

BCS Digital Industries Apprenticeship

Template 4 – Employer Reference

Level 4 Software Developer Apprenticeship

Version 4.0 May 2019

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	Changes Made
and Date	
V4.0	Change History table added to document. Major changes to document
May 2019	throughout. Standard specific competencies and proficiencies
	unchanged.

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Apprentice Details

Name	Krzysztof Kasprzak
ULN number	7963804818

Training Provider Details

Contact name	Michelle Anthony
Company name	Makers
Company address	50 - 52 Commerical Street,
	London, E1 6LT

Employer Details

Name	BGL Group Ltd		
Company address	Pegasus House Bakewell Road Peterborough PE2 6YS		
DocuSigned by:			

Signed by: Marc Daffern

Print name: Marc Daffern

Job title: Engineering Manager

Date: 12/11/21

Section 1 Starting the Apprenticeship

The apprentice may have just joined your organisation but could also be an existing employee who has joined the apprenticeship programme.

The intent of the employer reference is for you to support your apprentice by validating the evidence that they have submitted for end point assessment (EPA).

You should complete this initial section when the apprenticeship starts.

Software Developer Standard Number ST0116

The knowledge, skills and behaviours that must be demonstrated by the end of this apprenticeship are defined by the Standard:

https://www.instituteforapprenticeships.org/apprenticeship-standards/software-developer/

Role Profile

The primary role of a software developer is to build and test simple, high-quality code across front end, logic and database layers. A developer will typically be working as part of a larger team, in which they will have responsibility for some of the straightforward elements of the overall project. The developer will need to be able to interpret design documentation and specifications. The customer requirements will typically be defined and agreed by more experienced or specialist members of the team, such as a business analyst or technical architect.

Typical Job Roles

Web Developer, Application Developer, Mobile App Developer, Games Developer, Software Developer.

Please complete the following fields:

Job Title of Apprentice	Brief Summary of the Common Duties that	Date
	the Apprentice Will be Doing for your	Started
	Organisation	
Junior Software Engineer	Within the Allspark team, Krzysztof will be primarily working on the maintenance of the Allspark application. To include both front and back-end changes in React.js, Javascript, C# along with deployments and associated scripts.	22/09/2020

The standard defines the technical knowledge and understanding that will be required by the apprentice, these will generally be delivered by the training provider that you have chosen to work with. This knowledge and understanding will be confirmed by the two knowledge modules, each of these must be successfully covered, either by passing an approved knowledge module exam or via a vendor certification proxy. In the case of this standard one

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approved vendor certifications must be passed. This certification will provide a proxy for a specific knowledge module.

Over their time on the apprenticeship, your apprentice will apply the underpinning knowledge gained through the training to actual work-related activities required by the role that you have employed them to fulfil. The apprentice should work with one or more mentors within your organisation who will provide advice, guidance and training on how the knowledge gained by the apprentice is applied in actual working situations.

The standard also defines a number of technical competences, your apprentice must demonstrate competence in all of them to achieve the standard. The following must be demonstrated by the apprentice in their Summative Portfolio, which provides evidence against the totality of the standard, based on the application of knowledge, competence and behaviours to real work projects in the work environment.

Technical Competencies

- Logic: writes good quality code (logic) with sound syntax in at least one language.
- User interface: can develop effective user interfaces for at least one channel.
- **Data:** can effectively link code to the database/data sets.
- **Test:** can test code and analyse results to correct errors found using either V-model manual testing and/or using unit testing.
- **Problem solving:** can apply structured techniques to problem solving, can debug code and can understand the structure of programmes in order to identify and resolve issues.
- **Design:** can create simple data models and software designs to effectively communicate understanding of the program, following best practices and standards.
- **Analysis:** can understand and create basic analysis artefacts, such as user cases and/or user stories.
- **Deployment:** can understand and utilise skills to build, manage and deploy code into enterprise environments.
- **Development lifecycle:** can operate at all stages of the software development lifecycle, with increasing breadth and depth over time with initial focus on build and test.
- Can **apply good practice** approaches according to the relevant paradigm (for example object oriented, event driven or procedural).
- Can interpret and follow:
 - o software designs and functional/technical specifications;
 - o company defined 'coding standards' or industry good practice for coding;
 - o testing frameworks and methodologies;
 - company, team or client approaches to continuous integration, version and source control.

