Docker and Kubernetes

Onboarding materials on Docker and Kubernetes. Most are used as part of the CMP team onboarding Goals wiki.

Docker

1. Docker Intro 1
2. Docker Intro 2
3. Orientation and setup | Docker Documentation
4. A Docker Tutorial for Beginners
5. Play with Docker Classroom for developers stages 1 and 2

Additional

1. Dockerfile best practices
2. Multi-stage builds
3. Go + Docker

Kubernetes

Basics/Concepts

1. Intro video https://www.youtube.com/watch?v=1xo-0gCVhTU
2. Manning's Kubernetes in Action provides a good and structured introduction to all important Kubernetes concepts
3. Read the Kubernetes basics https://kubernetes.io/docs/concepts/ and do the tutorials https://kubernetes.io/docs/tutorials/
4. Materials from the internal K8S training (good enough for self-study)
5. Internal K8S Dojo green belt
6. Video explaining helm basics https://www.youtube.com/watch?v=ltVwo1Wt0V8
7. Play with Kubernetes https://training.play-with-kubernetes.com/kubernetes-workshop/
8. Lots of hands on tasks (all very useful) can be found in https://www.katacoda.com/courses/kubernetes

API Server

The following links provide a very good insight on how the API server works (on a high level) - it is totally optional to read these but some very good API patterns and practices can be learned from the Kubernetes API (and the pages below)

1. Managing K8S Resources via Declarative Config Files
2. Design doc on Resource Management and Lifecycle
3. API Server Concepts
4. API Server Conventions
5. Accessing the API Server
6. RBAC

Controllers and Operators

1. Quick refresher on all Kubernetes (one of the best vids that wraps up most important basics within 1 hour)
    a. short version (30min) https://www.youtube.com/watch?v=90kZRyPcRZw
    b. long version (50min) https://vimeo.com/245778144/4d1d597c5e
2. CRDs
    a. https://kubernetes.io/docs/concepts/extend-kubernetes/api-extension/custom-resources/
    b. https://kubernetes.io/docs/tasks/access-kubernetes-api/custom-resources/custom-resource-definitions/
3. Controllers
    a. https://engineering.bitnami.com/articles/a-deep-dive-into-kubernetes-controllers.html
    b. https://engineering.bitnami.com/articles/kubewatch-an-example-of-kubernetes-custom-controller.html
    c. https://github.com/kubernetes/sample-controller/blob/master/docs/controller-client-go.md
    d. https://github.com/kubernetes/community/blob/master/contributors/devel/sig-api-machinery/controllers.md
    e. https://trstringer.com/extending-k8s-custom-controllers/
    f. https://medium.com/speechmatics/how-to-write-kubernetes-custom-controllers-in-go-8014c4a04235
4. Operators Framework
    a. https://www.youtube.com/watch?v=i9V4oCa5f9I&feature=emb_logo
    b. https://developers.redhat.com/blog/2018/12/18/introduction-to-the-kubernetes-operator-framework/
    c. https://sdk.operatorframework.io/docs/
        i. https://sdk.operatorframework.io/docs/operator-capabilities/
        ii. https://sdk.operatorframework.io/docs/helm/
        iii. https://sdk.operatorframework.io/docs/golang/
        iv. https://sdk.operatorframework.io/docs/golang/quickstart/
        v. https://sdk.operatorframework.io/docs/golang/references/