**Kubernetes Assignment 1**

1. What is a Kubernetes cluster?
   1. It is a open source system for automating deployment , scaling and management of containerized applications.
2. What are the different parts of the Kubernetes architecture?
   1. We can interact with the Kubernetes cluster in two way , one is using the UI and the other is using the CLI – kubectl.
   2. We also have a control plane , which is also called as the master node which consists 4 different sections.
      1. API server: this is used to communicate with the worker nodes.
      2. Scheduler: this is used to schedule the worker nodes , or help with the upscaling or downscaling of worker nodes.
      3. Control manager: this is used to control the worker nodes , to create , update or delete the worker nodes.
      4. Etcd: this is key-value storage, which tracks the state of the worker nodes.
   3. We have worker nodes ,
      1. Kubelet:inside which we have kubelet which is used to track the node , update , create or delete the container.
      2. Kubeproxy: this is used for network proxy.
      3. Docker: we have docker images , which are containerized applications.
      4. Pod: this is the smallest part of a Kubernetes architecture ,which contains the containers ,usually we can have any number of containers inside a pod but the standard practice is to have only one container in a single Pod. We can have any number of pods in a worker node , and depending upon the use case/ project , we can have any number of worker nodes.
3. What exactly do you mean by "container orchestration"?
   1. Helps in deployment , scaling , maintaining of the containers. If we have only one or two containers it is easy to maintain them , but if we have more than 50 or 100 containers maintaining them would be difficult so we have container orchestration tools such as Kubernetes.
4. What are the various features of Kubernetes?
   1. Simply put , Kubernetes is an open source system for automating , deployment , scaling and management of containerized applications.
5. Explain the relationship between Kubernetes and Docker?
   1. We have multiple Docker containers which are running in a Kubernetes cluster. Docker is an application which helps in containerizing other software applications among other things , and Kubernetes helps in maintaining the docker containers.