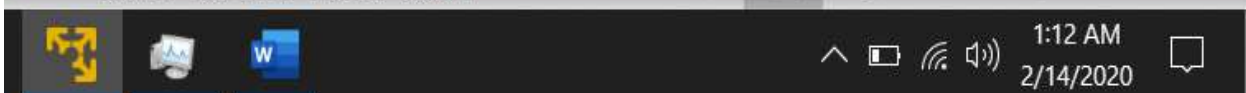


CS571
MANSI SHAH
(19526)
WEEK5

Creating a simple YAML descriptor for a pod

```
cs571@ubuntu:~$ kubectl get po kubia-m998k -o yaml
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: "2020-02-14T08:12:11Z"
  generateName: kubia-
  labels:
    run: kubia
  name: kubia-m998k
  namespace: default
  ownerReferences:
  - apiVersion: v1
    blockOwnerDeletion: true
    controller: true
    kind: ReplicationController
    name: kubia
    uid: 18642dcc-6a30-4f24-927f-2d238595afc1
  resourceVersion: "1818"
  selfLink: /api/v1/namespaces/default/pods/kubia-m998k
  uid: ce767770-1fc4-4d38-b282-7732ea48a855
spec:
  containers:
  - image: mansi2210/shahm888:kubia
    imagePullPolicy: IfNotPresent
    name: kubia
    ports:
    - containerPort: 8080
      protocol: TCP
    resources: {}
    terminationMessagePath: /dev/termination-log
    terminationMessagePolicy: File
    volumeMounts:
    - mountPath: /var/run/secrets/kubernetes.io/serviceaccount
      name: default-token-xyz40
```



```

cs571@ubuntu:~/app_js$ vim kubia-manual.yaml
cs571@ubuntu:~/app_js$ kubectl create -f kubia-manual.yaml
error: error validating "kubia-manual.yaml": error validating data: ValidationError(Pod.spec.containers[0]): missing required field "name" in io.k8s.api.core.v1.Container; if you choose to ignore these errors, turn validation off with --validate=false
cs571@ubuntu:~/app_js$ vim kubia-manual.yaml
cs571@ubuntu:~/app_js$ kubectl create -f kubia-manual.yaml
pod/kubia-manual created
cs571@ubuntu:~/app_js$ cat kubia-manual.yaml
apiVersion: v1
kind: Pod
metadata:
  name: kubia-manual
spec:
  containers:
  - image: mansi2210/shahm888:kubia
    name: kubia
    ports:
    - containerPort: 8080
      protocol: TCP

```

```

cs571@ubuntu:~/app_js$ kubectl get po kubia-manual -o json
{
  "apiVersion": "v1",
  "kind": "Pod",
  "metadata": {
    "creationTimestamp": "2020-02-14T08:48:30Z",
    "name": "kubia-manual",
    "namespace": "default",
    "resourceVersion": "5826",
    "selfLink": "/api/v1/namespaces/default/pods/kubia-manual",
    "uid": "54c5ddc7-68a4-4c7e-9662-15151bfabec"
  },
  "spec": {
    "containers": [
      {
        "image": "mansi2210/shahm888:kubia",
        "imagePullPolicy": "IfNotPresent",
        "name": "kubia",
        "ports": [
          {
            "containerPort": 8080,
            "protocol": "TCP"
          }
        ],
        "resources": {},
        "terminationMessagePath": "/dev/termination-log",
        "terminationMessagePolicy": "File",
        "volumeMounts": [
          {
            "mountPath": "/var/run/secrets/kubernetes.io/serviceaccount"

