# Interview Details

### Candidate Name:

### Interview Date:

# Evaluation Summary

### Evaluator’s Impression of Technical Proficiency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | C#/.Net | SQL | Devops | Azure |
| Significantly below required technical proficiency |  |  |  |  |
| Below required technical proficiency |  |  |  |  |
| Meets required technical proficiency |  |  |  |  |
| Exceeds required technical proficiency |  |  |  |  |
| Significantly exceeds required technical proficiency |  |  |  |  |

### Test Results

|  |  |  |
| --- | --- | --- |
| Test | Candidate’s Score | Max Possible Score |
| C# Quiz |  | **20** |
| C# Code |  | **25** |
| Azure and DS |  | **11** |
| Git |  | **6** |
| SQL |  | **20** |

# Interview Questionnaire

# Not all questions in this section need to be asked.

# Save time by skipping questions if appropriate.

### What got you interested in programming?

### Have you ever done any programming that was not part of an educational assignment or employment duty?

***If you have any public repositories, for example on github, or any public profiles, for example on StackOverflow, SqlServerCentral, C# Corner, etc, and if you want to share them, please email us through the links and we will have a look. If you do not want to share them that’s fine, we are not going to go snooping for them.***

### (Mandatory) Suppose you could be mentored by anyone in the world in the fields of general computer science, programming, etc, and in particular .NET, C#, Azure, and SQL Server. Tell me who you would choose to be your mentors. Name as many people as you like.

### As a senior developer you will be helping more junior developers. But if you needed help, where would you look for it?

### Are there any particular websites, blogs, channels, books, etc, that you would use as resources when you are trying to solve a technical problem?

# Self-Reported Level of Experience

*“Tell me about your level of knowledge or experience in relation to the following subjects. Just rate yourself as low, medium, high, or expert, or on a scale of 1-10, or similar. Do not provide long answers, this is just for quiz calibration”*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Topic | Low | Med | High | Expert |
| **C#** |  |  |  |  |
| **T-SQL and SQL Server** |  |  |  |  |
| **Azure Resources (eg azure functions, keyvault)** |  |  |  |  |
| **Git** |  |  |  |  |
| **Devops pipelines in general (CI/CD)** |  |  |  |  |
| **Azure Devops** |  |  |  |  |
| **Visual Studio and/or VS Code** |  |  |  |  |
| **Distributed Systems Concepts** |  |  |  |  |

# Tests

### Quiz

|  |  |  |
| --- | --- | --- |
| Have you heard of Benchmark dot net? Can you tell me what it does? | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Correctly states that benchmark.net is a nuget package which can be used to accurately evaluate performance. |  | 2 |
| Correctly answers the question and provides further details about how it works or how they have used it in the past. |  | 3 |

|  |  |  |
| --- | --- | --- |
| What is the effect of marking a class as “sealed”? For example “public sealed class C”. | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 0 |
| Correctly states that it means the class cannot be inherited from. |  | 2 |
| Correctly states that the class cannot be inherited from, and can also talk about reasons to mark a class as sealed. |  | 3 |

|  |  |  |
| --- | --- | --- |
| A List of T is an IEnumerable of T. Tell me about the differences between a List of T and an IEnumerable of T. | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Answer includes any one of:  - A List is a data structure, an IEnumerable represents behaviour  - List is a class, IEnumerable is an interface.  - A List is mutable, an IEnumerable is read-only  - An IEnumerable can only be iterated in one direction, a List is sorted but can be iterated in either direction  - An IEnumerable might be lazily evaluated |  | 2 |
| Answer includes 2-3 of the listed elements |  | 3 |
| Answer includes more than 3 of the listed elements or otherwise demonstrates a deep understanding of the concept. |  | 4 |

|  |  |  |
| --- | --- | --- |
| What, if anything, is the difference between a Task and a Thread in C#? | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Is aware that a Task does not necessarily represent a thread. |  | +2 |
| Mentions the threadpool in relation to task continuation. |  | +1 |
| Is aware that a Task is implemented as a finite state machine in lowered code. |  | +1 |
| Can talk meaningfully about schedulers, differences between ASP.Net and console applications, etc |  | +2 |

|  |  |  |
| --- | --- | --- |
| Tell me about the meaning of covariant and contravariant. | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Mentions assignment compatibility, or relation preservation, or in/out generic modifiers, or uses examples like Base : Derived and IEnumearble<Base> and IEnumerable<Derived> |  | 4 |

