LEVEL 4 SOFTWARE DEVELOPER

THE APPRENTICE and TRAINING PARTNERSHIP

There is nothing standard about the new apprenticeship Standards!

Following the 2019 - 2021 digital skills review, modern apprenticeships have once again taken a leap forward to provide better vocational training for apprentices and greater benefit to employers. The perfect solution for new career starts, professional upskilling or changes in career direction.

Programme Overview:

On successful completion of this programme, employees will be capable of building and testing quality software solutions to defined briefs. Working across the full software development life cycle (SDLC), in either Agile or traditional workflows, with tools and techniques such as unit testing, continuous integration, frameworks and libraries.

Apprentices will be capable of working with and undertaking projects for more experienced or specialist members of the team, such as a business analysts and/or technical architects, they will be able to interact with internal and external parties including users and customers to understand their needs and test the software developed. Apprentices will learn to collaborate with a range of other professionals including designers, senior developers, engineers, analysts and project/delivery managers. to ensure the effective solution implementation.

Programming is taught in primarily in Python but SQL and C++ are included to teach concepts not able to be taught in Python.

Who is it for?

This apprenticeship is aimed at those who are already capable at junior developer level, those who posses 12-18 months of coding experience or possess very strong

A Levels including Computer Science, or of course, having passed a Level 3 Software Development Technician Apprenticeship.

Example roles can include:

- Software Developer
- Web Developer
- Applications Developer
- Mobile Applications Developer

Entry Requirements:

Entry requirements exist for all funded Further Education programmes. These ensure the value, gain and success of the programme. The ATP will conduct the processes with employers and prospective apprentices to determine correct funding eligibility.

Job role eligibility (known as Competency Role Map):

The job role must contain opportunity for an apprentice to practice the content set out in the apprenticeship Standard to achieve vocational competency. Apprentices must have the opportunity to practice the knowledge taught in training sessions in order to convert new knowledge in to sustainable skills applied in the workplace.

Each apprenticeship requires a portfolio of evidence, which will showcase the apprentice's work and will be reviewed by the End Point Assessment Organisation to determine how well new knowledge has been

successfully utilised vocationally. If a job role is close to the eligibility criteria we will consult with employers to see if adjustments can be made to ensure criteria is met.

Initial Assessment of existing knowledge and skills:

A prospective apprentice must stand to gain significant knowledge and skills from an apprenticeship. If the apprenticeship is too advanced for them or if they already know much of the knowledge and skills the apprenticeship would provide then they may not be eligible for the funding.

The ATP will review existing qualifications, knowledge and skills to determine if the prospective apprentice will benefit from the proposed apprenticeship such that it meets the funding criteria. In most instances this is very straightforward, however in some instances funding can be specially authorised for reduction in order to fund the parts of an apprenticeship that would be relevant. The ATP will provide the assessment for these possibilities.

The Level 4 Software Developer is highly technical, so whilst employers can select their own entry criteria, they should include; at least 5 GCSEs including English and Mathematics and have achieved a Level 3 or equivalent qualification as a minimum to help ensure success.

In many cases this type of apprenticeship can demand a higher capability of English and maths than is taught at GCSE or A-Level. For example, advanced report writing, complex structured explanations and/or advanced formulae and statistics. The ATP will provide both functional and advanced English and maths diagnostics and teaching to ensure each apprentice is fully supported in these areas.

Programme Duration:

This apprenticeship is delivered over 24 months for full-time employees. For part-time employees the term may be extended depending on contracted hours.

Delivery Model:

Apprenticeship training is delivered through a blend of weekly live virtual classrooms and regular mentoring sessions that are held on a one-to-one basis.

These live classrooms are held through Microsoft Teams. This software provides the full suite of educational tools including everything you would find in a conventional classroom and more e.g. live open interactions, private breakout rooms, note and question queues and interactive illustration boards. We can also use movie green screen technology for lesson illustrations.

A full timetable for the training, mentoring, exams and assessments is provided at the outset. Progress is reviewed at 12-week intervals in a meeting between the mentor, apprentice and employer (typically the apprentice's line manager).

Employers and apprentices have full visibility of progress in real-time by accessing the e-portfolio system, alternatively regular updates can be provided by other means if preferred.

End Point Assessment (EPA):

Aside from qualifications that can be obtained by doing an apprenticeship, the most important and valuable goal is what has been achieved during the programme.