```



1:16 AM
2/14/2020

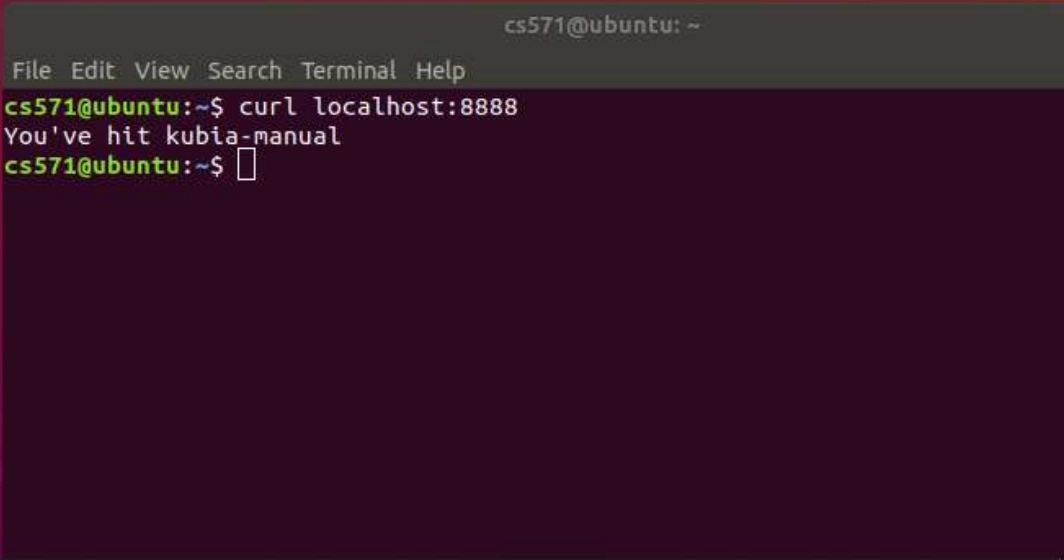


Viewing application logs

```
cs571@ubuntu:~/app_js$ kubectl logs kubia-manual
Kubia server starting...
cs571@ubuntu:~/app_js$ minikube service kubia-manual
^C
cs571@ubuntu:~/app_js$ minikube service kubia-http
|-----|-----|-----|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|-----|-----|-----|
| default | kubia-http | | http://192.168.39.20:32181 |
|-----|-----|-----|-----|
🌐 Opening service default/kubia-http in default browser...
```

Sending requests to the pod

```
cs571@ubuntu:~/app_js$ kubectl logs kubia-manual
Kubia server starting...
cs571@ubuntu:~/app_js$ kubectl port-forward kubia-manual 8888:8080
Forwarding from 127.0.0.1:8888 -> 8080
Forwarding from [::1]:8888 -> 8080
Handling connection for 8888
```



The screenshot shows a terminal window with a menu bar (File, Edit, View, Search, Terminal, Help) and a title bar (cs571@ubuntu: ~). The terminal content is as follows:

```
cs571@ubuntu:~$ curl localhost:8888
You've hit kubia-manual
cs571@ubuntu:~$
```

The terminal window is part of a desktop environment with a taskbar at the bottom showing icons for a file manager, a terminal, and a web browser. The system clock in the bottom right corner indicates 1:19 AM on 2/14/2020.

Specifying labels when creating a pod

```
cs571@ubuntu:~/app_js$ vim kuba-manual-with-labels.yaml
cs571@ubuntu:~/app_js$ cat kuba-manual-with-labels.yaml
apiVersion: v1
kind: Pod
metadata:
  name: kuba-manual-v2
  labels:
    creation_method: manual
    env: prod
spec:
  containers:
  - image: mansi2210/shahm888:kuba
    name: kuba
    ports:
    - containerPort: 8080
      protocol: TCP

cs571@ubuntu:~/app_js$ kubectl create -f kuba-manual-with-labels.yaml
pod/kuba-manual-v2 created
cs571@ubuntu:~/app_js$ kubectl get pod --show-labels
NAME          READY   STATUS    RESTARTS   AGE   LABELS
kuba-6ljpm    1/1     Running   0           44m   run=kuba
kuba-gfwrf    1/1     Running   0           44m   run=kuba
kuba-m998k    1/1     Running   0           54m   run=kuba
kuba-manual   1/1     Running   0           18m   <none>
kuba-manual-v2 1/1     Running   0           23s   creation_method=manual,env=prod

cs571@ubuntu:~/app_js$ kubectl get po -L creation_method,env
NAME          READY   STATUS    RESTARTS   AGE   CREATION_METHOD   ENV
kuba-6ljpm    1/1     Running   0           46m
kuba-gfwrf    1/1     Running   0           46m
kuba-m998k    1/1     Running   0           56m
kuba-manual   1/1     Running   0           19m
kuba-manual-v2 1/1     Running   0           2m    manual            prod

cs571@ubuntu:~/app_js$ kubectl get po -L creation_method,env
```



