1. download minikube from official website
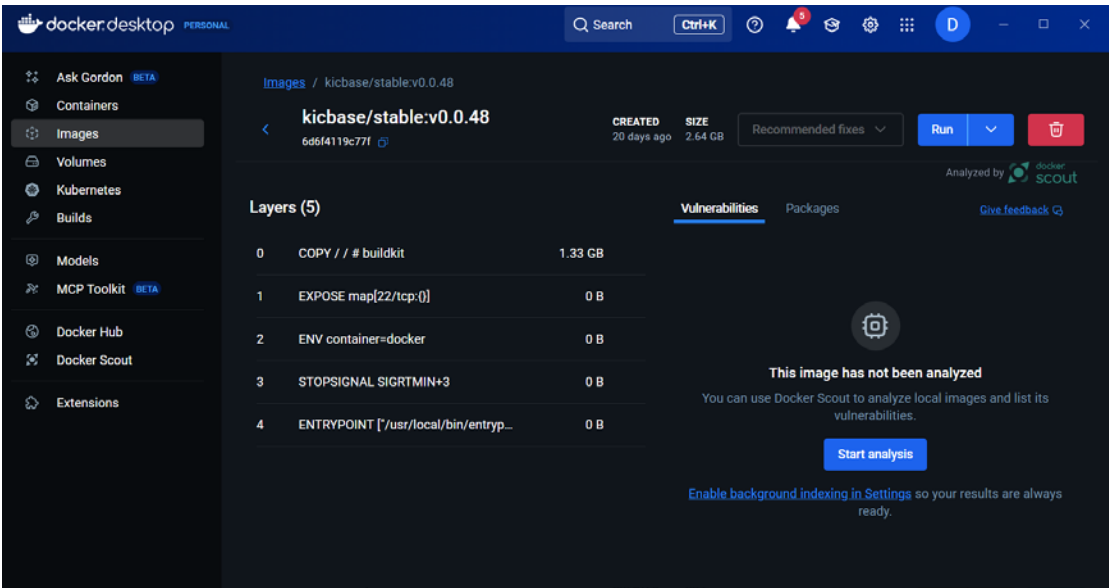

2. load the kicbase image into Docker Desktop
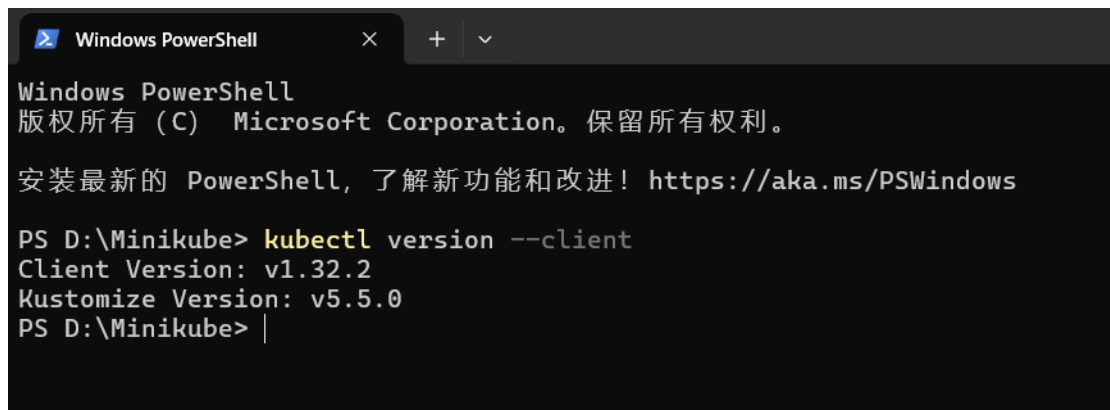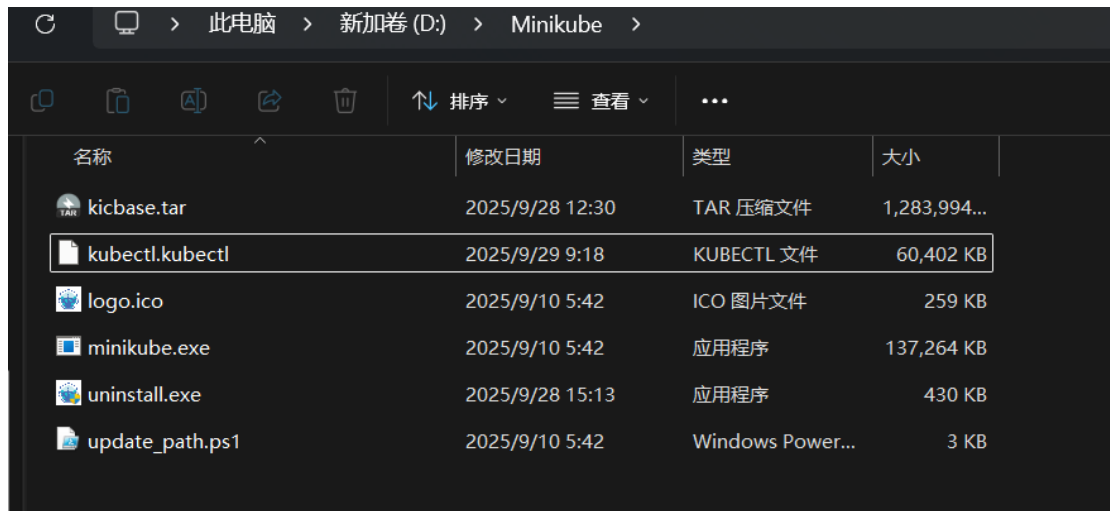
3. download kubectl and test its version

