcs.org).

Behaviour and relationship standards	Expected requirement
Apprentices can demonstrate the full range of skills, knowledge and behaviours required to fulfil their job role.	Knows what skills, knowledge and behaviours are needed to do the job well Are aware of their own strengths in the job role, and any areas for improvement Appreciate who else is important, for them to do their job and fulfil the role effectively (e.g. colleagues, managers, other stakeholders) Are aware of potential risks in the job role (e.g. security, privacy, regulatory) Use personal attributes effectively in the role Understand how the job fits into the organisation as a whole.
Apprentices can demonstrate how they contribute to the wider business objectives and show an understanding of the wider business environment.	Understands the goals, vision and values of the organisation. Aware of the commercial objectives of the tasks/ projects they are working on. Understands their role in meeting or exceeding customers' requirements and expectations. Is in tune with the organisation's culture.
Apprentices can demonstrate the ability to use both logical and creative thinking skills when undertaking work tasks, recognising and applying techniques from both.	Logical thinking: <ul style="list-style-type: none"> <li>Recognises the conclusion to be reached;</li> <li>Proceeds by rational steps;</li> <li>Evaluates information, judging its relevance and value;</li> <li>Supports conclusions, using reasoned arguments and evidence.</li> </ul> Creative thinking: <ul style="list-style-type: none"> <li>Explores ideas and possibilities;</li> <li>Makes connections between different aspects;</li> </ul> Embraces ideas and approaches as conditions or circumstances change.

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Behaviour and relationship standards	Expected requirement
Apprentices can show that they recognise problems inherent in, or emerging during, work tasks, and can tackle them effectively.	<p>Problem-solving:</p> <ul style="list-style-type: none"> <li>• Analyses situations;</li> <li>• Defines goals;</li> <li>• Contributes to the development of solutions;</li> <li>• Prioritises actions;</li> </ul> <p>Deals with unexpected occurrences.</p>
<p>Apprentices can manage relationships with work colleagues, including those in more senior roles, customers / clients and other stakeholders, internal or external, and as appropriate to their roles, so as to gain their confidence, keep them involved and maintain their support for the task / project in hand.</p> <p>Apprentices can establish and maintain productive working relationships, and can use a range of different techniques for doing so.</p>	<p>Managing relationships:</p> <ul style="list-style-type: none"> <li>• understands the value and importance of good relationships;</li> <li>• acknowledges other people's accomplishments and strengths;</li> <li>• understands how to deal with conflict;</li> <li>• promotes teamwork by participating.</li> </ul> <p>Customer / client relationships:</p> <ul style="list-style-type: none"> <li>• understands their requirements, including constraints and limiting factors;</li> <li>• sets reasonable expectations;</li> <li>• understands how to communicate with them in decisions and actions;</li> <li>• interacts positively with them;</li> <li>• provides a complete answer in response to queries (transparency, full disclosure).</li> </ul> <p>Stakeholders:</p> <ul style="list-style-type: none"> <li>• understands who they are and what their 'stake' is;</li> <li>• prioritises stakeholders in terms of their importance, power to affect the task and interest in it;</li> </ul> <p>agrees objectives.</p>

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<p>Apprentices can communicate effectively with a range of people at work, one-to-one and in groups, in different situations and using a variety of methods.</p> <p>Apprentices can demonstrate various methods of communication, with an understanding of the strengths, weaknesses and limitations of these, the factors that may disrupt it, and the importance of checking other people's understanding.</p>	<p>Intention / purpose:</p> <ul style="list-style-type: none"> <li>• understands the purpose of communicating in a particular situation or circumstance (e.g. inform, instruct, suggest, discuss, negotiate etc.);</li> <li>• checks that the person / people with whom one is communicating also understand the purpose;</li> <li>• is sensitive to the dynamics of the situation;</li> <li>• is aware of anything that might disrupt the effectiveness of the communication (e.g. status, past history).</li> </ul> <p>Method:</p> <ul style="list-style-type: none"> <li>• understands the most appropriate method for the situation;</li> <li>• aware of the limitations of the chosen method, and the possible risks of miscommunication (e.g. ambiguity);</li> <li>• takes account of the affective dimensions of the method (e.g. body language, tone of voice, eye contact, facial expression etc.).</li> </ul> <p>Execution:</p> <ul style="list-style-type: none"> <li>• expresses self clearly and succinctly, but not over-simplifying;</li> <li>• checks that the other person / people understand what is being expressed;</li> <li>• takes account of the potential barriers to understanding (e.g. filtering, selective perception, information overload);</li> </ul> <p>modifies the purpose and methods of communication during a situation in response to cues from the other person / people.</p>
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These attributes are difficult to measure and are subjective in nature so cannot actually guarantee that any greater level of competence or proficiency is being demonstrated. The BCS Apprenticeship is mapped to the Skills Framework for the Information Age (SFIA), an internationally recognised skills framework and to observable activities that a Software Development Technician apprentice working to the level of responsibility appropriate for the role should demonstrate. Accordingly, the proficiencies that should be demonstrated by an apprentice in Software Development Technician are shown below.

