Kubernetes is a software that is used for orchestration.

What does orchestration means, it means that when lot of load comes on a server then we can place more resources on the server like suppose there is a sale on amazon web site for 5 days so lot of visitors will come on amazon website for these 5 days so we can use Kubernetes for increases resources on the server and when sale ends we can reduce the resources on the server.

resources means more hard disk space or ram.

Kubernetes requires docker. docker is a software on which we can place containers.

container means a software application or web application with libraries and dependencies in it.

A Docker image is a file used to execute code in a Docker container. Docker images act as a set of instructions to build a Docker container, like a template. Docker images also act as the starting point when using Docker. An image is comparable to a snapshot in virtual machine (VM) environments.

to pull or get a docker image for latest fedora version for amd64 processor from docker hub repository you can write command using windows terminal.

```
docker pull amd64/fedora
```

now how to run the docker image amd64/fedora

```
docker run -it amd64/fedora
```

Kubernetes works on nodes and there can be several nodes on a Kubernetes cluster.

we can place pods on nodes, pods are instances of your web application on a node if the number of visitors to your web application increases we can place more pods on a node, now if the resources of node are exhausted or are finish then we can create a new node and on this node we can place a pod.

what is scaling means ?

scaling means you are adding more pods to Kubernetes cluster when number of users visiting your web application increases and decreasing the number of pods on Kubernetes cluster when number of visitors visiting your web application decreases.

what are multi container pods?

multi container pods means we are having multiple types of containers on a pod.

what is kubectl?

Following command will get nginx image from docker hub repository and will deploy nginx docker image.

```
kubectl run nginx  - - image=nginx
```

how to list pods running on nodes

```
kubectl get pods
```

Following image will make you clear how to get nginx image from docker hub repository and deploy a pod using that image

```
PS C:\Users\raman> kubectl run nginx --image nginx
pod/nginx created
PS C:\Users\raman> kubectl get pods
NAME    READY   STATUS              RESTARTS   AGE
nginx   0/1     ContainerCreating   0          6s
```

Following command will give you information about pod nginx

kubectl describe pod nginx

Following will be the output

```
PS C:\Users\raman> kubectl describe pod nginx
Name:             nginx
Namespace:        default
Priority:         0
Service Account:  default
Node:             docker-desktop/192.168.65.4
Start Time:       Sun, 28 May 2023 15:25:37 +0200
Labels:           run=nginx
Annotations:      <none>
Status:           Running
IP:               10.1.0.14
IPs:
  IP:  10.1.0.14
```

You can see the ip address as 10.1.0.14

you can also see Node as docker-desktop because we are using docker desktop for pod nginx.