Short Coding Test - Part 1

Let's say you need a sequence of numbers that can be used with LINQ for the purpose of some algorithm (e.g., 1, 2, 3,...).  You can get an enumerator that can provide a sequence of numbers with something like `Enumerable.Range(1, 100)`.

That method returns an IEnumerable that generates that sequence on-the-fly without ever actually creating a proper data structure to hold all elements of the sequence.

Now, let's say you had a dependency that required this sequence to be randomly accessed via an IList interface.  Can you implement an IList that makes random access to a just-in-time return of the value in each "element" of the list?  (so … um, ToList() is not a valid answer here)

Here's one test to help gauge your implementation success:

// Given a list of numbers ranging from 100 to 200

var list = new Listify(100, 200);

// When I access index position 50

var val = list[50];

// Then I should get back a value of 150

val.Should().Equal(150);

Short Coding Test - Part 2

Now, we need to hook up that IList interface to do something super useful via a “microservice” (#buzzwords):

1. If you don’t already have a free Azure dev account, set that up now
2. Set up a public repo on GitHub
3. Create a WebAPI project that responds to GET requests on this endpoint route: /listify
   1. Accept *begin* / *end* range parameter values, in whatever way you think is most RESTful
   2. Accept a parameter to select the *index* within that range
   3. Return the value located in that index in whatever way you think is most RESTful
4. Deploy this WebAPI endpoint into Azure

Once you have it deployed, share the working Azure link and GitHub repo link.

If you want bonus points, or just for fun, set up the GitHub webhook integration so that your endpoint auto-deploys to Azure after each commit.

Interview Questions

Answer as many of these as you like and post them in a gist to share your responses with us to review:

1. What are examples of the types of projects you have deployed to Azure?

***ASP.NET Web applications and Angular Web Applications, WebAPIs, Notification services, SendGrid, Databases (Mongo inside VM, Cosmos, MSSQL), I work a lot with IoT services (IoT hub, azure functions, logic apps, Service bus, virtual machines, Event hub, etc).***

1. How do you classify your senior-ness as a developer? What are your development strengths?

***I am too self-critical and from that reason, I always think I still have to improve myself to become a real senior. I work a lot on both technical, but also a leadership skills. I like psychology and I spend a lot of time reading about how to be a great leader, how to inspire people and help them to achieve their best. Since for me, technical knowledge does not make one person a senior. There is a lot of other skills and characteristics that senior needs to possess. Senior needs to understand the needs of the project and has to be able to manage the whole project, he needs to understand where project is going and what is the purpose. To behave in a way as a leader. To recognize potential of junior developers and then help and support junior developers with the right strategy to build themselves into new seniors. To understand both team’s and customer’s needs. To understand team’s dynamic and to be able to adapt since that flexibility and utilizing all the skills is crucial to a team success. Senior must have good communication and organizational skills, to be pragmatic and to implement best solution in a given time (not his best solution).***

***My strengths: I am honest, without honesty there is no trust, without trust, there is no team, without team, there is no business. I am open-minded, flexible, hard working, dedicated, realistic. I never stop improving myself. Everything I do needs to start with understanding a purpose (why?)***

***My both strength and weakness is that I don’t know what “impossible” word means.***

1. What are your top 1-2 favorite editor(s)?

***Visual Studio and Jet Brains Rider***

1. Have you ever done a pull request?

***We make inside the team PRs every few days after finishing my (or team’s) development work of a features on a feature branch. When code is pushed and pull request is made, each pull request is reviewed by other (in our team 3 people) before pull request is approved.***

1. Have you ever had a chance to use TDD?  Have you found it to be helpful? If so, when does it work best for you?

***I used TDD in many projects. It is helpful to both test your code and find out is your code well organized (no strong dependencies, only interfaces). From that reason, it helps a lot to achieve SOLID principles, since both SOLID and TDD are greatly impacted by Uncle Bob. I personally like the process red-green-refactor, it allows me to think about my solution in a different way, while building it.   
I prefer to use TDD on projects which do not have a lot of dependencies and simple flow of actions. In systems which depend on different systems, I prefer mixing unit tests with integration tests. Frameworks I have used are MSTest, NUnit, xUnit.***

1. Have you been given the opportunity to use tools like ReSharper?  What did you like about it?

***I use R# every day. It saves time and simplifies some actions. I like small features which help me with everyday job, but also a bigger clean ups, like clean unused namespaces, or clean references, or show TODO items, etc. However, I strongly recommend juniors should not use it until they get really familiar with the IDE.***

1. Do you prefer working directly with the business people? Or do you find it's best to have a go-between run interference?