Overwrite labels:

```
cs571@ubuntu:~/app_js$ kubectl label po kubia-manual creation_method=manual
pod/kubia-manual labeled
cs571@ubuntu:~/app_js$ kubectl label po kubia-manual-v2 env=debug --overwrite
pod/kubia-manual-v2 labeled
cs571@ubuntu:~/app_js$ kubectl get po -L creation_method,env
```

NAME	READY	STATUS	RESTARTS	AGE	CREATION_METHOD	ENV
kubia-6ljpm	1/1	Running	0	61m		
kubia-gfwrf	1/1	Running	0	61m		
kubia-m998k	1/1	Running	0	71m		
kubia-manual	1/1	Running	0	34m	manual	
kubia-manual-v2	1/1	Running	0	17m	manual	debug

```
cs571@ubuntu:~/app_js$
```

Listing pods using a label selector

```
cs571@ubuntu:~$ kubectl get po -l creation_method=manual
```

NAME	READY	STATUS	RESTARTS	AGE
kubia-manual	1/1	Running	0	36m
kubia-manual-v2	1/1	Running	0	18m

```
cs571@ubuntu:~$ kubectl get po -l env
```

NAME	READY	STATUS	RESTARTS	AGE
kubia-manual-v2	1/1	Running	0	18m

```
cs571@ubuntu:~$ kubectl get po -l '!env'
```

NAME	READY	STATUS	RESTARTS	AGE
kubia-6ljpm	1/1	Running	0	63m
kubia-gfwrf	1/1	Running	0	63m
kubia-m998k	1/1	Running	0	73m
kubia-manual	1/1	Running	0	36m

```
cs571@ubuntu:~$
```

Using labels for categorizing worker nodes

```
cs571@ubuntu:~$ kubectl label node minikube gpu=true
node/minikube labeled
cs571@ubuntu:~$ kubectl get nodes -l gpu=true
```

NAME	STATUS	ROLES	AGE	VERSION
minikube	Ready	master	94m	v1.17.2

```
cs571@ubuntu:~$ vim kubia-gpu.yaml
cs571@ubuntu:~$ kubectl create -f kubia-gpu.yaml
```

```
cs571@ubuntu:~$ vim kubia-gpu.yaml
cs571@ubuntu:~$ kubectl create -f kubia-gpu.yaml
pod/kubia-gpu created
cs571@ubuntu:~$
```

