Home Exercise

- The purpose of the following tasks is to gain familiarity with your way of thinking, your approach to new problems, and your ability to design and implement complex cloud solutions.
- Please invest only as much time as you can and wish to, in order to complete the exercises in the best way possible. Don't worry about small details you deem irrelevant for the exercise – but note we are willing to see efficient, readable and generally well-designed code.
- You can provide an architecture document or complement your code with comments to help us understand why you chose to implement things the way you did.
- Any source of assistance is permitted except for the forward of this document parts of it to a third party.
- You can write your code in IaC software tool and/or programming language of your choice.
- You can implement the exercises using a cloud provider of your choice, although Microsoft Azure is preferred.
- Please try and take the time to complete Exercise 1. We would love to see exercise 2 as well – if you have the time after finishing 1.

Exercise 1:

Goal:

Design and implement an isolated and private environment with the following main components –

1. Kubernetes Cluster
2. Container Registry

In general, the use of public IPs is prohibited, and all the components or services are required to be exposed privately. Make sure to allocate it only where it's necessary.

Assumptions and conditions:

1. All the resources can access to the internet without any restrictions (Outbound traffic only).
2. The implementation is required to be in code. If manual intervention is necessary, please document it as a prerequisite.

Submissions:

1. Link to a git repository with the source code and any other relevant and supporting information.
2. Screenshots of the following -
    a. kubectl get nodes -o wide
    b. K8S API server IP address
    c. Container Registry IP Address

Exercise 2 (Bonus):

Goal:

Design and implement a **simple** Build and Release pipeline for web application, using the K8S cluster and Container Registry you created in exercise 1.
In general, you are required to build the image, store it in the container registry and deploy it to the cluster. The web application **should not be** accessible from the outside world so make sure you deliver it internally.

Assumptions and conditions:

1. All the resources can access to the internet without any restrictions (Outbound traffic only).
2. You can use ingress controller of your choice.
3. For the purpose of the exercise, you can use any 'Hello World' web application, for example - https://github.com/Azure-Samples/python-docs-hello-world
4. You can implement the pipeline using CI/CD tools of your choice.

Submissions:

1. Link to a git repository with the source code and any other relevant and supporting information.
2. Screenshots of the following –
    a. 'Service' information using the 'kubectl get service -o wide' command
    b. Screenshot of the browser, using the private service address

Enjoy and Good luck!!! ☺