Complete SRE environment with WSL, Minikube, Prometheus, Grafana, and our React-based dashboard application

1. Failed to build docker image

```
#12 356.1 npm ERR! network 'proxy' config is set properly.  See: 'npm help config'
#12 356.1
#12 356.1 npm ERR! A complete log of this run can be found in:
#12 356.1 npm ERR!     /root/.npm/_logs/2025-03-20T10_31_25_445Z-debug-0.log
#12 ERROR: process "/bin/sh -c npm ci" did not complete successfully: exit code: 1
------
 > [build 4/6] RUN npm ci:
356.1 npm ERR! code ERR_SOCKET_TIMEOUT
356.1 npm ERR! network Socket timeout
356.1 npm ERR! network This is a problem related to network connectivity.
356.1 npm ERR! network In most cases you are behind a proxy or have bad network settings.
356.1 npm ERR! network
356.1 npm ERR! network If you are behind a proxy, please make sure that the
356.1 npm ERR! network 'proxy' config is set properly.  See: 'npm help config'
356.1
356.1 npm ERR! A complete log of this run can be found in:
356.1 npm ERR!     /root/.npm/_logs/2025-03-20T10_31_25_445Z-debug-0.log
------

 1 warning found (use docker --debug to expand):
 - FromAsCasing: 'as' and 'FROM' keywords' casing do not match (line 2)
Dockerfile:5
--------------------
   3 |       WORKDIR /app
   4 |       COPY package*.json ./
   5 | >>> RUN npm ci
   6 |       COPY . .
   7 |       RUN npm run build
--------------------
ERROR: failed to solve: process "/bin/sh -c npm ci" did not complete successfully: exit code: 1

[ERROR] 2025-03-20 10:37:18 - Command failed after 1 attempts: docker build -t react-sre-app:latest .
[ERROR] 2025-03-20 10:37:18 - Failed to build Docker image
```

docker images | grep react-sre-app
Increase timeout of building the docker image
Manually Build the Image
docker build -t react-sre-app:latest .

2. Failed to deploy Grafana

```
[DEBUG] 2025-03-21 05:20:00 - Running command: kubectl apply -f /home/hafsa_027/react-sre-project/monitoring/grafana-k8s.yaml in current directory
[WARN] 2025-03-21 05:20:01 - Command failed (attempt 2/3): Warning: resource deployments/grafana is missing the kubectl.kubernetes.io/last-applied-configuration annotation which is require
d by kubectl apply. kubectl apply should only be used on resources created declaratively by either kubectl create --save-config or kubectl apply. The missing annotation will be patched aut
omatically.
The Deployment "grafana" is invalid:
* spec.template.spec.containers[0].env[1].valueFrom: Invalid value: "": may not be specified when `value` is not empty
* spec.template.spec.containers[0].env[2].valueFrom: Invalid value: "": may not be specified when `value` is not empty
* spec.selector: Invalid value: v1.LabelSelector{MatchLabels:map[string]string{"app":"grafana", "app.kubernetes.io/instance":"grafana", "app.kubernetes.io/name":"grafana"}, MatchExpression
s:[]v1.LabelSelectorRequirement(nil)}: field is immutable

[DEBUG] 2025-03-21 05:20:06 - Running command: kubectl apply -f /home/hafsa_027/react-sre-project/monitoring/grafana-k8s.yaml in current directory
[WARN] 2025-03-21 05:20:08 - Command failed (attempt 3/3): Warning: resource deployments/grafana is missing the kubectl.kubernetes.io/last-applied-configuration annotation which is require
d by kubectl apply. kubectl apply should only be used on resources created declaratively by either kubectl create --save-config or kubectl apply. The missing annotation will be patched aut
omatically.
The Deployment "grafana" is invalid:
* spec.template.spec.containers[0].env[1].valueFrom: Invalid value: "": may not be specified when `value` is not empty
* spec.template.spec.containers[0].env[2].valueFrom: Invalid value: "": may not be specified when `value` is not empty
* spec.selector: Invalid value: v1.LabelSelector{MatchLabels:map[string]string{"app":"grafana", "app.kubernetes.io/instance":"grafana", "app.kubernetes.io/name":"grafana"}, MatchExpression
s:[]v1.LabelSelectorRequirement(nil)}: field is immutable

[ERROR] 2025-03-21 05:20:08 - Command failed after 3 attempts: kubectl apply -f /home/hafsa_027/react-sre-project/monitoring/grafana-k8s.yaml
[ERROR] 2025-03-21 05:20:08 - Failed to deploy Grafana
```

- Correct indentation (everything under env: should align) in grafana.yaml
- Delete and recreate the Grafana Deployment (kubectl delete deployment grafana).

3.OOM (Out of Memory)

> kubectl exec -it -n react-sre-app
dev-react-sre-app-7c649cc69-whkvp -- sh / # command terminated with exit code 137

Exit code 137 means the container was killed due to OOM (Out of Memory) or SIGKILL. This might have happened because:

1. Container exceeded its memory limit (300Mi in your case).
2. The process inside crashed or was forcefully killed by Kubernetes.
3. The app is running out of memory due to a bug (e.g., memory leaks).