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Proficiency standard	Work activities demonstrating expected level of proficiency	Work activities demonstrating competence beyond the minimum expected
Business skills	<p>Demonstrates an analytical and systematic approach to issue resolution.</p> <p>Takes the initiative in identifying and negotiating appropriate personal development opportunities.</p> <p>Demonstrates effective communication skills.</p> <p>Appreciates the wider business context, and how their role relates to other roles and to the business of the employer or client.</p>	<p>Undertakes work that is more complex, more critical or more difficult.</p> <p>Works independently and takes high level of responsibility.</p> <p>Independently demonstrates an ability to extend or enhance their approach to work and the quality of outcomes.</p> <p>Doesn't just solve the problem but explores creative or innovative options to do it better, more efficiently, more elegantly or to better meet customer needs.</p>
Complexity	<p>Applies a methodical approach to issue definition and resolution.</p>	<p>Shows strong project management skills, in defining problem, identifying solutions and making them happen.</p> <p>Drives solutions – with a strong goal focused and appropriate level of urgency.</p> <p>Demonstrates a disciplined approach to execution, harnessing resources effectively.</p>
Influence	<p>Interacts with and influences colleagues.</p> <p>Has working-level contact with customers, suppliers and partners.</p>	<p>Internally works alone, 1:1, in a team and across the company with colleagues at all levels.</p> <p>Externally works with customers, suppliers and partners in a variety of situations/</p>
Autonomy	<p>Uses discretion in identifying and responding to complex issues and assignments.</p>	<p>Reads situations, adapts behaviours and communicates appropriately for the situation and the audience.</p> <p>Can be trusted to deliver, perform and behave professionally, manages and delivers against expectations, proactively updates colleagues and behaves in line with the highest values and business ethics.</p> <p>Actively inspires and leads others, takes others with them, leads by example.</p>

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## **Software Development Technician Apprentice Templates**

The following templates are designed to support the training provider and will take them from training and development planning through to the end-point assessment readiness check. As with the tables above they can be used by the training provider to help them manage the process through to completion, although training providers may also substitute their own processes and documentation as they see fit in order to effectively manage their program.

## Software Development Technician Template 1 – Training and Development Plan

### Apprentice details

Name	
ULN number	

### Employer details

Company name	
Company address	
Contact name	

### Training provider details

Company name	
Company address	
Contact name	

## Role mapping against the Software Development Technician standard

For each area of technical and behavioural competence an overall evaluation should be provided on a three-point scale to show how often this competence is required during the normal work carried out by the employer:

- **critical** – this competence is applied most of the time;
- **desirable** – this competence is applied some of the time;
- **occasional** – this competence is rarely required.

This evaluation could form the basis of an ongoing review with the apprentice on a regular basis.

### Workplace competence map

The template shows the type of activities that are identified in the apprenticeship standard for Software Development Technician as demonstrating the required competencies being applied in the workplace.

It is recognised that there are differences between the types of work carried out by different employers so this template provides the opportunity to include any other activity that demonstrates the apprentice's competence during their normal duties.

The tables below could be used to make an evaluation of the apprentice's work environment and detail the work activities that a competent apprentice should be able undertake. This activity should then lead to a discussion to identify any gaps with the employer and make a plan to redress the balance.

