**Challenge #1**

A 3-tier environment is a common setup. Use a tool of your choosing/familiarity create these resources. Please remember we will not be judged on the outcome but more focusing on the approach, style and reproducibility.

**Approach**:

3-tier approach basically contains

* Presentation tier which is UI for end users in case of any web application.
* Application Tier which is core logic of the application where the information gathered from the presentation tier and gets processed and passes to next layer.
* Data tier which backends the application which basically a database layer.

Here, I would first provision the infra through **terraform** script onto any cloud (**AWS**, **GCP**) according to business requirement documents.

I would prefer to have this in **micro services architecture** and hence go with **Kubernetes**.

I will choose **GKE** in this case and I would deploy the K8S objects for web application as below –

1. Keep the configuration of application isolated so that it would be easy move the application to different environment if required. So I would create a **configMap** object with all the configuration elements
2. I would go with **secrets** to maintain the passwords and sensitive information encrypted
3. I would create deploy an application with the image that is constructed by developers.
4. I would create service to **expose** the application to external world. Based on the requirement I would go with ingress load balancer.

**Then I would deploy a DB object as below –**

1. Again, I will deploy the db based on the requirement.
2. I will create a service (**Cluster IP**) to make this available for application.

So here the presentation tier is achieved by exposing the deployment to external world.

Application tier is achieved in functionality of the deployment and its logic

Data tier is achieved in as backend to application tier.

It is not as easy as I explained above to deploy multi-tier architecture. We need to consider lot of security standards, resiliency, HA and low-latency approaches.

It is very important to first design the deployment by following the above features.