4. install minikube
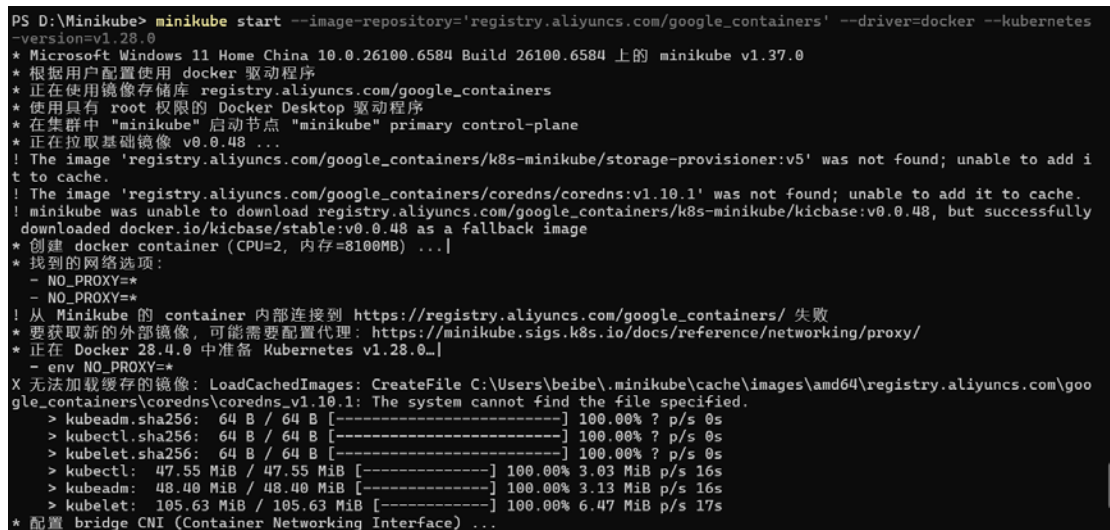
```
* 配置 bridge CNI (Container Networking Interface) ...
* 正在验证 Kubernetes 组件...
  - 使用镜像 registry.aliyuncs.com/google_containers/k8s-minikube/storage-provisioner:v5 (全局镜像仓库)
* 启用插件:  storage-provisioner, default-storageclass

! C:\Program Files\Docker\Docker\resources\bin\kubectl.exe 的版本为 1.34.1, 可能与 Kubernetes 1.28.0 不兼容。
  - 想要使用 kubectl v1.28.0 吗? 尝试使用 'minikube kubectl -- get pods -A' 命令
* 完成! kubectl 现在已配置, 默认使用"minikube"集群和"default"命名空间
```