In the normal course of work, is the apprentice required to:	Critical	Desirable	Occasional
<b>Logic:</b> Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether for web, mobile or desktop applications)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Security:</b> Apply appropriate secure development principles to specific software components at all stages of development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Development support:</b> Apply industry-standard approaches for configuration management and version control to manage code during build and release?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Data:</b> Make simple connections between code and defined data sources as specified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Test:</b> Functionally test that the deliverables for that component have been met or not?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Analysis:</b> Follow basic analysis models such as use cases and process maps?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Development Lifecycle:</b> Support the software developers at the build and test stages of the software development lifecycle?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Quality:</b> Follow organisational and industry good coding practices (including those for naming, commenting, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Problem Solving:</b> Solve logical problems, seeking assistance when required (including appropriate mathematical application) and respond to the business environment and business issues related to software development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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<b>Communication:</b> Clearly articulate the role and function of software components to a variety of stakeholders (including end users, supervisors, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Environment:</b> Operate appropriately in their own business's, their customers' and the industry's environments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>User Interface:</b> Develop user interfaces as appropriate to the organisation's development standards and the type of component being developed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please add any other activities you think demonstrate the apprentice's competence in this area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**What is your overall evaluation of the apprentice's opportunity to demonstrate the technical competencies in the employer's normal workplace environment?**

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Knowledge module training plan

The knowledge standards define learning that should take place during the apprenticeship, **both through the training provider activities and the apprentice's independent learning**. The training provider should work with the employer to identify appropriate training for the apprentice to meet the requirements of the standard and the employer should identify opportunities within the scope of their normal business activities for the apprentice to demonstrate what they have learnt.

Knowledge and understanding will be delivered by a combination of BCS qualifications and vendor certifications in accordance with the Software Development Technician standard.

One recognised vendor or professional certification must be passed, which may be used to exempt one of the knowledge modules. Details of these, and the knowledge module that can be exempted, are contained in the standard. The training provider and the employer should agree which is best suited to their requirements.

### Training plan – knowledge

BCS qualification	Selected Y/N
BCS Level 3 Certificate in Software Development Context and Methodologies	
BCS Level 3 Certificate in Programming	

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## Technical competence development plan

The following template may be used to describe how to ensure that the apprentice will be given the opportunity to demonstrate each of the required technical competencies stated in the Software Development Technician standard.

Competency requirement to meet the standard	How will this be ensured?	Responsibility (Employer or training provider)?
<b>Logic:</b> Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether for web, mobile or desktop applications)?		
<b>Security:</b> Apply appropriate secure development principles to specific software components at all stages of development?		
<b>Development support:</b> Apply industry-standard approaches for configuration management and version control to manage code during build and release?		
<b>Data:</b> Make simple connections between code and defined data sources as specified?		
<b>Test:</b> Functionally test that the deliverables for that component have been met or not?		
<b>Analysis:</b> Follow basic analysis models such as use cases and process maps?		
<b>Development Lifecycle:</b> Support the software developers at the build and test stages of the software development lifecycle?		
<b>Quality:</b> Follow organisational and industry good coding practices (including those for naming, commenting, etc.)?		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

<b>Problem Solving:</b> Solve logical problems, seeking assistance when required (including appropriate mathematical application) and respond to the business environment and business issues related to software development?		
<b>Communication:</b> Clearly articulate the role and function of software components to a variety of stakeholders (including end users, supervisors, etc.)?		
<b>Environment:</b> Operate appropriately in their own business's, their customers' and the industry's environments?		
<b>User Interface:</b> Develop user interfaces as appropriate to the organisation's development standards and the type of component being developed?		
Please add any other activity you think demonstrates the apprentice's competence in this area.		

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## Professional development activities plan

BCS has defined a number of professional development activities that support wider professional and career development. These activities have been associated with the various levels of responsibility, and the activities listed in the table below represent those that are appropriate for an apprentice.

Training providers may wish to engage in assisting the apprentice in some of these activities as they can contribute towards the portfolio of evidence. The recommended activities include those shown below.