***I prefer both, each depending on a need. Working with business people is best to find out best about their needs, feedback, etc. Having a person between helps in situations when both customers and developers need a single point of contact and with the right person, it case save a lot of time and impact global team performance. Also, it depends on a team and customer’s technical knowledge. In normal situation, I always chose to stay as close as possible to a customer/business people.***

1. Have you ever used web.config transformations?  If not, do you know what they are good for?

***They allow using different web.config values per different configurations. I use them when I switch between environments. Most common are Web.Release.config and Web.Debug.config, but I also use .Development, .Staging. for custom-made configurations inside my solution.***

1. Can you tell me anything about `slots` in terms of Azure?  If not, based on what you just googled, how would you use them in your next Azure project?

***If we are talking about deployment slots, we use them to test another version of the web app before deploying it to a production. For example, we have mainwebsite.com and then we use acceptance.mainwebsite.com***

1. Have you worked with any of the cloud providers (Heroku, AWS, Azure, Google)?

***100% Azure at the moment. I tested Google and AWS with a test accounts and playing with a few services.***

1. Can you explain what DevOps and/or continuous integration is, and some of the benefits?

***CI is a process of integration of developers work within a team, it helps improving the speed of a team, building a code with a single click, eliminates mistakes of a manual work, making builds self testing and saving a lot of time. DevOps is a set of practices that combines development and IT operations with the goal of saving time in software development life cycle and making development as agile as possible. The goal and task of DevOps engineers is to simplify processes where too many systems are involved (software dev, databases, cloud providers and deployments, testing processes, etc.) as well as to provide continuous delivery by automating processes.***

1. Are you technology agnostic? Or are you pretty strict when it comes to things like Mac vs Windows, or AWS vs Azure?

***I am agnostic. I prefer .NET since I’ve been working in .NET for more than 10 years and can provide best results there. However, I am not the person who would say No to AWS for sure.***

1. What are some of your more advanced SQL querying abilities (i.e., like what  keywords or commands, etc)?

***I have used SQL for years and basically used around 90% of the commands, together with profiler tools and performances. I used stored procedures, views, functions, joins, triggers, indexes, we had a lot of cursors in stored procedures, as well, together with some basic, like left/right inner/outer joins, union I used mostly in views, where, group by, between, contains, case, count(), having, is null/ is not null, like, limit, etc. I am working not mostly with NoSql databases, like MongoDB.***

1. Do you happen to know what TypeScript is and why it’s gotten so popular?  How does it differ from JS?

***Typescript has been developed by Microsoft to improve JavaScript for big systems by introducing generics, interfaces, tuples, enums, async/await, but at the same time to be compatible to JS. TypeScript compiler is called tsc. Result of complied TS is regular JavaScript which can be run in a browser. Since MS is the creator of TS, they have also made a very good support in VS for TypeScript development. It also helps .NET developers to move faster to JavaScript****.*

1. How comfortable are you in working a project that involves touching some CSS and HTML?

***I am comfortable working on the UI, but personally I don’t like working on the design. Technically, I can write any CSS, either as a style or inside a separate CSS class, but in order to achieve responsiveness in all browsers, I will need more time. But todays FE developers who are familiar with other CSS preprocessors like LESS and Sass would probably be a better choice for this kind of development.***

1. Can you explain the diff b/t relational databases and NoSQL? What are some NoSQL platforms that you have familiarity with?

