Simple Operator – Example 1:

BEFORE STARTING:

1) **Install required tools:** (Short link: https://bit.ly/2F5IUfz)

2) Install Operator SDK (Short link: https://bit.ly/2WuJWri)

For this first example of operator we provide a short and fast way to deploy it:

[LONG VERSION]: full steps to deploy the operator

[SHORT VERSION]: few lines and you will deploy the operator. Minishift needed.

[LONG VERSION]: full steps to deploy the operator

Create and deploy an app-operator using the SDK CLI:

```
$ minishift start
```

"

The server is accessible via web console at:
https://192.168.64.2:8443

You are logged in as:
User: developer
Password: developer

To login as administrator:
oc login -u system:admin
"

```
# (instead of "kubectl" you can also use "oc" command instead)
$ oc login -u system:admin
$ oc new-project myproject
$ oc project myproject

# Create an app-operator project that defines the App CR.
$ mkdir -p $GOPATH/src/github.com/example-inc/
# Create a new app-operator project
$ cd $GOPATH/src/github.com/example-inc/
$ export GO111MODULE=on
$ operator-sdk  --verbose new app-operator
```

INFO[0000] Creating new Go operator 'app-operator'.
INFO[0000] Create cmd/manager/main.go
INFO[0000] Create build/Dockerfile
INFO[0000] Create deploy/service_account.yaml
INFO[0000] Create deploy/role.yaml
INFO[0000] Create deploy/role_binding.yaml
INFO[0000] Create deploy/operator.yaml
INFO[0000] Create pkg/apis/apis.go
INFO[0000] Create pkg/controller/controller.go
INFO[0000] Create version/version.go
INFO[0000] Create .gitignore
INFO[0000] Create Gopkg.toml
INFO[0000] Run dep ensure ...
...

```
$ cd app-operator

# Add a new API for the custom resource AppService
$ operator-sdk --verbose add api --api-version=app.example.com/v1alpha1 --kind=AppService
```

INFO[0000] Generating api version app.example.com/v1alpha1 for kind AppService.
INFO[0001] Created pkg/apis/app/v1alpha1/appservice_types.go
INFO[0001] Created pkg/apis/addtoscheme_app_v1alpha1.go

```
INFO[0001] Created pkg/apis/app/v1alpha1/register.go
INFO[0001] Created pkg/apis/app/v1alpha1/doc.go
INFO[0001] Created deploy/crds/app_v1alpha1_appservice_cr.yaml
...
This will scaffold the AppService resource API under pkg/apis/app/v1alpha1/....

The Operator-SDK automatically creates the following manifests for you under the /deploy
directory.

Custom Resource Definition
Custom Resource
Service Account
Role
RoleBinding
Deployment
Inspect the Custom Resource Definition manifest:
$ cat deploy/crds/app_v1alpha1_appservice_crd.yaml
```

```
# Add a new controller that watches for AppService
$ operator-sdk --verbose add controller --api-version=app.example.com/v1alpha1 --kind=AppService
```

```
INFO[0000] Generating controller version app.example.com/v1alpha1 for kind AppService.
INFO[0000] Created pkg/controller/appservice/appservice_controller.go
INFO[0000] Created pkg/controller/add_appservice.go
INFO[0000] Controller generation complete.
```

```
# Build and push the app-operator image to a public registry directly from DOCKER:
$ sudo docker login
# Since the operator-sdk tool wraps "go mod vendor" in the "operator-sdk new" command, may be
"operator-sdk build" should invoke it too, before running "go build"
$ go mod vendor
#$ operator-sdk build <docker id>/app-operator:v.1.0
 # (e.g., operator-sdk  --verbose build docker.io/spanichella/app-operator )
#$ docker push <docker id>/app-operator:v.1.0
 # (e.g., docker push docker.io/spanichella/app-operator)

 # Update the operator manifest to use the built image name (if you are performing these steps on
 OSX, see note below)
# $ sed -i "" 's|REPLACE_IMAGE|docker.io/<docker id>/app-operator|g' deploy/operator.yaml.
 # (e.g., sed -i "" 's|REPLACE_IMAGE|docker.io/spanichella/app-operator|g' deploy/operator.yaml)

 # Start and logging with Minishift:
 $ minishift start
 (instead of "kubectl" you can also use "oc" command instead)
$ oc login -u system:admin
$ oc new-project myproject
 $ oc project myproject

# Setup Service Account (instead of "kubectl" you can also use "oc" command instead)
 $ kubectl create -f deploy/service_account.yaml
 # Setup RBAC
 $ kubectl create -f deploy/role.yaml
 $ kubectl create -f deploy/role_binding.yaml
 # Setup the CRD
 $ kubectl create -f deploy/crds/app_v1alpha1_appservice_crd.yaml
 # Confirm the CRD was successfully created:
 $ oc get crd
 # Deploy the app-operator
 $ kubectl create -f deploy/operator.yaml

 # Create an AppService CR
 # The default controller will watch for AppService objects and create a pod for each CR
 $ kubectl create -f deploy/crds/app_v1alpha1_appservice_cr.yaml

 # Verify that a pod is created
 $ kubectl get pods
     NAME                              READY   STATUS              RESTARTS   AGE
     app-operator-77fc4bcddf-g7h2h     0/1     ContainerCreating   0          29s

 # Test the new Resource Type
 $ kubectl describe appservice example-appservice
        Name:         example-appservice
        Namespace:    blogpost-project
        Labels:       <none>
        Annotations:  <none>
```

```
API Version:  app.example.com/v1alpha1
Kind:         AppService
Metadata:
  Creation Timestamp:  2019-06-12T18:22:23Z
  Generation:          1
  Resource Version:    1488007
  Self Link:           /apis/app.example.com/v1alpha1/namespaces/blogpost-project/appservices/example-appservice
  UID:                 062bf8e8-8d3f-11e9-8435-ceff9172fca2
Spec:
  Size:  3
  Events:  <none>
```

```
# Cleanup
 kubectl delete -f deploy/crds/app_v1alpha1_appservice_cr.yaml
 kubectl delete -f deploy/operator.yaml
 kubectl delete -f deploy/role.yaml
 kubectl delete -f deploy/role_binding.yaml
 kubectl delete -f deploy/service_account.yaml
 kubectl delete -f deploy/crds/app_v1alpha1_appservice_crd.yaml
```

