**Question Answers**

1. How long did you spend on the coding test and how would you improve your solution if you had more time? (If you were unable to spend as much time as you would have liked on the coding test, use your answer as an opportunity to explain what you would add).

Ans:

Well, I have spent 4-5 hours in creating this application. There is a lot of scope in improving the application in terms of clean architecture and adding more domain information. Also, on the front-end side I could add only couple of unit tests due to time limitation. I could have added more unit tests like creating a separate service for http api calls. And this service could have been mocked for unit tests. I could have done it but it was consuming more time hence I thought its not worth spending so much time.

1. Describe the tooling / libraries / packages you chose to use for your development process and the reasons why.

Ans:

The application is built on .net 5 and using angular template available in Visual Studio.

I tried to keep it as simple as possible so that it can be built on any other machine without any dependency errors. On backed used entity framework core for persistence, Newtonsoft JSON and used MS Test for unit testing.

On the front-end part, I have referenced ng-bootstrap component to display rating in the form on start. It provides good visual. Apart from this I have reference following css in the project to display the sort icons.

//maxcdn.bootstrapcdn.com/font-awesome/4.1.0/css/font-awesome.min.css

1. Describe how this solution would be deployed and run in your chosen cloud provider and any impact this may have on its development.

Ans:

There are various ways this application can be deployed on cloud, Azure.

WebApp – It is easy and straight forward to deploy as web application.

Container Web App – Docker Support needs to be enabled and for this.

Docker Container Registry – Again docker support will be required. As this is very small app it can be deployed on single container. It can be enhanced in terms of microservices, and web front and backend services can be deployed on separate containers.

Azure VM – Deploying it on VM should also be as simple as WebApp. But before that VM need to be configured for IIS so that it can host web applications.

1. If the application was enhanced to contain business sensitive data what considerations and possible solutions would you consider for securing it?

Ans:

At present the is no user login authentication is implementation. That can be done to secure the application. Https is already enabled with adds another security over network. We can use the authentication and authorization features to improve security at various levels when deployed on cloud environment. On client-side authentication tokens can be used. Data servers should not be directly accessible to any users instead it can be accessed via services. TLS certifications can be added for user to front end server and if require they can also be added in the intranet wherever high security is needed. The application can be enhanced to find the common vulnerabilities like SQL injection, cross site scription etc.

1. How would you track down a performance issue in production and what was your last experience of this?

Ans:

In a production environment performance issues can occur at various stages of the application. Network latency, hardware capacity (vertical and horizontal). For vertical issue server capacity can be enhanced and for horizontal issue more servers can be added. The application algorithms can also be enhanced to utilize the available resources effectively. Memory management and garbage collection should be implemented effectively. Thread pools can be used whenever possible.

There can be performance issues on database side as well for this normalization and denormalization can be used. Use database indexing effectively. Caching can be implemented wherever possible.

**Pre-Requisites**

* Visual Studio 2019 or 2022 (preview)
* Node.js
* .Net 5.0 or later SDK.
* Windows 10 😊. (Did not try it on other OS).

**How to run the application**

1. Download the attached zip file.
2. Copy it to any folder on your machine.
3. Extract the zip file content.
4. Open the solution in Visual Studio 2019 or 2022 (Preview).
5. Build the solution. (for the first time it will take some time to build the application as it needs time to download the node modules.)
6. Set the “HotelSearch.Web” project as startup project and run the application from visual studio.
7. Once started it will display a list of hotels (hardcoded in json). [Part of requirement]
8. Type in any keyword to search a particular text. [Part of requirement]
9. In the search text box type in rating numbers to filter the result by rating. [Part of requirement]
10. Click on individual column headers to sort the respective column.
11. You can also click on the rating column to sort the rating. [Part of requirement]