Lab-Week#6

There are four deployment strategies to be explained in this Lab:

1. Deployment Update
2. Rolling Update Deployment
3. Blue/Green Deployment
4. Canary Deployment

**Deployment Update (2 marks)**

1. Reset your Kubernetes cluster before starting.
2. Use deploy.yml file to create a deployment (*kubectl apply -f deploy.yml*)
3. Notice and understand the content of the YAML file (in particular the spec part)
4. Use command *kubectl get all*, and notice/understand the created objects
5. Make sure that the web application is working using the web browser (you need to have the service working)
6. Create another version (v2) of the web application, build the image and push it to your docker hub account.
7. Modify deploy.yml to use the new image (v2) and deploy it.
8. Repeat step4 and step5
9. Delete the deployment

**Rolling Update (2 marks)**

1. Use deploy-complete.yml to create a deployment (*kubectl apply -f deploy-complete.yml*)
2. Notice and understand the content and parameters in the YAML file (in particular the rollingUpdate part)
3. Use command *kubectl get all*, and notice/understand the created objects
4. Make sure that the web application is working using the web browser
5. Modify deploy-complete.yml to use the new image (v2) and deploy it. Notice the effect of changing the Rolling update parameters on the deployment.
6. Repeat step3 and step4
7. Use command *kubectl describe deployment [deployment name]* and notice the output
8. Use command *kubectl rollout history deployment [deployment name]* and notice the output
9. Use command *kubectl rollout undo deployment [deployment name] --to-revision=1*
10. Use command *kubectl rollout undo deployment [deployment name]*
11. Delete the deployment
12. Delete the service

***Note:***

[***Look at this link***](https://searchitoperations.techtarget.com/answer/When-to-use-canary-vs-blue-green-vs-rolling-deployment#:~:text=Blue%2Fgreen%2C%20which%20requires%20a,option%20due%20to%20infrastructure%20limitations.) ***before proceeding to the next sections***

**Blue/Green Deployment (3 marks)**

1. Create the Blue part (the current application) by deploying deploy.yml and create a service, make sure that web site is working fine on the browser.
2. Use command *kubectl get all*, and notice/understand the created objects
3. Modify deploy.yml file to use the other image (v2) and change the labels and the deployment name, save it as deploy1.yml, deploy it
4. Steps 3 and 4 will be the Green part (the application we want to switch to)
5. Modify the service yaml file to point to v2 pods and create another service (with another name)
6. Use command *kubectl get all*, and notice/understand the created objects
7. Now delete the previous deployment (so that you will have only the Green deployment), and delete the previous service.
8. Make sure that v2 of the website is working on the browser
9. Delete all objects

**Canary Deployment (3 marks)**

1. Use deploy.yml file to create a deployment (*kubectl apply -f deploy.yml*) – that would be v1 of the application
2. Make sure that the web application is working using the web browser (create the service)
3. Modify deploy.yml to use v2 of the docker image, keep the same label, make replicas 1 pod, save it as canary\_dep.yml then deploy it.
4. Check the website the objects you have (refresh the website several times, you might see the two different applications if you allow sometime to refresh the website)
5. Keep increasing the pods gradually of v2 deployment and redeploy canary\_dep.yml until you get the required number of pods of v2
6. Delete v1 deployment