[END LONG VERSION]

[SHORT VERSION]: few lines and you will deploy the operator

```
# Start and logging with Minishift:
$ minishift start
# (instead of "kubectl" you can also use "oc" command instead)
$ oc login -u system:admin
$ oc new-project myproject
$ oc project myproject
#clone example from "https://github.com/appuio/operator-sdk-examples/tree/master/app-operator"
$ git clone https://github.com/appuio/operator-sdk-examples.git
#copy folder "app-operator" and move it in "$GOPATH/src/github.com/example-inc/"
$ ….
$ cd app-operator
# Setup Service Account (instead of "kubectl" you can also use "oc" command instead)
$ kubectl create -f deploy/service_account.yaml
# Setup RBAC
$ kubectl create -f deploy/role.yaml
$ kubectl create -f deploy/role_binding.yaml
# Setup the CRD
$ kubectl create -f deploy/crds/app_v1alpha1_appservice_crd.yaml
# Deploy the app-operator
$ kubectl create -f deploy/operator.yaml
# Create an AppService CR
# The default controller will watch for AppService objects and create a pod for each CR
$ kubectl create -f deploy/crds/app_v1alpha1_appservice_cr.yaml
# Verify that a pod is created
$ kubectl get pods
        NAME READY STATUS RESTARTS AGE
        app-operator-77fc4bcddf-g7h2h 0/1 ContainerCreating 0 29s
# Test the new Resource Type
$ kubectl describe appservice example-appservice
        Name: example-appservice
        Namespace: blogpost-project
        Labels: <none>
        Annotations: <none>
        API Version: app.example.com/v1alpha1
        Kind: AppService
        Metadata:
        Creation Timestamp: 2019-06-12T18:22:23Z
        Generation: 1
        Resource Version: 1488007
        Self Link: /apis/app.example.com/v1alpha1/namespaces/blogpost-project/appservices/example-appservice
        UID: 062bf8e8-8d3f-11e9-8435-ceff9172fca2
        Spec:
        Size: 3
        Events: <
```

```
# Cleanup
```

```
kubectl delete -f deploy/crds/app_v1alpha1_appservice_cr.yaml
kubectl delete -f deploy/operator.yaml
kubectl delete -f deploy/role.yaml
kubectl delete -f deploy/role_binding.yaml
kubectl delete -f deploy/service_account.yaml
kubectl delete -f deploy/crds/app_v1alpha1_appservice_crd.yaml
oc delete project myproject
```

[END SHORT VERSION]: few lines and you will deploy the operator