Looking up an object's annotations

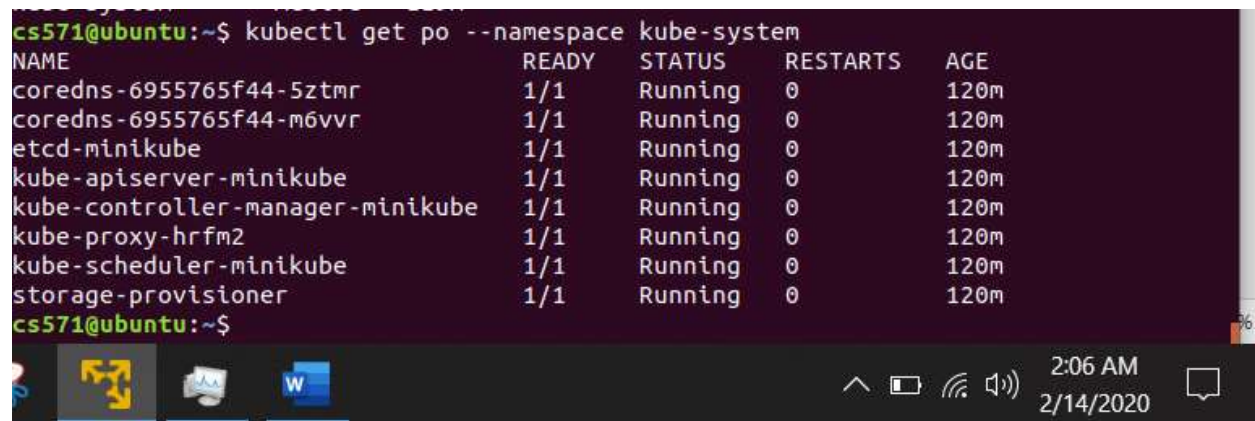
```
cs571@ubuntu:~$ kubectl annotate pod kubia-manual mycompany.com/someannotation="foo bar"
pod/kubia-manual annotated
cs571@ubuntu:~$ kubectl describe pod kubia-manual
Name:          kubia-manual
Namespace:     default
Priority:       0
Node:          minikube/192.168.39.20
Start Time:    Fri, 14 Feb 2020 00:48:31 -0800
Labels:        creation method=manual
Annotations:   mycompany.com/someannotation: foo bar
Status:        Running
IP:            172.17.0.7
IPs:
  IP: 172.17.0.7
Containers:
  kubia:
    Container ID:  docker://b5e71c750aa886f135fe2804f7c589d5ccaf8a32c8291a1a8ea406a7a82cce6c
    Image:         mansi2210/shahm888:kubia
    Image ID:      docker-pullable://mansi2210/shahm888@sha256:9f9db1726111d8815d5a73def458a3390664a48b18cd707b6c508bbd54e7abf4
    Port:          8080/TCP
    Host Port:     0/TCP
    State:         Running
      Started:     Fri, 14 Feb 2020 00:48:36 -0800
    Ready:         True
    Restart Count: 0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from default-token-pxw49 (ro)
Conditions:
  Type          Status
```

Discovering other namespaces and their pods

```
cs571@ubuntu:~$ kubectl get ns
NAME                STATUS   AGE
default             Active   119m
kube-node-lease     Active   119m
kube-public         Active   119m
kube-system         Active   119m
Show Applications
cs571@ubuntu:~$
```

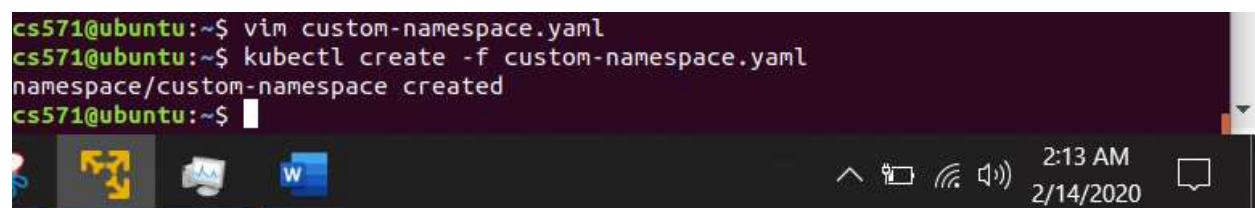


```
cs571@ubuntu:~$ kubectl get po --namespace kube-system
NAME                                READY   STATUS    RESTARTS   AGE
coredns-6955765f44-5ztmr           1/1     Running   0           120m
coredns-6955765f44-m6vvr           1/1     Running   0           120m
etcd-minikube                       1/1     Running   0           120m
kube-apiserver-minikube             1/1     Running   0           120m
kube-controller-manager-minikube    1/1     Running   0           120m
kube-proxy-hrfm2                   1/1     Running   0           120m
kube-scheduler-minikube             1/1     Running   0           120m
storage-provisioner                 1/1     Running   0           120m
cs571@ubuntu:~$
```



