1. what is Kubernetes? K8S

* Kubernetes is a container management tool to manage containerized applications in different kind of environment such as physical ,virtual and cloud infrastructure.
* Open source system which helps in creating and managing containerization of application.
* It can run application on clusters of physical and virtual machine infrastructure.

2. what is the need of K8S?

* Kubernetes is mainly used to easily manage several containers (since it can handle the grouping of containers), which provides logical units that can be discovered and managed.
* As an orchestrator, Kubernetes handles the work of scheduling containers on a cluster and also manages the workloads to ensure they run as you intended.
* It offers portability, and faster, simpler deployment times.
* Kubernetes addresses high availability at both the application and the infrastructure level.
* Kubernetes can place replicas of service on the most appropriate server, restart them when needed, replicate them, and scale them.
* It provides service discovery and easy access to logs

3. How does Kubernetes work in GCP platform?

* Kubernetes automates operational tasks of container management and includes built-in commands for deploying applications, rolling out changes to your applications, scaling your applications up and down to fit changing needs, monitoring your applications, and more—making it easier to manage applications.
* **Kubernetes on Google Cloud (GKE)**
* Go to console.cloud.google.com and log in. ...
* Go to and enable the Kubernetes Engine API.
* Choose a terminal. ...
* Create a managed Kubernetes cluster and a default node pool. ...
* To test if your cluster is initialized, run: ...
* Give your account permissions to perform all administrative actions needed

4. What is GKE?

* Google Kubernete Engine is an open-source management platform tailor-made for Docker containers and clusters.
* It is used to provide support for the clusters that run in Google public cloud services.

5. what are the steps to deploy a spring boot appln onto a Kubernetes container in GKE?

1. Before you begin
2. Setup and requirements
3. Get source code
4. Locally run the app
5. Package the java app as a Docker container
6. Create your cluster
7. Deploy your app to Kubernetes
8. Allow external traffic
9. Scale your service
10. Roll out an upgrade to your service
11. Roll back
12. Done

6. what is a Kubernetes Cluster?

* A cluster of containers is nothing but a set of machine elements or nodes.
* Clusters specify specific routes so that the containers running on the nodes can communicate with each other.
* In Kubernetes, the container engine also provides hosting for the API server.

7. What is a Pod, what is a Node in Kubernetes?

**Pod in Kubernetes**

* It is the smallest and simplest basic unit of the Kubernetes application.
* This object indicates the processes which are running in the cluster.
* Containers in the same pod share a local network and the same resources.
* That's why they can easily communicate with other containers in the same pod.

**Node in Kubernetes**

* In Kubernetes, a node is the smallest unit of hardware.
* A nod**e** is nothing but a single host, which is used to run the virtual or physical machines.
* A node in the Kubernetes cluster is also known as a minion.

8. what is Kubelet and Kubectl?

**Kubelet**

* Kubelete is a service helps in managing the task on the node.
* Service agent used to control and maintain a group of pods by checking pod specifications.
* The kubelet runs on each node and makes them able to communicate between a master node and a slave node

**Kubectl**

* It is a software that is used to control Kubernetes clusters.
* The ctl in "Kubectl" stands for control, a command-line interface to pass the command to the cluster and manage the Kubernetes component.

9. what is a Docker? Explain?

* Docker is an open-source platform used to handle software development.
* Used to create the lightweight image of applications.
* It is mainly used to package the settings and dependencies that the software/application needs to run into a container, which allows for portability and several other advantages.

Docker provides tooling and a platform to manage the lifecycle of your containers:

* Develop your application and its supporting components using containers.
* The container becomes the unit for distributing and testing your application.
* When you’re ready, deploy your application into your production environment, as a container or an orchestrated service. This works the same whether your production environment is a local data center, a cloud provider, or a hybrid of the two.

10. why should we create a docker image? what does it contain?

* A Docker image is a read-only template that contains a set of instructions for creating a container that can run on the Docker platform.
* Docker builds images automatically by reading the instructions from a Dockerfile.
* It provides a convenient way to package up applications and preconfigured server environments, which you can use for your own private use or share publicly with other Docker users.
* A Docker image is made up of a collection of files that bundle together all the essentials – such as installations, application code, and dependencies – required to configure a fully operational container environment.

11. what is the need of the container platform?

Containers are a streamlined way to build, test, deploy, and redeploy applications on multiple environments from a developer’s local laptop to an on-premises data center and even the cloud. Benefits of containers include:

* They provide capabilities like automation, orchestration,security and enterprise support for container architectures.
* Increased portability.
* Containers allow applications to be more rapidly deployed, patched, or scaled.
* Containers support agile and DevOps efforts to accelerate development, test, and production cycles
* Containers are a solution to the problem of how to get software to run reliably when moved from one computing environment to another

12. what are the benefits of deploying spring boot on a container platform?

* Firstly, it is based on Java, which is one of the world’s most popular programming languages. Besides that, Spring Boot can help you to quickly build any applications without having to worry about their safe and correct configuration. ⠀
* Spring Boot has a huge user community which means you can find free learning materials and courses. Spring Boot is multi-threaded. This is useful when performing long or repetitive operations. When the main thread is consumed, others are used concurrently

Some additional benefits include:

* Reduces the time spent on development and increases the overall efficiency of the development team.
* Helps to auto configure all components for a production-grade Spring app.
* Facilitates the creation and testing of Java-based applications by providing a default setup for unit and integration tests.
* Provides admin support – you can manage via remote access to the application.
* Eases the dependency and comes with Embedded Servlet Container.
* Offers flexibility in configuring XML configurations, Java Beans, and Database Transaction