### C# Code

*“I am going to show you some C# code samples covering various topics. The first few questions are specific technical questions of varying degrees of difficulty. For the last question I will ask you to perform a bit of a “code review”, where I want you to read a larger section of code (less than a page) and provide your feedback on what you see. Take your time and feel free to ask questions if you like.”*

**( Share csharp code quiz )**

|  |  |  |
| --- | --- | --- |
| What is the purpose or effect of the “@” prefix before the string literal… | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 0 |
| Correctly answers that the @ prefix causes the language to ignore escape characters, etc |  | 1 |
| Correctly answers the question and uses the word “verbatim” or “verbatim string”. |  | 2 |

|  |  |  |
| --- | --- | --- |
| What is the purpose or effect of the “@” prefix before a variable name? | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Correctly states that the @ symbol allows the use of a keyword as the name of the variable. |  | 3 |

|  |  |  |
| --- | --- | --- |
| What values will be assigned to c and d? | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 0 |
| Correctly answers that c = 5 |  | +1 |
| Correctly answers that d = 0 |  | +1 |

|  |  |  |
| --- | --- | --- |
| Suppose the following two fields are part of a class used in a shared library… | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Mentions that the readonly field value can be set in the constructor |  | +1 |
| Mentions that const is “baked in” at compile time, like a macro |  | +1 |
| Mentions that if the const value is changed, any dependant module must be recompiled to pick up the new const value. |  | +2 |

|  |  |  |
| --- | --- | --- |
| What, if anything, is the difference between the following two error handling implementations? | Answer | Score |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 0 |
| States that the first implementation will lose information. |  | 1 |
| Explicitly mentions the loss of the stack trace in the first implementation. |  | 2 |

|  |  |  |
| --- | --- | --- |
| Assume we have a public Task DoSomethingAsync(Uri uri) method… | Answer | Value |
| Provides confident but incorrect feedback |  | 0 |
| Is unable to provide any meaningful feedback |  | 0 |
| Shares opinions which are stated clearly, whether correct or incorrect. |  | +2 |
| Mentions the lack of await in DoOneThingAsync |  | +1 |
| Uses the phrase “Fire and Forget” in relation to DoOneThingAsync |  | +2 |
| Says or asks anything about the independence or possible concurrent execution of the calls in DoTwoThingsAsync and DoManyThingsAsync. |  | +1 |
| Specifically suggests the use of WaitAll or WhenAll in DoTwoThingsAsync or DoManyThingsAsync |  | +1 |
| Explains the difference between WaitAll and WhenAll (WaitAll is synchronous and throws aggregate exceptions, WhenAll can be awaited and will unwrap the aggregate exception) |  | +1 |
| Suggests the use of Parallel.ForEachAsync, or a SemaphoreSlim, or other similar pattern in relation to DoManyThingsAsync |  | +4 |

### Azure and Distributed Systems

|  |  |  |
| --- | --- | --- |
| Tell me about “Azure Functions” – Give me an example of something you might do with an Azure function, and any of the benefits or drawbacks of using an azure function. | Answer | Value |
| Provides a confident but incorrect answer |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 0 |
| Correctly describes any aspect of Azure functions |  | +1 |
| Mentions scalability |  | +1 |

|  |  |  |
| --- | --- | --- |
| Have you heard of, or used, Azure Container Apps? What can you tell me about them? What is a container anyway? | Answer | Value |
| Provides a confident but incorrect description or is unable to provide a meaningful response |  | 0 |
| Understands what a container is in terms of the OS kernel |  | +1 |
| Correctly describes any aspect of docker, docker files, etc |  | +1 |
| Describes any differences between container apps and kubernetes (and possibly container instances) |  | +2 |
| Mentions scalability |  | +1 |

|  |  |  |
| --- | --- | --- |
| In distributed systems, what is meant by the phrase “eventual consistency”? | Answer | Value |
| Provides a confident but incorrect answer |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Correctly decribes any aspect of eventual consistency |  | 2 |
| Specifically mentions the CAP theorem or can correctly describe it when prompted |  | +2 |