5. create new deployments

```
PS D:\Minikube> kubectl create deployment hello-node --image=registry.k8s.io/e2e-test-images/agnhost:2.53 -- /agnhost ne
texec --http-port=8080
deployment.apps/hello-node created
PS D:\Minikube> kubectl get deployments
NAME         READY   UP-TO-DATE   AVAILABLE   AGE
hello-node   0/1     1            0           8s
```

6. view pods and events

```
PS D:\Minikube> kubectl get pods
NAME                        READY   STATUS             RESTARTS   AGE
hello-node-b8688cb56-9xh4r  0/1     ImagePullBackOff   0          27m
PS D:\Minikube> kubectl get events
LAST SEEN   TYPE      REASON                   OBJECT                          MESSAGE
27m         Normal    Scheduled                pod/hello-node-b8688cb56-9xh4r  Successfully assigned default/hello-no
de-b8688cb56-9xh4r to minikube
25m         Warning   Failed                   pod/hello-node-b8688cb56-9xh4r  Failed to pull image "registry.k8s.io/
e2e-test-images/agnhost:2.53": Error response from daemon: Get "https://registry.k8s.io/v2/": proxyconnect tcp: dial tcp
 127.0.0.1:7890: connect: connection refused
25m         Warning   Failed                   pod/hello-node-b8688cb56-9xh4r  Error: ErrImagePull
17m         Normal    BackOff                  pod/hello-node-b8688cb56-9xh4r  Back-off pulling image "registry.k8s.i
o/e2e-test-images/agnhost:2.53"
26m         Warning   Failed                   pod/hello-node-b8688cb56-9xh4r  Error: ImagePullBackOff
25m         Normal    Pulling                  pod/hello-node-b8688cb56-9xh4r  Pulling image "registry.k8s.io/e2e-tes
t-images/agnhost:2.53"
27m         Normal    SuccessfulCreate         replicaset/hello-node-b8688cb56 Created pod: hello-node-b8688cb56-9xh4
r
27m         Normal    ScalingReplicaSet        deployment/hello-node           Scaled up replica set hello-node-b8688
cb56 to 1
69m         Normal    Starting                 node/minikube                   Starting kubelet.
69m         Normal    NodeHasSufficientMemory  node/minikube                   Node minikube status is now: NodeHasSu
fficientMemory
69m         Normal    NodeHasNoDiskPressure    node/minikube                   Node minikube status is now: NodeHasNo
DiskPressure
69m         Normal    NodeHasSufficientPID     node/minikube                   Node minikube status is now: NodeHasSu
fficientPID
69m         Normal    NodeNotReady             node/minikube                   Node minikube status is now: NodeNotRe
ady
69m         Normal    NodeAllocatableEnforced  node/minikube                   Updated Node Allocatable limit across
```

7. view configuration

```
PS D:\Minikube> kubectl config view
apiVersion: v1
clusters:
- cluster:
    certificate-authority: C:\Users\beibe\.minikube\ca.crt
    extensions:
    - extension:
        last-update: Mon, 29 Sep 2025 11:34:56 CST
        provider: minikube.sigs.k8s.io
        version: v1.37.0
      name: cluster_info
    server: https://127.0.0.1:57958
  name: minikube
contexts:
- context:
    cluster: minikube
    extensions:
    - extension:
        last-update: Mon, 29 Sep 2025 11:34:56 CST
        provider: minikube.sigs.k8s.io
        version: v1.37.0
      name: context_info
    namespace: default
    user: minikube
  name: minikube
current-context: minikube
kind: Config
users:
- name: minikube
```

8. create new services

```
PS D:\Minikube> kubectl expose deployment hello-node --type=LoadBalancer --port=8080
service/hello-node exposed
PS D:\Minikube> kubectl get services
NAME         TYPE           CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
hello-node   LoadBalancer   10.100.62.233   <pending>     8080:30324/TCP   10s
kubernetes   ClusterIP      10.96.0.1       <none>        443/TCP          72m
```

