

# CMPE 281 - LAB #9 - Docker & Kubernetes (Part 1)

In this Lab, you will be deploying a Gumball Stack with RabbitMQ and MongoDB using three methods:

- Using Docker Command Line with a User Defined Network
- Using Docker Compose
- Using Docker Kubernetes

The Lab Files and Steps are available here:

- <https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9>

## Gumball Docker Command Line

- Use **Source Code** and **Makefile** Steps here: [https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9/gumball\\_makefile](https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9/gumball_makefile) to Deploy Gumball Stack and test using Curl
- View **Docker Containers** (Use "docker ps" with ports)
- View **Curl Test Results**

## Gumball Docker Compose

- Use **Source Code** and **Makefile** Steps here: [https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9/gumball\\_compose](https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9/gumball_compose) to Deploy Gumball Stack using **Docker Compose** and test using Curl.
- View **Docker Containers** (Use "docker ps" with ports)
- View **Curl Test Results**

## Gumball Docker Kubernetes

- Follow instructions here to setup **Docker with Kubernetes**: <https://github.com/paulnguyen/cmpe281/blob/master/labs/lab9/docker/k8sdocker.md>. Note: This assumes you are using Docker Desktop for Mac or Docker Desktop for Windows with Kubernetes integration built-in. If not, you will have to setup **Minikube** and adjust the Makefile steps accordingly.
  - <https://kubernetes.io/docs/tasks/tools/install-minikube/>
- Use **Yaml Config** files and **Makefile** here: [https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9/gumball\\_kubernetes](https://github.com/paulnguyen/cmpe281/tree/master/labs/lab9/gumball_kubernetes) to Deploy Gumball Stack using Docker with Kubernetes and test using Curl.
- View **Kubernetes Dashboard** showing running Pods
- View **Curl Test Results**

## Kubernetes Tutorials

- In the **kubernetes-tutorials** folder, follow the steps in the Markdown file and Makefile to deploy Pods, Deployments, Services and Explore different features of Kubernetes.
- Keep a "**Detailed Journal**" of **Screenshots** and **Command Line Terminal Output of each Step**. Make sure to also show the results of the Deployments or Deletions from the Kubernetes Dashboard.
- In the Journal, create Four Sections for each of the following:
  - **Basics**
  - **Kubernetes 101**
  - **Kubernetes 201**
  - **Gumball Pod Example**
    - For this Example, use the Makefile steps to Deploy the Pod and test the API