### Git

|  |  |  |
| --- | --- | --- |
| What, if anything, is the difference between a git fetch and a git pull? | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 1 |
| Correctly states that a fetch will update the local copy of the remote without affecting your working tree |  | 2 |
| Explicitly states that git pull is git fetch + git merge |  | 3 |

|  |  |  |
| --- | --- | --- |
| What is a “tag” in Git and why might you use one? | Answer | Value |
| Answers the question confidently but incorrectly. |  | 0 |
| States that they do not know the answer to the question or makes an inaccurate guess. |  | 0 |
| Mentions that a tag is a reference to a particular point in the commit history |  | +1 |
| Mentions that tags are immutable |  | +1 |
| Mentions that tags are commonly used to mark important revisions, like releases or release candidates |  | +1 |

### SQL

*“What I am about to show you is a simple SQL Server model for a basic ordering system. All code is valid T-SQL.*

*The domain description is as follows:*

* *The system consists of orders placed by customers.*
* *An order may contain zero or more ordered items.*
* *An ordered item may be a product or a service.*

*Take some time to read through the code then provide your feedback as you would if performing a code review for a developer who may not be very familiar with T-SQL or data modelling, and is eager to learn. What do you like? What do you not like?*

*You might talk about things like…*

* *how well the implementation model matches the domain model I described*
* *identifier names*
* *data types*
* *performance considerations*
* *common T-SQL conventions*
* *anything else that comes to mind.*

*You are encouraged to provide your personal opinions. Feel free to ask any clarification questions you like.”*

**( Share T-SQL code review )**

|  |  |  |
| --- | --- | --- |
| Possible Feedback | Answer | Value |
| Is unable to provide any meaningful feedback |  | 0 |
| Provides minimal feedback or feedback which is inaccurate or not in line with good practices |  | 0 |
| Shares opinions which are stated clearly, whether correct or incorrect. |  | +2 |
| Suggests plural table names |  | +0.5 |
| Mentions inconsistent naming conventions (snake\_case, camelCase, PascalCase) or other formatting concerns |  | +0.5 |
| Mentions lack of clarity due to unnecessary abbreviations for any identifiers, eg “Cust” vs “Customers” |  | +0.5 |
| Mentions lack of clarity due to unqualified names for any identifiers, eg “Name” vs “FirstName” or “LastName”. |  | +0.5 |
| Mentions the performance implications of a guid clustered index generated with newid(). |  | +0.5 |
| Mentions the unsuitability of any data type, eg varchar(50) for phone numbers, float for prices and rates, etc |  | +0.5 |
| Mentions the lack of any check constraints, eg, OrderLine.qty could be given a negative value |  | +0.5 |
| Mentions the lack of indexes, especially on foreign key columns |  | +0.5 |
| Mentions the possibility of modelling phone numbers as rows rather than columns |  | +0.5 |
| Discourages the use of reserved words for identifier names, eg [date] and [service] |  | +0.5 |
| Discourages the use of the sp\_ prefix in the sp\_createProduct stored procedure |  | +0.5 |
| Discourages the use of select \* in the GetOrders stored procedure |  | +0.5 |
| Mentions that statements should be terminated with a semicolon |  | +0.5 |
| Mentions the use of inconsistent identifier names, eg Cust.id is the same thing as Order\_header.customer |  | +0.5 |
| Mentions that the parameter datatypes for sp\_createProduct do not match the column datatypes of the Product table |  | +0.5 |
| Mentions the lack of a column list on the insert statement in sp\_createProduct |  | +0.5 |
| Any helpful feedback not listed above, +0.5 per feedback item, up to a maximum of +2 |  | +2 |
| Notices the supertype/subtype relationship for ordered items <-> products and services, and suggests ways of improving the model (any “relational inheritance” pattern). |  | +4 |
| Mentions that getOrders would likely benefit from option (recompile) |  | +4 |