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- Can **respond to the business environment** and business issues related to software development.
- Can operate effectively in their own business's, their customers' and the industry's environments.
- Can **apply the maths** required to be a software developer (e.g. algorithms, logic and data structures).

BCS have created a Standard Specific Guide for this standard and also provides Template 5 – Summative Portfolio Checklist which gives advice and guidance on what types of evidence are suitable for each of the above criteria, it also includes specific details of the minimum evidence requirements.

Please note, the apprenticeship standards are designed to cover a wide range of different job roles so there may be a small number of areas within these mandatory requirements that are not naturally occurring within the day-to-day duties of your apprentice. If you are a larger organisation, it is perfectly acceptable for you to second your apprentice to a different department for a period (at least a week) to allow them exposure to some activities that they may not come into contact with. If this is not possible, you, your apprentice and your selected training provider should select a synoptic project that will allow your apprentice to demonstrate that they are competent in criteria that they are not exposed to during their normal working activities. Please also note, the synoptic project is the only area within the submitted portfolio of evidence that does not draw from the real work environment

Section 2 Technical Competence Evaluation

Please provide your evaluation of the technical competence of the apprentice using the tables below. Under each heading are details of the activities that a competent apprentice should be able to demonstrate by the time that they are judged ready, by you, your chosen training provider and the apprentice themselves, to apply for the EPA.

We strongly recommend that you continually review your apprentice against these competences throughout the duration of the apprenticeship and periodically update this document. A suitable time to add comments and evidence could be during your performance reviews (or similar) with your apprentice.

Competence – Logic

Logic: writes good quality code (logic) with sound syntax in at least one language.

How has your apprentice demonstrated competence in this area? (please give examples)

Krzysztof writes sound, good quality code day-to-day in his role. Some examples:

- He worked on a proof of concept for a new project. The end goal is to rewrite an Angular.js application using React.js. The POC was written in React.js with Javascript, retrieved data from the server and displayed it on a page in the client, and also included a pop-up modal window to add a new "provider".
- Fixing a bug in the UI where data was lost when refreshing the page. The solution involved modifying front-end code (and associated tests) to make sure the correct parameters were passed between pages upon the state changing.
- He played a story where the requirement was to enable reverting a change made in the UI. This included logic to determine whether the revert functionality should be available, depending on the state of the item to be reverted; and the logic to call the server side to trigger the revert depending on the result of a confirmation modal, and then refresh the display.

NOTE: this box will expand as required

Competence – User Interface

User interface: can develop effective user interfaces for at least one channel.

How has your apprentice demonstrated competence in this area? (please give examples)

Krzysztof's primary area of focus is working on our front-end rewrite. Some examples of his work are:

 Researching and making use of tools and libraries designed to help build highquality user interfaces, such as Material-UI for front-end components, and Toastify for progress bars and error messages.

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- Created a mocked-up design for the "hub" page for our providers, where all the high-level options are displayed. Took feedback from users about the mock up before proceeding to implement the design.
- Regularly presenting completed UI work for sign-off to users of the system, and implementing requests for change where necessary.

NOTE: this box will expand as required

Competence – Data

Data: can effectively link code to the database/data sets.

How has your apprentice demonstrated competence in this area? (please give examples)

- Krzysztof worked on a story to import data from our legacy Teletraan system by adding endpoints to our server-side service which saved the imported data to the database.
- Krzysztof created a proof-of-concept to demonstrate that we could switch our front end from Angular to React, whilst still maintaining calls to the existing Node/Express back-end. The POC made http calls to amend and save data to the existing database via the existing server-side calls.
- A story to fetch 'story' data from the server-side service in Allspark and display to the user in a modal window. This data could then be modified by the user and saved back to the database via http calls back to th server side from the UI.
- He completed a story to update a database document, using a script to connect to the database via Mongoose, fetching the document, correcting a typo in a property and then saving it back to the database.

NOTE: this box will expand as required

Competence – Test

Test: can test code and analyse results to correct errors found using either V-model manual testing and/or using unit testing.