***A difference is that NoSQL DBs don’t have schema or schema is dynamic and can be said they are column based, where in relational databases everything is row based, they rely on relations between the tables which make the strong schema around the db. NoSQL DBs are faster since they are not based on schema. There is no joins in NoSQL and therefore should not be used for complex queries. Every use case/need in software projects requires a specific approach and therefore, both should be used respectively. NoSql DBs can be Key-Value, Graph, Document based, Column-family. Good thing is that they both support transactions. Scalability in rel. databases is vertical and in NoSQL is horizontal. In relational DBs, there is a concepts like foreign key which represents relation between two tables. Relations between the tables can be 1-1, 1-many, many-many, etc.***

***Relational DBs I worked with: MSSQL, MySql, SqlLite, Oracle***

***NoSQL: MongoDb and CosmosDB***

1. Can you explain GPG, SSL or public/private key encryption?

***GPG is GNU Privacy Guard, way of encryption. It works on a principle of a public and private key. It is a free command line tool.***

***SSL (Secure Socket Layer) is a secure protocol for information exchange over internet. It is used to establish encrypted (safe) link between our browser and a web server. This secured channel ensures the data we are sending from our browser to a web site are private. In order to support SSL, on the web server we must install SSL certificate. This creates two keys, private key, which is a secret key and publi key, stored in CSR (Cert Signing Request) and is not secret. Secure connection is marked in the browser with a lock icon and suffix s on http => https (secure http). Certificates hold a lot of details, like ip address, city, country, company name, domain name and each certificate has an expiration date. SSL certificate is usually not free and can be purchased on several web sites as RapidSSL, GeoTrust and others.***

***One of the most common use cases for SSL are payment transactions in order to keep credit card details private.***

1. Do you know anything about "secure coding" practices?

***I have used several practices in my previous projects:***

* + - ***During the design, we make sure security policies are implemented in architecture***
    - ***Checking all inputs parameters***
    - ***Default deny - Base access is denied for all actions in the system, until some privilege is assigned. We define what is allowed and deny everything else.***
    - ***Warnings in the code are counted as errors and code does not compile with warnings.***
    - ***Secure Policy document for the whole development team with a best practices***
    - ***Transforming the data before sending to database or another systems***
    - ***Removing possibility for any threats like SQL injection, cross-site scripting***
    - ***Centralizing security tools/code in the same place/library/nuget package/etc***

1. Can \_you\_ authenticate to GitHub using SSH?

***Yes.***

1. Can you explain what REST sorta kinda means?

***REST stands for representational state transfer, in other words, every URL represents a resource. It is a style or method for building the web services. Each user accessing REST API using the generic approach can access a certain resource by building the correct request and accessing specific URI.***

***Web service APIs built using RESTful architecture are called REST APIs. REST APIs are stateless.***

***Every request gets back response with a payload, in most cases JSON, but can’t be also HTML or XML. Using the HTTP status codes, requester know the response status (e.g. 200 – OK, 403 – Forbidden, 500 – internal server error, etc.***

***Where SOAP web services expose a set of operations, REST works using the uniform set of operations which are covered under the predefined syntax. HTTP methods are used to communicate with REST APIs (GET, POST, PUT, DELETE, PATCH).***

***Authentication are mostly done using oAuth method, with Bearer tokens, etc.***

***Example:*** [***https://www.myapi.com/api***](https://www.myapi.com/api) ***- base***

***Get employees:*** [***https://www.myapi.com/api/employee/1***](https://www.myapi.com/api/employee/1) ***- returns employee with id = 1***

1. How enthusiastic would you be if we asked to pay you to take some training courses on Udemy?

***My education is my thing and I invest in my knowledge constantly. If company pays extra for extra trainings, that is a plus, but not required.***

1. How many of these platforms / languages / frameworks do you have experience with?

Node Typescript Angular / React / Vue Spark Hadoop SQL Excel Python Pandas R Linux Mac Windows Jasmine Docker Kubernetes .NET C# NUnit Go PostgreSQL MySQL SQL Server bash shell scripts PowerShell MongoDB Azure AWS Google Cloud Platform

***Typescript, Angular, SQL, Linux, Windows, Docker, Kubernetes, .NET, C#, NUnit, MySql, Shell scripts, PowerShell, MongoDB, Azure, AWS***