Professional development activities	Appropriate to the role	Agreed with apprentice and employer
Participating in group activities inside or outside the working environment that can assist with the development of interpersonal skills.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking unpaid activities that can help to develop professional skills or offer additional insight into, or understanding of, their working role.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning in subjects relevant to, but not directly related to, their role (e.g. mentoring skills, cultural awareness and diversity training), perhaps through self-study or evening classes.	<input type="checkbox"/>	<input type="checkbox"/>
Gaining basic knowledge of the employing organisation, its business, structure, culture, products/services, operations and terminology.	<input type="checkbox"/>	<input type="checkbox"/>
Gaining knowledge of IT activities in the employing organisation external to their function.	<input type="checkbox"/>	<input type="checkbox"/>
Exploring a topic that is not part of their normal responsibilities, and presenting findings to colleagues and/or management.	<input type="checkbox"/>	<input type="checkbox"/>
Attending meetings, seminars and workshops organised by a professional body and reading published material such as journals and web content.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in the techniques of team and collaborative working. Gaining an understanding of the underlying concepts.	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in oral and written communications, including report writing and presentations.	<input type="checkbox"/>	<input type="checkbox"/>

## Software Development Technician Template 2 – Weekly Diary

Week number	Activities completed	Competencies displayed	Supporting evidence

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## Software Development Technician Template 3 – Periodic Workplace Competence Assessment and Remedial Action Plan

This template can be used to track the competencies being applied in the workplace on a continual/periodic basis. The training provider can then discuss any gaps with the employer and make a plan to redress the balance.

### Competence assessment

In the normal course of work, is the apprentice demonstrating these competencies:	Sufficiently applied to meet minimum competence standard	Start/stop/continue – what should the apprentice start, stop or continue doing in order to develop this competence?
<b>Logic:</b> Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether for web, mobile or desktop applications)?	<input type="checkbox"/>	
<b>Security:</b> Apply appropriate secure development principles to specific software components at all stages of development?	<input type="checkbox"/>	
<b>Development support:</b> Apply industry-standard approaches for configuration management and version control to manage code during build and release?	<input type="checkbox"/>	
<b>Data:</b> Make simple connections between code and defined data sources as specified?	<input type="checkbox"/>	
<b>Test:</b> Functionally test that the deliverables for that component have been met or not?	<input type="checkbox"/>	
<b>Analysis:</b> Follow basic analysis models such as use cases and process maps?	<input type="checkbox"/>	
<b>Development Lifecycle:</b> Support the software developers at the build and test stages of the software development lifecycle?	<input type="checkbox"/>	
<b>Quality:</b> Follow organisational and industry good coding practices (including those for naming, commenting, etc.)?	<input type="checkbox"/>	

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<b>Problem Solving:</b> Solve logical problems, seeking assistance when required (including appropriate mathematical application) and respond to the business environment and business issues related to software development?	<input type="checkbox"/>	
<b>Communication:</b> Clearly articulate the role and function of software components to a variety of stakeholders (including end users, supervisors, etc.)?	<input type="checkbox"/>	
<b>Environment:</b> Operate appropriately in their own business's, their customers' and the industry's environments?	<input type="checkbox"/>	
<b>User Interface:</b> Develop user interfaces as appropriate to the organisation's development standards and the type of component being developed?	<input type="checkbox"/>	
Please add any other activity you think demonstrates the apprentice's competence in this area.	<input type="checkbox"/>	

If any remedial action is required, the table below could be used to record it.

Please continue on a separate sheet as required

## Software Development Technician – The Employer

### Reference Overview

This template and guidance will assist the training provider in supporting the employer when completing the employer reference, which forms a key part of the final end-point assessment.

This employer reference template should be used to record the employer's comments against the grading minimum standards, criteria and dimensions, as set out in the Software Development Technician standard.

For each area of technical competence and behavioural proficiency, the employer will be asked to provide an overall evaluation on a three-point scale:

- **met** – they have observed this behaviour in the apprentice most of the time;
- **exceeded** – they have observed this behaviour in the apprentice all of the time;
- **not met** – they have not observed this behaviour in the apprentice.

They should perform an evaluation using the checkboxes, and then provide an overall evaluation of the apprentice's competence or proficiency.

The template shows the type of activities that could demonstrate the required competencies and behaviours being applied in the workplace. There are always differences between individual employers and their requirements so there is the opportunity for the employer to include any other activity that they think demonstrates the apprentice's competence. It should be completed by a senior member of the team, who is able to comment directly on work activities.