How has your apprentice demonstrated competence in this area? (please give examples)

In our team, and across CtM, we embrace a tests-first methodology which Krzysztof uses with all of his work where possible. All front-end logic is unit tested, and integration tests are used where systems interact. Examples:

In the bug fix mentioned previously, Krzysztof wrote a Jasmine test to check that
the correct data was being broadcast from one controller in a given scenario, and
another to test that the correct data was displayed when the broadcast was
received by another controller. The tests initially failed, and code was implemented
to fix the bug.

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- Krzysztof researched different testing libraries to use with the new project and settled upon React Testing Library. The team have used this library for all front-end unit tests in the project from its inception.
- Krzysztof uses the tests in the old Angular project to determine and complete functionality in the new React project, to ensure no functionality is missed during the migration of each component.

NOTE: this box will expand as required

Competence – Problem Solving

Problem solving: can apply structured techniques to problem solving, can debug code and can understand the structure of programmes in order to identify and resolve issues. (Note – this has a requirement for using a minimum of two problem solving tools)

How has your apprentice demonstrated competence in this area? (please give examples)

First: The first story we had to develop front-end functionality which needed to talk to the existing back-end. Everything worked in lower environments, but when deployed to prod, he found it did not work as expected. Krzysztof used the browser's dev tools and client-side console errors to determine that the existing server needed to allow CORS for the new front-end URL for the two to be able to communicate in the production environment.

Second: A bug was introduced into a story where there was a list of actions, of which some should be able to be reverted. The bug was that items that should **not** have the revert button did have it. Krzysztof used Redux Dev Tools to determine that the current state was outdated, and that some properties had not been stored. The solution was for UseEffect to refresh the state.

NOTE: this box will expand as required

Competence – Design

Design: can create simple data models and software designs to effectively communicate understanding of the program, following best practices and standards.

How has your apprentice demonstrated competence in this area? (please give examples)

Krzysztof has been heavily involved with the design and build of our rewrite project from the start, he's researched libraries and frameworks to use (as previously mentioned), as well as the file structure of the project and the visual design. He has presented visual designs to users of the application and taken onboard feedback to amend and implement them to provide the best user experience.

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He also designed the initial data structure for Redux to manage the state of the front-end application, after investigating suitable state-management libraries.

For his own reference to aid communication of ideas, he created a flow diagram to describe the process flow relating to Redux and the state management within the new application. He used this to request feedback from other engineers to ensure his implementation was correct.

NOTE: this box will expand as required

Competence – Analysis

Analysis: can understand and create basic analysis artefacts, such as user cases and/or user stories.

How has your apprentice demonstrated competence in this area? (please give examples)

- Krzysztof has spent some time pairing with the team's BA to learn how to write stories to an appropriate level of detail to be understood by the team, and
- He determined that some of our test code needed refactoring, due to some repetition of code. He raised a story to improve this and reduce repetition. The goal is to reduce repletion and increase reusability. The story was detailed with references to the offending code, and details of what needed to be changed and potential solutions.
- Krzysztof is vocal during our planning and refining ceremonies, contributing towards story analysis and estimation, and providing appropriate level of detail for stories to ensure that the engineer doing the work has enough information to develop it.

NOTE: this box will expand as required

Competence – Deployment

Deployment: can understand and utilise skills to build, manage and deploy code into enterprise environments.

How has your apprentice demonstrated competence in this area? (please give examples)

The project Krzysztof is working on is a whole new, deployable application. As such, he has worked on dockerising the application to make it into a deployable artifact, that can be used by a deployment pipeline. He has documented the deployment process.

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 He has deployed code to all environments, using the processes defined by the business to maintain a solid audit trail of all deployable stories from inception to deployment. Stories are deployed into lower environments for thorough testing to ensure risk of deployment to production is minimised.

NOTE: this box will expand as required

Competence – Development Lifecycle

Development lifecycle: can operate at all stages of the software development lifecycle, with increasing breadth and depth over time with initial focus on build and test.