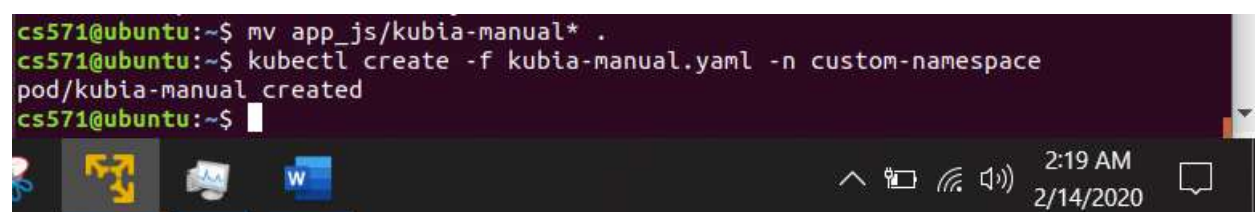
Creating a namespace

```
cs571@ubuntu:~$ vim custom-namespace.yaml
cs571@ubuntu:~$ kubectl create -f custom-namespace.yaml
namespace/custom-namespace created
cs571@ubuntu:~$
```



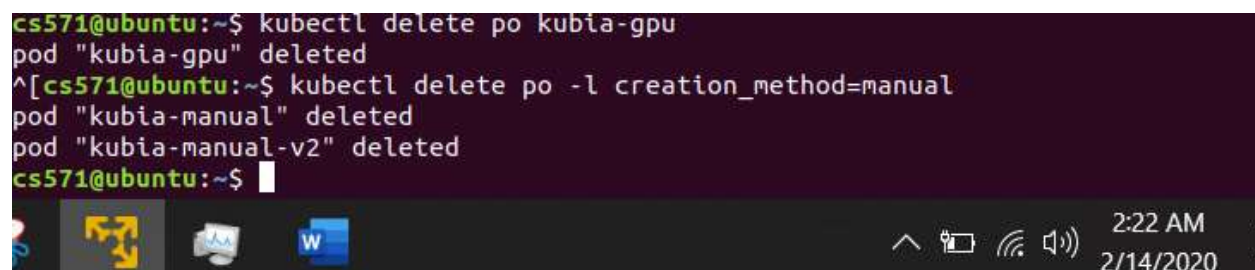
Managing objects in other namespaces

```
cs571@ubuntu:~$ mv app_js/kubia-manual* .
cs571@ubuntu:~$ kubectl create -f kubia-manual.yaml -n custom-namespace
pod/kubia-manual created
cs571@ubuntu:~$
```



Deleting a pod by name

```
cs571@ubuntu:~$ kubectl delete po kubia-gpu
pod "kubia-gpu" deleted
^[cs571@ubuntu:~$ kubectl delete po -l creation_method=manual
pod "kubia-manual" deleted
pod "kubia-manual-v2" deleted
cs571@ubuntu:~$
```



Deleting pods by deleting the whole namespace

```
cs571@ubuntu:~$ kubectl delete ns custom-namespace
namespace "custom-namespace" deleted
```

Deleting all pods in a namespace, while keeping the namespace

```
cs571@ubuntu:~$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
kubia-6ljpm   1/1     Running   0           122m
kubia-gfwrf   1/1     Running   0           122m
kubia-m998k   1/1     Running   0           132m
cs571@ubuntu:~$ kubectl delete po --all
pod "kubia-6ljpm" deleted
pod "kubia-gfwrf" deleted
pod "kubia-m998k" deleted
```

```
cs571@ubuntu:~$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
kubia-8rvn6   1/1     Running   0           48s
kubia-h75q6   1/1     Running   0           48s
kubia-wn9nw   1/1     Running   0           48s
cs571@ubuntu:~$
```

Deleting (almost) all resources in a namespace

```
cs571@ubuntu:~$ kubectl delete all --all
pod "kubia-8rvn6" deleted
pod "kubia-h75q6" deleted
pod "kubia-wn9nw" deleted
replicationcontroller "kubia" deleted
service "kubernetes" deleted
service "kubia-http" deleted
```