## Software Development Technician Template 4 – The Employer Reference

### Apprentice details

Name	
ULN	

### Training provider details

Company name	
Company address	
Contact name	

### Employer details

Name	
Company address	
 Signed by:  Print name:  Job title:  Date:	

## **Section 1**

### **Technical competence evaluation**

Please provide your evaluation of the technical competence of the apprentice using the tables below. Under each heading is a list of activities that a competent apprentice should be able to demonstrate.

Please indicate your assessment of each competence using the checkboxes, and then provide an overall evaluation of the apprentice's technical competence.



## Competence – Logic

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether for web, mobile or desktop applications)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

### What is your overall evaluation of the apprentice's competence in logic?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Competence – Security

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Apply appropriate secure development principles to specific software components at all stages of development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

### What is your overall evaluation of the apprentice's competence in security?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Development Support

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Apply industry-standard approaches for configuration management and version control to manage code during build and release?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's competence in development support?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Data

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Make simple connections between code and defined data sources as specified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's competence in data?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Test

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Functionally test that the deliverables for that component have been met or not?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's competence in test?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Analysis

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Follow basic analysis models such as use cases and process maps?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's competence in analysis?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Development Life Cycle

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Support the software developers at the build and test stages of the software development life cycle?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's competence in development life cycle?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

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## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Quality

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Follow organisational and industry good coding practices (including those for naming, commenting, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's competence in quality?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.



## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Problem Solving

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Solve logical problems, seeking assistance when required (including appropriate mathematical application)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respond to the business environment and business issues related to software development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's competence in problem solving?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Communication

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Clearly articulate the role and function of software components to a variety of stakeholders (including end-users, supervisors, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's competence in communication?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – Environment

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Operate appropriately in their own business's, their customers' and the industry's environments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's competence in environment?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Competence – User Interfaces

In your view, is the apprentice competent to:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Develop user interfaces as appropriate to the organisation's development standards and the type of component being developed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's competence in user interfaces?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of competence in this area.

Please continue on a separate sheet if required.

## **Section 2**

### **Behaviours, business skills and level of responsibility evaluation**

Please provide an evaluation as to the level of responsibility of the apprentice you are providing a reference for using the tables below. Under each heading is a list of proficiencies that a competent apprentice should display. Please indicate your assessment of the apprentice's proficiency using the checkboxes, and then provide an overall evaluation of the apprentice's proficiency.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Proficiency – Business Skills

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Demonstrating an analytical and systematic approach to issue resolution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taking the initiative in identifying and negotiating appropriate personal development opportunities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrating effective communication skills?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appreciating the wider business context, and how their role relates to other roles and to the business of the employer or client?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's business skills?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Proficiency – Complexity

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Applying a methodical approach to issue definition and resolution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's proficiency at handing complexity?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Proficiency – Autonomy

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Using discretion in identifying and responding to complex issues and assignments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

#### What is your overall evaluation of the apprentice's proficiency to work autonomously?

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.



## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

### Proficiency – Influence

In your view, is the apprentice proficient at:	The apprentice has MET this requirement	The apprentice has EXCEEDED this requirement	The apprentice has NOT MET this requirement
Having working level contact with customers, suppliers and partners?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interacting with and influencing colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Met** – you have observed this behaviour in the apprentice most of the time.
- **Exceeded** – you have observed this behaviour in the apprentice all of the time.
- **Not Met** – you have not observed this behaviour in the apprentice.

**What is your overall evaluation of the apprentice's ability to influence?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

## Section 3

### Professional development

A number of professional development activities have been identified as part of the SFIAP<sup>plus</sup> framework to help career development. These activities have been associated with the various levels of responsibility, and the activities listed in the table below represent those that are appropriate for a Software Development Technician apprentice.