4.. ImagePullBackOff error:

kubectl get pods -n react-sre-app
Kubernetes is unable to pull the Docker image

I. Check Pod Description for Errors
kubectl describe pod pod_name -n react-sre-app

Look for messages under Events, especially errors like:

- ErrImagePull
- ImagePullBackOff
- unauthorized: authentication required

II. Verify Image Availability

Check if the image exists in Minikube:

minikube image list | grep react-sre-app

III.Push latest image to Docker Hub

docker tag react-sre-app:latest hafsazareen/react-sre-app:latest
docker push hafsazareen/react-sre-app:latest

5.patchesStrategicMerge Deprecated in Kustomization:-
Replaced patchesStrategicMerge with patches in kustomization.yaml:
patches:
  - path: replica-count.yaml
  - path: resource-limits.yaml

6.crashloopbackoff

```
hafsa_027@Dell:~/react-sre-project$ kubectl port-forward -n react-sre-app svc/react-sre-app 3001:80
Forwarding from 127.0.0.1:3001 -> 80
Forwarding from [::1]:3001 -> 80
Handling connection for 3001
Handling connection for 3001
E0321 07:48:53.240752  237144 portforward.go:424] "Unhandled Error" err=<
    an error occurred forwarding 3001 -> 80: error forwarding port 80 to pod 542c8569505533e5bb01eac482647cd4670c46e2e808d421baac3df984347aa8, uid : ex:
t status 1: 2025/03/21 07:48:53 socat[104879] E connect(5, AF=2 127.0.0.1:80, 16): Connection refused
 >
E0321 07:48:53.241157  237144 portforward.go:424] "Unhandled Error" err=<
    an error occurred forwarding 3001 -> 80: error forwarding port 80 to pod 542c8569505533e5bb01eac482647cd4670c46e2e808d421baac3df984347aa8, uid : ex:
t status 1: 2025/03/21 07:48:53 socat[104887] E connect(5, AF=2 127.0.0.1:80, 16): Connection refused
 >
error: lost connection to pod
hafsa_027@Dell:~/react-sre-project$ kubectl get pods -n react-sre-app
NAME                               READY   STATUS            RESTARTS         AGE
dev-react-sre-app-679564f496-n6bc9  0/1    Running           6 (102s ago)     11m
dev-react-sre-app-86b45ccd-hh7wn    0/1    CrashLoopBackOff  16 (2m53s ago)   46m
react-sre-app-7754c66467-cv5sg      0/1    CrashLoopBackOff  16 (2m53s ago)   46m
react-sre-app-7754c66467-htddt      0/1    Running           16 (41s ago)     46m
react-sre-app-86d8995869-7vsmx      0/1    CrashLoopBackOff  13 (2m47s ago)   45m
```

kubectl describe pod dev-react-sre-app-679564f496-n6bc9 -n react-sre-app

```
ting). Image size: 48864921 bytes.
  Warning  Unhealthy  10m (x3 over 10m)      kubelet              Liveness probe failed: Get "http://10.244.0.48:3000/health": dial tcp 10.244.0.48:3000: conn
ect: connection refused
  Warning  Unhealthy  8m59s (x8 over 10m)    kubelet              Readiness probe failed: Get "http://10.244.0.48:3000/health": context deadline exceeded (Cli
ent.Timeout exceeded while awaiting headers)
  Normal   Pulled     8m17s                  kubelet              Successfully pulled image "hafsazareen/react-sre-app:latest" in 8.06s (8.061s including wait
ing). Image size: 48864921 bytes.
```

7.Probes Failed:-

Readiness probe failed: Get "http://10.244.0.31:3000/health": dial tcp 10.244.0.31:3000: connect: connection refused.
Liveness probe failed: Get "http://10.244.0.31:3000/health": dial tcp 10.244.0.31:3000: connect: connection refused.
Killing pod due to failed liveness probe.

Corrected probes in deployment.yaml:

readinessProbe:
  httpGet:
    path: /health
    port: 80
livenessProbe:
  httpGet:
    path: /health
    Port:80

8.Port forwarding failed:-

```
hafsa_027@Dell:~/react-sre-project$ kubectl get pods -n monitoring -l app=grafana
NAME                      READY   STATUS    RESTARTS   AGE
grafana-b56ff7f47-5447f   1/1     Running   0          3h8m
hafsa_027@Dell:~/react-sre-project$ kubectl port-forward svc/grafana 8083:3000 -n monitoring
error: timed out waiting for the condition
```

```yaml
  ports:
  - name: http
    port: 80
    protocol: TCP
    targetPort: http
  selector:
    app: react-sre-app
  sessionAffinity: None
  type: NodePort

status:
  loadBalancer: {}
```
~
~
~
~
~
~
~
~
~
~
~
-- INSERT --

localhost:3001

Home   SRE Dashboard   Error Test

SRE React Application

Welcome to the SRE-instrumented React application