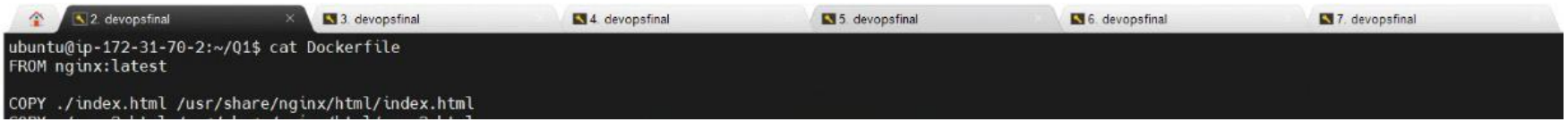
Final Exam (DevOps for Cloud Computing)- Part 2

NOTE: Please provide the files and scripts for each question in separate zip archives with names such as Q1 part2.zip, Q2 part2.zip, etc. You will present your work in class by sharing your screen, however I require that all of your files be uploaded to Blackboard prior to your presentation time.

You have 7 minutes to present all the answers. To save time, I recommend keeping the commands you wish to execute in separate tabs of your terminal, such as one tab for each question that requires executing commands.



1- Create three web pages (this is our application in this exam), each page has two links to other pages. Create a local repo and include the pages you have created in that repo. Through **Jenkins** create a **CI** pipeline in a way that when you push the pages to the remote repo (your Github repo), Jenkins creates an image immidiately. Make sure Jenkins monitors the repo in a very short periods that we do not wait long to kick on the process. Use your choice of a web server (Nginx, Apache, etc) as its base image. **(4 marks).**

2- Through Jenkins push the image you have created in the previous step to your dockerhub account **(4 mark).**

3- Create a Helm chart for a deployment and a service and use the image you pushed in step 2. Deploy the application two times in the Kubernetes through Helm (i.e. we want to create two releases of the same application). For that, you need to parameterize parts of the chart (i.e. do not create two charts) and use **one** helm chart to deploy two releases of the application in Kubernetes **(2 mark).**

4- create a Kubernetes Cron job[1] that runs every **10 seconds** and if it finds a pod that is in the pending mode, it sends an email to you. The email should have the name of the pod, the time and date that the pod is shown as pending.

NOTE: Creating a pod that goes to the pending mode after creation is something you should design (**5 mark**). If you create a cronjob that finds the pending pod and you can prove the cronjob is able to find it (for example by writing the report to a file rather than email) you get **5 mark**. Sending email has 5 marks (**total 15 marks**).

NOTE: If I see similarity in responses, it violates academic integrity and I shall notify the office. Please refrain from consulting with one another, since it will result in identical replies, which is problematic.

[1] https://kubernetes.io/docs/concepts/workloads/controllers/cron-jobs/