9. view addons

```
PS D:\Minikube> minikube addons list
        ADDON NAME          | PROFILE  |  STATUS  |          MAINTAINER
    ambassador              | minikube | disabled | 3rd party (Ambassador)
    amd-gpu-device-plugin   | minikube | disabled | 3rd party (AMD)
    auto-pause              | minikube | disabled | minikube
    cloud-spanner           | minikube | disabled | Google
    csi-hostpath-driver     | minikube | disabled | Kubernetes
    dashboard               | minikube | enabled ✅ | Kubernetes
    default-storageclass    | minikube | enabled ✅ | Kubernetes
    efk                     | minikube | disabled | 3rd party (Elastic)
    freshpod                | minikube | disabled | Google
    gcp-auth                | minikube | disabled | Google
    gvisor                  | minikube | disabled | minikube
    headlamp                | minikube | disabled | 3rd party (kinvolk.io)
    inaccel                 | minikube | disabled | 3rd party (InAccel [info@inaccel.com])
    ingress                 | minikube | disabled | Kubernetes
    ingress-dns             | minikube | disabled | minikube
    inspektor-gadget        | minikube | disabled | 3rd party (inspektor-gadget.io)
    istio                   | minikube | disabled | 3rd party (Istio)
    istio-provisioner       | minikube | disabled | 3rd party (Istio)
    kong                    | minikube | disabled | 3rd party (Kong HQ)
    kubeflow                | minikube | disabled | 3rd party
    kubetail                | minikube | disabled | 3rd party (kubetail.com)
    kubevirt                | minikube | disabled | 3rd party (KubeVirt)
    logviewer               | minikube | disabled | 3rd party (unknown)
    metallb                 | minikube | disabled | 3rd party (MetalLB)
    metrics-server          | minikube | enabled ✅ | Kubernetes
    nvidia-device-plugin    | minikube | disabled | 3rd party (NVIDIA)
```

10. enable addons metrics-server

```
PS D:\Minikube> minikube addons enable metrics-server
* metrics-server 是由 Kubernetes 维护的插件。如有任何问题，请在 GitHub 上联系 minikube。
您可以在以下链接查看 minikube 的维护者列表：https://github.com/kubernetes/minikube/blob/master/OWNERS
   - 使用镜像 registry.aliyuncs.com/google_containers/metrics-server/metrics-server:v0.8.0@sha256:89258156d0e9af60403eafd
44da9676fd66f600c7934d468ccc17e42b199aee2（全局镜像仓库）
* 启动 'metrics-server' 插件
PS D:\Minikube> kubectl get pod,svc -n kube-system
NAME                                        READY   STATUS            RESTARTS      AGE
pod/coredns-66f779496c-g5hqm                1/1     Running           1 (40m ago)   75m
pod/etcd-minikube                           1/1     Running           1 (40m ago)   75m
pod/kube-apiserver-minikube                 1/1     Running           1 (40m ago)   75m
pod/kube-controller-manager-minikube        1/1     Running           1 (40m ago)   75m
pod/kube-proxy-6hskt                        1/1     Running           1 (40m ago)   75m
pod/kube-scheduler-minikube                 1/1     Running           1 (40m ago)   75m
pod/metrics-server-f4b5f5cdc-5bgb5          0/1     ImagePullBackOff  0             53m
pod/storage-provisioner                     0/1     ImagePullBackOff  0             75m

NAME                     TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)                  AGE
service/kube-dns         ClusterIP   10.96.0.10     <none>        53/UDP,53/TCP,9153/TCP   75m
service/metrics-server   ClusterIP   10.96.58.63    <none>        443/TCP                  53m
```

11. clean up everything

```
PS D:\Minikube> kubectl delete service hello-node
service "hello-node" deleted from default namespace
PS D:\Minikube> kubectl delete deployment hello-node
deployment.apps "hello-node" deleted from default namespace
PS D:\Minikube> minikube stop
* 正在停止节点 "minikube" ...
* 正在通过 SSH 关闭"minikube"…
* 1 个节点已停止。
PS D:\Minikube> minikube delete
* 正在删除 docker 中的"minikube"…
* 正在删除容器 "minikube" ...
* 正在移除 C:\Users\beibe\.minikube\machines\minikube…
* 已删除所有关于 "minikube" 集群的痕迹。
```