Successful apprentices will obtain a Pass, Merit or Distinction in their apprenticeship. The way a Pass, Merit or Distinction is determined is at a stage called End Point Assessment which takes place once all the leaning has been completed. Like all examinations, a mock will take place before the final assessment.

Once all components of the apprenticeship have been achieved including the mock, a final review is conducted to ensure everything has been covered - this is called gateway. Then the apprentice will undergo their End Point Assessment.

EPA for this programme consists of:

1. Portfolio of Evidence demonstrating work on 6-8 projects covering all the standard criteria

2. Work-based project with questioning

3. A structured interview with the assessors exploring the project, portfolio of evidence and employer reference
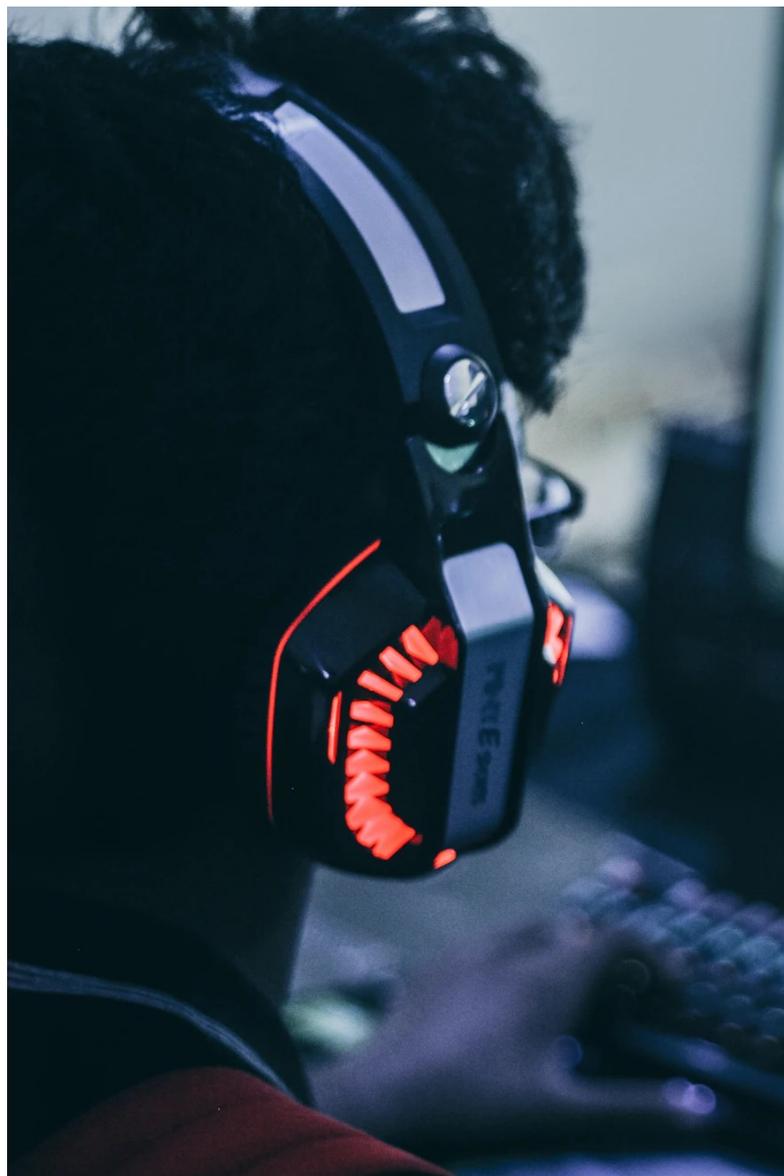
Programme Structure:

Technical Competencies:

- Take and interpret given software development requirements to estimate effort to deliver the work product and enable accurate costs to be established

- Break software development activities down into logical units of work to enable sequencing and ensure the best possible structuring of activities to deliver a high quality product right first time

- Report progress accurately throughout the development life-cycle stages to ensure adequate audit trails of key worksteps such that the organisation can demonstrate how the product has been created for quality and commercial purposes

- Identify and report any impediments to software development activities and propose practical solutions

- Convert customer requirements into technical requirements, both functional and non-functional to ensure that customers' expectations are accurately reflected in the software products developed