In your view, is the apprentice undertaking any of the following professional development activities:	The apprentice is demonstrably undertaking this activity	The apprentice is NOT demonstrably undertaking this activity
Participating in group activities inside or outside the working environment that can assist with the development of interpersonal skills?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking pro bono (unpaid) activities that can help to develop professional skills or offer additional insight into, or understanding of, their working role?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning in subjects relevant to, but not directly related to, their role (e.g. foreign language courses, mentoring skills, cultural awareness and diversity training), perhaps through self-study or evening classes?	<input type="checkbox"/>	<input type="checkbox"/>
Gaining basic knowledge of the employing organisation, its business, structure, culture, products/services, operations and terminology?	<input type="checkbox"/>	<input type="checkbox"/>
Gaining knowledge of IT activities in the employing organisation external to their function?	<input type="checkbox"/>	<input type="checkbox"/>
Exploring a topic that is not part of their normal responsibilities, and presenting findings to colleagues and/or management?	<input type="checkbox"/>	<input type="checkbox"/>
Attending meetings, seminars and workshops organised by a professional body and reading published material such as journals and web content?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in the techniques of team and collaborative working. Gaining an understanding of the underlying concepts?	<input type="checkbox"/>	<input type="checkbox"/>
Undertaking learning and practice in oral and written communications, including report writing and presentations?	<input type="checkbox"/>	<input type="checkbox"/>

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

**What is your overall evaluation of the apprentice's ability to undertake wider professional development?**

Please give reasons, together with supporting examples, why you think the apprentice has demonstrated this level of proficiency in this area.

Please continue on a separate sheet if required.

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## **Section 4**

### **Overall impressions and constructive feedback**

This section is an opportunity for you to provide written feedback outside the rigid competency structure.

It is a free text field to allow you to share general thoughts on the apprentice's performance in case you were unable to say everything you wanted to say using the structured template. For example, you may want to highlight some of the areas where you have not been able to give the apprentice the exposure they would have liked.

We would welcome any general constructive development advice you may wish to give.

Please continue on a separate sheet if required.

## **Software Development Technician Template 5 – Declaration and Evidence Checklists for the Completion of the Summative Portfolio**

This template is to support the training provider in working with the apprentice and employer to ensure the successful completion of the summative portfolio.

The checklists can be used by training providers to help them manage the process through to completion, although training providers may also substitute their own processes and documentation as they see fit.

The key responsibilities of the apprentice in producing their summative portfolio can be found in the General Guidance for Apprentices, Employers and Training Providers, as can generic guidance on how to select evidence to compile the summative portfolio.

The apprentice should gather artefacts and record information that can evidence their activities undertaken in the workplace. The portfolio of evidence should demonstrate the full range of competencies, as shown in this template, which are required by the standard to show that the apprentice can fulfil the role of a Software Development Technician.

## Summative Portfolio Declaration

### Apprentice declaration

Name	[first name] [surname]
ULN	[e.g.123456]
Declaration	I confirm that all the evidence submitted is my own work and it has been completed as specified
Signature	
Date	

### Line manager declaration (employer)

Name	[line manager name]
Company	[employer name]
Declaration	I confirm that the work contained within this portfolio has, to the best of my knowledge, been completed solely by [apprentice's name]
Signature	
Date	

### Training provider declaration (training provider)

Name	[observer name]
Company	[training provider name]
Declaration	I confirm that the work contained within this portfolio has, to the best of my knowledge, been completed solely by [apprentice's name]
Signature	
Date	

### Software Development Technician technical competencies evidence checklist

The defined competence areas and associated typical evidence are listed in this table. Not all employer businesses are identical so there will always be variation in the types of activity that will be carried out in the course of each apprentice's daily work; however, each Software Development Technician apprentice must be able to demonstrate evidence of every competence.

Competence		
<b>Logic</b> Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether for web, mobile or desktop applications).		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can write code to achieve the desired functionality using the appropriate tools and methods applicable to your organisation.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Security</b> Apply appropriate secure development principles to specific software components at all stages of development.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can apply security principles to all work within the development lifecycle.		
Evidence showing that you have an understanding of the importance of up-to date-software.		



## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Development Support</b>  Apply industry-standard approaches for configuration management and version control to manage code during build and release.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you have an understanding of the business context and drivers during development.		
Evidence showing that you can communicate with customers, internal and external, to explain your work with the appropriate language relevant to your audience.		
Evidence showing that you have an understanding of the importance of version control at every stage within the development life cycle.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Data</b> Make simple connections between code and defined data sources as specified.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can link to a range of database types and embed data queries within their code.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Test</b> Functionally test that the deliverables for each component have been met or not.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can test and analyse your code to identify errors as soon as possible in the coding process and on an interactive basis.		
Evidence showing that you can design manual tests for your product.		
Evidence showing that you can understand expected results and acceptance criteria during testing.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Analysis</b> Follow basic analysis models such as use cases and process maps.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can read and understand data to ensure you know and can meet the customers' requirements.		
Evidence showing that you can identify and represent required functionality (e.g. use cases).		
Evidence showing that you can identify and represent activity workflow (e.g. process maps).		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Development lifecycle</b> Support the software developers at the build and test stages of the software development lifecycle.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can work as part of a team that understand their process within the development lifecycle.		
Evidence showing that you can show initiative during development and take responsibility for your own work.		
Evidence showing that you can work flexibly to assist with other members of the team during development.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Quality</b> Follow organisational and industry good coding practices (including for naming, commenting, etc.)		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can identify and follow standards and good practice that can improve programming efficiency, style and quality, including: <ul style="list-style-type: none"><li>• programming standards, both organisational and external;</li><li>• generic best practices including readability, reusability, maintainability;</li><li>• best practice approaches of different paradigms and language.</li></ul>		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Problem Solving</b> Solve logical problems, seeking assistance when required (including appropriate mathematical application). Respond to the business environment and business issues related to software development.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can use at least one problem-solving tool and technique to identify and resolve programming issues.		
Evidence showing that you can apply structured problem-solving methods.		
Evidence showing that you can apply problem-solving techniques to programming activities.		
Evidence showing that you can demonstrate you know how and where to seek assistance dependent at what stage of development is appropriate.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Communication</b> Clearly articulate the role and function of software components to a variety of stakeholders (including end-users, supervisors etc.).		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can use a minimum of three tools to communicate – oral, face-to-face, remote and diagrammatic.		
Evidence showing that you are able to document work done in accordance with agreed procedures.		
Evidence showing that you can explain three types of communication styles to ensure cultural awareness and appropriateness for customer are taken into account.		



## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>Environment</b> Operates appropriately in their own business's, their customers' and the industry's environments.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can work within operational requirements such as health and safety, budgets, brands and normal business protocols.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Competence		
<b>User Interface</b> Develop user interfaces as appropriate to the organisation's development standards and the type of component being developed.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence showing that you can understand of the fundamental concepts of human-computer interaction or user experience design, the development practices leading to a high-quality user interface, and the programming techniques required to construct a graphical user interface.		
Evidence showing that you can understand how to interact with screen or UI designers to ensure the logic layer integrates with the user interface.		
Evidence showing that you can understand how to interact with testers to optimise the user interface.		

### Generic levels of responsibility evidence checklist

Areas of responsibility and associated typical evidence are shown below.

Proficiency		
<b>Business skills</b> Demonstrates an analytical and systematic approach to issue resolution. Takes the initiative in identifying and negotiating appropriate personal development opportunities. Demonstrates effective communication skills. Appreciates the wider business context, and how their role relates to other roles and to the business of the employer or client.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can demonstrate an analytical and systematic approach to issue resolution.		
Evidence that you can take the initiative in identifying and negotiating appropriate personal development opportunities.		
Evidence that you can demonstrate effective communication skills.		
Evidence that you can appreciate the wider business context, and how your role relates to other roles and to the business of the employer or client.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Proficiency		
<b>Complexity</b> Applies a methodical approach to issue definition and resolution.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can apply a methodical approach to issue definition and resolution.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Proficiency		
<b>Autonomy</b> Uses discretion in identifying and responding to complex issues and assignments.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can use discretion in identifying and responding to complex issues and assignments.		

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Proficiency		
<b>Influence</b> Interacts with and influences colleagues. Has working-level contact with customers, suppliers and partners.		
Minimum expected requirement	List the evidence in the portfolio that fulfils this requirement	Reflections on applying knowledge learnt
Evidence that you can interact with and influence colleagues.		
Evidence that you have working-level contact with customers, suppliers and partners.		

### Professional development activities evidence checklist

Areas of additional professional development activities that might be undertaken and associated typical evidence are shown below.

