Lab09 – Defining a Pod's Resource Requirements

You are tasked with creating a Pod for running an application in container. During application development, you ran a load test for figuring out the minimum amount of resources needed and the maximum amount of resources the application is allowed to grow to. Define those resource requests and limits for the Pod.

1. Define a Pod named `hello-world` running the container image `brahimhamdi/nodejs-hello-world:1.0.0`. The container exposes the port 3000.

```
brahim@Training:~/lab09-resource-requests-limits$ vim pod.yaml
brahim@Training:~/lab09-resource-requests-limits$ cat pod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: hello
spec:
  containers:
  - image: brahimhamdi/nodejs-hello-world:1.0.0
    name: hello
    ports:
    - name: nodejs-port
      containerPort: 3000

brahim@Training:~/lab09-resource-requests-limits$
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```

2. Add a Volume of type `emptyDir` and mount it the container path `/var/log`.

```
brahim@Training:~/lab09-resource-requests-limits$ vim pod.yaml
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apiVersion: v1
kind: Pod
metadata:
  name: hello
spec:
  containers:
  - image: brahimhamdi/nodejs-hello-world:1.0.0
    name: hello
    ports:
    - name: nodejs-port
      containerPort: 3000
    volumeMounts:
    - name: log-volume
      mountPath: "/var/log"
  volumes:
  - name: log-volume
    emptyDir: {}

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```

3. For the container, specify the following minimum number of resources as follows:
   - CPU: 100m
   - Memory: 500Mi
   - Ephemeral storage: 1Gi

   And the following maximum number of resources as follows:
   - Memory: 500Mi
   - Ephemeral storage: 2Gi

```
brahim@Training:~/lab09-resource-requests-limits$ vim pod.yaml
brahim@Training:~/lab09-resource-requests-limits$ cat pod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: hello
spec:
  containers:
  - image: brahimhamdi/nodejs-hello-world:1.0.0
    name: hello
    ports:
    - name: nodejs-port
      containerPort: 3000
    volumeMounts:
    - name: log-volume
      mountPath: "/var/log"
    resources:
      requests:
        cpu: 100m
        memory: 500Mi
        ephemeral-storage: 1Gi
      limits:
        memory: 500Mi
        ephemeral-storage: 2Gi
  volumes:
  - name: log-volume
    emptyDir: {}

brahim@Training:~/lab09-resource-requests-limits$
```

4. Create the Pod from the YAML manifest. Inspect the Pod details. Which node does the Pod run on?

```
brahim@Training:~/lab09-resource-requests-limits$ kubectl  apply -f pod.yaml
pod/hello created
brahim@Training:~/lab09-resource-requests-limits$ kubectl get nodes
NAME                STATUS   ROLES           AGE   VERSION
kube-control-plane   Ready    control-plane   8d    v1.29.2
kube-node1           Ready    <none>          8d    v1.29.2
kube-node2           Ready    <none>          8d    v1.29.2
brahim@Training:~/lab09-resource-requests-limits$
brahim@Training:~/lab09-resource-requests-limits$ kubectl get pod hello -owide
NAME    READY   STATUS    RESTARTS   AGE   IP          NODE         NOMINATED NODE   READINESS GATES
hello   1/1     Running   0          29s   10.32.0.2   kube-node2   <none>           <none>
brahim@Training:~/lab09-resource-requests-limits$
brahim@Training:~/lab09-resource-requests-limits$ kubectl describe pod hello
Name:             hello
Namespace:        default
Priority:         0
Service Account:  default
Node:             kube-node2/192.168.56.12
Start Time:       Thu, 07 Mar 2024 09:21:51 +0100
Labels:           <none>
Annotations:      <none>
Status:           Running
IP:               10.32.0.2
```

...

```
    Limits:
      ephemeral-storage:  2Gi
      memory:             500Mi
    Requests:
      cpu:                100m
      ephemeral-storage:  1Gi
      memory:             500Mi
    Environment:          <none>
    Mounts:
      /var/log from log-volume (rw)
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-zc5r8 (ro)
Conditions:
  Type                        Status
  PodReadyToStartContainers   True
  Initialized                 True
  Ready                       True
  ContainersReady             True
  PodScheduled                True
Volumes:
  log-volume:
    Type:       EmptyDir (a temporary directory that shares a pod's lifetime)
```