- Identify and select the most appropriate technical solution, taking into consideration coding best practice and appropriate quality standards

- Communicate development solutions to a range of internal or external stakeholders to ensure clear understanding of requirements and how they have been met or adjusted

- Consider security implications of proposed design to ensure that security considerations are built in from inception and throughout the development process

- Write logical and maintainable software solutions to meet the design and organisational coding standards (Software Development Lifecycle - Implementation and Build phase)

- Apply security best practice to the software solution throughout the development life-cycle

- Create and maintain appropriate project documentation to explain the development process and resources used

- Apply appropriate recovery techniques to ensure the software solution being developed is not lost (Software Development Lifecycle -Implementation and Build phase)

- Implement appropriate change control to ensure that development changes may be tracked and quality risks managed

- Undertake unit testing of solutions, with appropriate levels of test code coverage, to identify and resolve issues

- Perform testing of the software solution to ensure a high quality output

- Deliver a suitably documented deployable solution to the customer for their use

- Support delivery of one or more software deployment phases, such as trials and final release, ensuring outcomes are deployed correctly

- Provide support during trials and after final release to ensure that customers understand, can correctly apply the product, and risks are mitigated

- Respond to Service Level Agreements (SLAs) ensuring time and resources invested in activity are allocated appropriately to deliver good customer service

- Apply suitable 'bug fix', appropriate to the severity and priority of issues identified

- All stages of the development life-cycle - test phase (stage contents, and inputs and outputs)

- Roles and responsibilities within the software development lifecycle (who is responsible for what)

- The roles and responsibilities of the project life-cycle, including your role

- How best to communication methods to apply and how to adapt appropriately to different +audiences

- The similarities and differences between software development methodologies, such as agile and waterfall

- How teams work effectively to produce software and how to contribute appropriately

- Software design approaches and patterns, to identify reusable solutions to commonly occurring problems

- Organisational policies and procedures relating to the tasks being undertaken, and how to follow them

- Algorithms, logic and data structures relevant to software development e.g. arrays- stacks- queues- linked lists- trees- graphs- hash tables- sorting algorithms- searching algorithms- critical sections and race conditions

- Principles and uses of relational and non-relational databases

- Software designs and functional or technical spec-ifications

- Software testing frameworks and methodologies

Skills:

- Create logical and maintainable code

- Develop effective user interfaces

- Link code to data sets

- Test code and analyse results to correct errors found using unit testing

- Conduct a range of test types, such as Integration, System, User Acceptance, Non-Functional, Performance and Security testing

- Identify and create test scenarios

- Apply structured techniques to problem solving, de-bug code and understand the structure of pro-grammes in order to identify and resolve issues

- Create simple software designs to effectively communicate understanding of the program

- Create analysis artefacts, such as use cases and/or user stories

- Build, manage and deploy code into the relevant environment

- Apply an appropriate software development approach according to the relevant paradigm (for example object oriented, event driven or procedural)

- Follow software designs and functional or technical specifications

- Follow testing frameworks and methodologies

- Follow company, team or client approaches to continuous integration, version and source control

- Communicate software solutions and ideas to technical and non-technical stakeholders

- Apply algorithms, logic and data structures

- Interpret and implement a given design whist remaining compliant with security and maintainability requirements

Behavioural Development Embedded:

- Logical and creative thinking

- Analytical, deductive and problem solving

- Resourceful

- Personal responsibility, independent working and highly collaborative

- Personal initiative

- Thorough and organised approach

- Ability to work with colleagues and clients

- Communicate effectively in a variety of situations

- Maintain productive, professional and secure working environment

- Committed to ongoing professional development

The designated mentor will support the employer and apprentice throughout the programme as a single point of contact for questions and queries. This includes additional support for portfolio and project preparation, along with any advice and guidance needed.

Professional Membership:

On completion, apprentices may choose to register with the BCS under the register of IT technicians to support their professional career development and progression.

Next steps:

To configure an ideal apprenticeship we will meet with you virtually to discuss your requirements, present the options and collaborate to determine the best apprenticeships to meet your needs. We will provide ongoing support including:

- Recruitment of apprentices

- Quality assured Information, Advice and Guidance

- Updates and information on legislation and funding

- Support and guidance for apprentice and employer throughout the apprenticeship

- Access to a comprehensive suite of resources and support material

- Industry specialist qualified trainers and mentors