Professional development topic	Objectives	Typical evidence
<b>Understanding organisation</b>	Gaining basic knowledge of the employing organisation, its business, structure, culture, products/services, operations and terminology.  Gaining knowledge of IT activities in the employing organisation external to their function.	<ul style="list-style-type: none"><li>• organisation charts;</li><li>• company annual reports;</li><li>• company website;</li><li>• documents or reports from other areas of the business.</li></ul>
<b>Additional business skills</b>	Undertaking learning and practice in the techniques of team and collaborative working. Gaining an understanding of the underlying concepts.  Undertaking learning and practice in oral and written communications, including report writing and presentations.  Learning from experience and mistakes and applying the lessons as part of continuous improvement.	<ul style="list-style-type: none"><li>• presentations, reports or minutes of meetings that demonstrate communication skills, report writing abilities and collaborative activities;</li><li>• evidence of reviewing their work and suggesting improvements or critically appraising what they did and what they learned from it, for example project retrospectives.</li></ul>
<b>External activities</b>	Participating in group activities inside or outside the working environment that can assist with the development of interpersonal skills.  Undertaking unpaid activities that can help to develop professional skills or offer additional insight into, or understanding of, their working role.	<ul style="list-style-type: none"><li>• evidence of meetings attended through continuous professional development records;</li><li>• evidence of activities undertaken.</li></ul>

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<b>Additional learning</b>	<p>Undertaking learning in subjects relevant to, but not directly related to, their role (e.g. foreign language courses, mentoring skills, cultural awareness and diversity training), perhaps through self-study or evening classes.</p> <p>Exploring a topic that is not part of their normal responsibilities, and presenting findings to colleagues and/or management.</p>	<ul style="list-style-type: none"><li>• evidence of learning undertaken from continuous professional development records;</li><li>• evidence of presentations given to colleagues and/or management.</li></ul>
<b>Professional networking</b>	<p>Attending meetings, seminars and workshops organised by a professional body and reading published material such as journals and web content.</p>	<ul style="list-style-type: none"><li>• evidence of meetings attended through continuous professional development records;</li><li>• written evidence summarising learning gained from reading.</li></ul>



## Software Development Technician Template 6 – End-Point Assessment Readiness Check

The training provider should assess whether the apprentice has met the criteria for the end-point assessment as defined in the standard.

The template below is a simple checklist that may be used.

Competence	Ready	Not ready	Comments
Logic: Write simple code for discrete software components following an appropriate logical approach to agreed standards (whether for web, mobile or desktop applications)?	<input type="checkbox"/>	<input type="checkbox"/>	
Security: Apply appropriate secure development principles to specific software components at all stages of development?	<input type="checkbox"/>	<input type="checkbox"/>	
Development support: Apply industry-standard approaches for configuration management and version control to manage code during build and release?	<input type="checkbox"/>	<input type="checkbox"/>	
Data: Make simple connections between code and defined data sources as specified?	<input type="checkbox"/>	<input type="checkbox"/>	
Test: Functionally test that the deliverables for that component have been met or not?	<input type="checkbox"/>	<input type="checkbox"/>	
Analysis: Follow basic analysis models such as use cases and process maps?	<input type="checkbox"/>	<input type="checkbox"/>	
Development Lifecycle: Support the software developers at the build and test stages of the software development lifecycle?	<input type="checkbox"/>	<input type="checkbox"/>	
Quality: Follow organisational and industry good coding practices (including those for naming, commenting, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	
Problem Solving: Solve logical problems, seeking assistance when required (including appropriate mathematical application) and respond to the business environment and business issues related to software development?	<input type="checkbox"/>	<input type="checkbox"/>	

## Digital Industries Apprenticeship: Standard Specific Guidance for Training Providers – Software Development Technician

Communication: Clearly articulate the role and function of software components to a variety of stakeholders (including end users, supervisors, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	
Environment: Operate appropriately in their own business's, their customers' and the industry's environments?	<input type="checkbox"/>	<input type="checkbox"/>	
User Interface: Develop user interfaces as appropriate to the organisation's development standards and the type of component being developed?	<input type="checkbox"/>	<input type="checkbox"/>	