How has your apprentice demonstrated competence in this area? (please give examples)

- Krzysztof worked on the POC for our migration to React. This involved analysis of existing functionality, writing user stories to develop the POC and then build and test the POC.
- After the POC, he took part in a high-level plan of the stories required to complete the migration, and contributed to the estimation of the overall size of the project.
- He has created wireframe designs for new pages, which were demo'd to the userbase and amended on the basis of feedback received.
- Every piece of work is appropriately tested via browser tests and unit tests. TDD is used for stories where appropriate.
- Krzysztof has taken ownership of each story he has developed, by deploying through lower environments for testing, and then deployment to production when satisfied that testing has been successful.

NOTE: this box will expand as required

Competence – Applying Good Practices

Can apply good practice approaches according to the relevant paradigm (for example object oriented, event driven or procedural).

How has your apprentice demonstrated competence in this area? (please give examples)

In a story to update the process for importing data from our legacy system, Krzysztof extended an existing class to include new calls to the legacy system to import data for a new product. The changes were test-driven - a skeleton of tests was created initially, and then the functionality driven out from the test structure.

In terms of preparing for completing tasks, he considers potential outcomes, weighing up different solutions before writing any code, and discuss with colleagues to make sure he's doing the "right thing".

NOTE: this box will expand as required

Competence – Interpret and Follow

Can interpret and follow:

- software designs and functional/technical specifications;
- company defined 'coding standards' or industry good practice for coding;
- testing frameworks and methodologies;

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

How has your apprentice demonstrated competence in this area? (please give examples)

For a story to change the source of some packages from Nuget to GitHub, Krzysztof used the company documentation to follow the correct process and implement the change.

For testing code on a day-to-day basis, he will follow the standards defined by the team to implement them in a Given/When/Then pattern.

Krzysztof has played a number stories to patch our services when vulnerabilities have been raised by our automated process. The story would highlight the vulnerability and provide a suggested fix, and he would implement the fix accordingly and deploy the service.

NOTE: this box will expand as required

Competence – Respond to Business Environment

Can respond to the business environment and business issues related to software development.

How has your apprentice demonstrated competence in this area? (please give examples)

Krzysztof presents the team's changes to the customers of our product on a monthly basis and acts on any feedback and requests for change. I've received great feedback from users of the product on Krzysztof's presentation skills and enthusiasm for the work he's doing.

NOTE: this box will expand as required

Competence – Industry Environment

Can operate effectively in their own business's, their customers' and the industry's environments.

How has your apprentice demonstrated competence in this area? (please give examples)

To enable Krzysztof to undertake the main project he has been working on, he has needed to learn and understand the flow of data from the customer journey, through our data mappings to the insurance providers and back to the price page.

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Competence – Application of Mathematics

Can apply the maths required to be a software developer (e.g. algorithms, logic and data structures).

How has your apprentice demonstrated competence in this area? (please give examples)

A story to enable reverting a change in the UI – only certain actions could be reverted. Krzysztof implemented some conditional logic to determine whether a given action could be reverted and display the revert button accordingly.

On a page in our application, there is a section to display several "stories" being worked on by the user. We had a requirement to display all of the stories available, where previously only two were displayed. Krzysztof updated the logic which limited the number of stories to two, so that it would display all stories returned from the server.

We have a results page which displays test coverage on a hierarchical tree of nodes. The story was to check each node for coverage and display the result. Krzysztof wrote a function to recursively check each node and its children for coverage information, and display it to the user. The story did not end up being deployed to production, however we made use of it to debug the coverage functionality, using it to log results to the console.

NOTE: this box will expand as required

Section 3 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.

Proficiency – Business Skills

• Demonstrates an analytical and systematic approach to issue resolution.

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- Takes the initiative in identifying and negotiating appropriate personal development opportunities.
- Demonstrates effective communication skills.
- · Contributes fully to the work of teams.
- Plans, schedules and monitors own work (and that of others where applicable) competently within limited deadlines and according to relevant legislation, standards and procedures.
- Appreciates the wider business context, and how their role relates to other roles and to the business of the employer of client.

How has your apprentice demonstrated competence in these areas? (please give examples)

Demonstrates an analytical and systematic approach to issue resolution:

Whilst working on any story, Krzysztof will use a combination of all the tools available to him, such as console logging, debugging tools in the browser, and unit tests to approach solution to a problem.

