POD DESIGN (20%)

The recommend time for this section is **24 minutes** or less.

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1. Create 3 pods with names nginx1,nginx2,nginx3. All of them should have the label app=v1
2. Show all labels of the pods
3. Change the labels of pod 'nginx2' to be app=v2
4. Get the label 'app' for the pods
5. Get only the 'app=v2' pods
6. Remove the 'app' label from the pods we created before
7. Create a pod that will be deployed to a Node that has the label 'accelerator=nvidia-tesla-p100'
8. Annotate pods nginx1, nginx2, nginx3 with "description='my description'" value
9. Check the annotations for pod nginx1
10. Remove the annotations for these three pods
11. Remove these pods to have a clean state in your cluster
12. Create a deployment with image nginx:1.7.8, called nginx, having 2 replicas, defining port 80 as the port that this container exposes (don't create a service for this deployment)
13. View the YAML of this deployment
14. View the YAML of the replica set that was created by this deployment
15. Get the YAML for one of the pods
16. Check how the deployment rollout is going
17. Update the nginx image to nginx:1.7.9
18. Check the rollout history and confirm that the replicas are OK
19. Undo the latest rollout and verify that new pods have the old image (nginx:1.7.8)
20. Do an on purpose update of the deployment with a wrong image nginx:1.91
21. Verify that something's wrong with the rollout
22. Return the deployment to the second revision (number 2) and verify the image is nginx:1.7.9
23. Check the details of the fourth revision (number 4)
24. Scale the deployment to 5 replicas

25. Autoscale the deployment, pods between 5 and 10, targeting CPU utilisation at 80%

26. Pause the rollout of the deployment

27. Update the image to nginx:1.9.1 and check that there's nothing going on, since we paused the rollout

28. Resume the rollout and check that the nginx:1.9.1 image has been applied

29. Delete the deployment and the horizontal pod autoscaler you created

30. Create a job with image perl that runs the command with arguments "perl -Mbignum=bpi -wle 'print bpi(2000)'"

31. Wait till it's done, get the output

32. Create a job with the image busybox that executes the command 'echo hello;sleep 30;echo world'

33. Follow the logs for the pod (you'll wait for 30 seconds)

34. See the status of the job, describe it and see the logs

35. Delete the job

36. Create a job but ensure that it will be automatically terminated by kubernetes if it takes more than 30 seconds to execute

37. Create the same job, make it run 5 times, one after the other. Verify its status and delete it

38. Create the same job, but make it run 5 parallel times

39. Create a cron job with image busybox that runs on a schedule of "*/1 * * * *" and writes 'date; echo Hello from the Kubernetes cluster' to standard output

40. See its logs and delete it