An example was a bug where refreshing a page resulted in loss of data displayed on the page. He was able to debug the issue both in the tests and the running application to determine the cause of the missing data, and then add a broadcast into a controller to ensure the correct data was passed into the refreshed page.

Takes the initiative in identifying and negotiating appropriate personal development opportunities:

Krzysztof targets his development areas to make sure he's improving all the time. An example is that he was aware that C# was an area he needed to develop. He used this as a goal for the mid-year appraisal, and made sure to spend a sprint working purely on C#, pairing with more experienced colleagues; and also making an effort to continue to work on C# stories on an on-going basis.

He recently demonstrated a spike he worked on, using a new React library to create a data tree. He used the presentation as an opportunity to solidify his own understanding of the technology, as well as to share the knowledge with the team.

Demonstrates effective communication skills:

Krzysztof presents progress on his project to our customers on a monthly basis, demonstrating new features and taking feedback and suggestions for improvements. He also talks through his daily work with the team during stand-ups, and is active in refinement sessions, discussing potential technical approaches to upcoming stories to work on.

Contributes fully to the work of teams:

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Krzysztof contributes at all stages of the lifecycle of a story. From actively taking part in refining stories, to leading pairing sessions and taking ownership of his work all the way through to deployment through testing environments and into production.

Plans, schedules and monitors own work (and that of others where applicable) competently within limited deadlines and according to relevant legislation, standards and procedures:

Krzysztof takes part in planning sessions, where we will plan the work for the upcoming sprint. He contributes to discussions around which stories we should be working on, and how much we can commit to for the sprint without over-committing or needing more work to do. His opinion when it comes to estimating stories is respected among his peers, and is getting more accurate as he is involved in more sessions.

Appreciates the wider business context, and how their role relates to other roles and to the business of the employer of client:

He worked with colleagues from the wider business who have more experience in React.js, pairing and mobbing with them to create the proof of concept of our new application. He is happy to contact people outside of our team when he needs support on a pice of work and knows who is best to contact. This might include DevOps, business analysts and project managers. He has particularly spent some time with our BA to help shape stories for upcoming work.

NOTE: this box will expand as required

Proficiency – Complexity

- Performs a range of work, sometimes complex and non-routine, in a variety of environments.
- Applies methodical approaches to issue definition and resolution.
- Undertakes all work in accordance with agreed safety, technical and quality standards, using appropriate methods and tools.

How has your apprentice demonstrated competence in this area? (please give examples)

Performs a range of work, sometimes complex and non-routine, in a variety of environments:

He has worked on a variety of tasks. Examples are:

- Working on migrating old Angular code to React.js
- Migrating some packages that we consume from NPM to GitHub
- Dockerising the new React application to enable us to deploy it
- Investigation into the cause of long response times for a service and documenting the results

Applies methodical approaches to issue definition and resolution:

When test-driving a solution, one approach Krzysztof will use is to sketch out his solution by using a skeleton of tests – using the given/when/then headings to articulate the intended functionality end-to-end, before filling out the tests with the necessary setup and assertions to drive out the production code.

Undertakes all work in accordance with agreed safety, technical and quality standards, using appropriate methods and tools:

Krzysztof follows standards defined within the team, pairing where approapriate and test-driving code where practical. To minimise risk to the team, he will test new features in lower environments before it is pushed into production.

Another example is the inclusion of a linter into the codebase, which will output any issues which he will then fix before merging code into the master branch.

He has also documented coding standards for the team on our knowledge-base, which sparked a reaction with the rest of the team who all continued to contribute to the document.

NOTE: this box will expand as required

Proficiency – Autonomy

- · Works under general direction.
- Uses discretion in identifying and responding to complex issues and assignments.
- Usually receives specific instructions and has work reviewed at frequent milestones.
- Determines when issues should be escalated to a higher level.

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How has your apprentice demonstrated competence in this area? (please give examples)

Works under general direction:

Krzysztof will work in a pair or a mob much of the time where that's the appropriate thing to do for the story being played, however when a pair/mob is not necessary, he is happy to pick up a story and discuss the needs of the story with the relevant colleagues, and then work on it through to completion by himself. He will take ownership of the work all the way to deploying to production.

Uses discretion in identifying and responding to complex issues and assignments:

When spiking a piece of work to design a data tree to display a JSON structure, Krzysztof evaluated two libraries to use for the specific drag/drop functionality required, and made the decision on which one to use, having weighed up the benefits and complexity of each.

Usually receives specific instructions and has work reviewed at frequent milestones:

The work carried out day-to-day is specified in detail in the user stories being worked on. Every story when completed will be reviewed by a peer with potential requests for change, which he will fix when requested.

More generally we will have one-to-one meetings every two weeks to discuss work that's been achieved in the previous fortnight.

Determines when issues should be escalated to a higher level:

When investigating which library to use for the data tree work, Krzysztof evaluated a number of different libraries, narrowing it down to two likely candidates. He escalated the decision to the team based on the benefits and drawbacks of each, as the better looking candidate did not appear to be maintained sufficiently in terms of patching vulnerabilities.

He has also worked on some vulnerabilities which needed to be escalated, as there was no fix by the package vendors to be able to patch them, so a risk acceptance was required.

NOTE: this box will expand as required

Proficiency – Influence

- Interacts with and influences colleagues.
- Has working level contact with customers, suppliers and partners.
- May supervise others or make decisions which impact the work assigned to individuals or phases of projects.
- Makes decisions which influence the success of projects and team objectives.

How has your apprentice demonstrated competence in this area? (please give examples)

Interacts with and influences colleagues:

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He has helped with onboarding new colleagues into the team, presenting the codebases and environments to them.

In reviewing code written by peers, Krzysztof will request appropriate changes and raise discussion points.

During the early stages of the migration project, a colleague was using an icon pack from the old solution. Krzysztof presented the idea of using a new icon pack that came with the material-ui package, hence reducing the need for extra packages, and the idea was adopted going forward.

He also ensures that colleagues maintain a consistent pattern when writing unit tests for the new code, when sometimes they might tend towards the old way of writing them.

Has working level contact with customers, suppliers and partners:

Krzysztof presents his work and the progress of the team to the application's users (customers) on a regular basis.

We have ownership of a service that was written by a different team within the business, and Krzysztof has played some stories on that service. He has collaborated with the other team to complete the work, in particular one story to fix a vulnerability which needed support from two members of the other team.

May supervise others or make decisions which impact the work assigned to individuals or phases of projects:

He has reviewed code written by colleagues and requested changes where appropriate, for example:

- Identified some code that was not sufficiently tested, influenced the team to write more complete tests – e.g. one piece of work involved a spinner appearing. It was tested for it appearing, but not that it disappeared at the right time. He requested the change for a colleague to make.
- He identified some text on a page which was not specific enough for its intention. He presented his alternative text to the product manager and requested the change on the pull request.

Makes decisions which influence the success of projects and team objectives:

Krzysztof researched which testing library to use at the outset of the React migration project, and narrowed the choice to Enzyme or React Testing Library. He decided upon RTL which we adopted going forward. This not only contributed to the success of this project, but our other sub-team is now looking to adopt the same library for their solution.

NOTE: this box will expand as required

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Skills Framework for the Information Age © SFIA Foundation 2003, 2005, 2008, 2011, 2015

SFIA plus © The British Computer Society 2004, 2006, 2008, 2011, 2015 Software Developer Template 4 - Employer Reference

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.

Krzysztof started adding value to the team right from the off. He has made a significant contribution to the migration of our application from Angular to React. He achieved higher than average ratings in his first annual appraisal as some aspects of his work set him apart from his peers, for example his regular presentations of features to customers.

He produces quality, well-thought-out solutions to user stories and routinely considers quality and customer impact. He interacts well with the team and is happy working on his own or with colleagues in a pair.

I believe Krzysztof has a solid grounding as an engineer and will continue to add value to the team and develop his skills. Going forward it would be good to see him develop his C# skills further by working on some more server-side code – he is already working on this as one of his goals for the next half-year.

NOTE: this box will expand as required

Please accept our sincere thanks for the support that you have provided to your apprentice.

