Electronic Voting (e-voting)

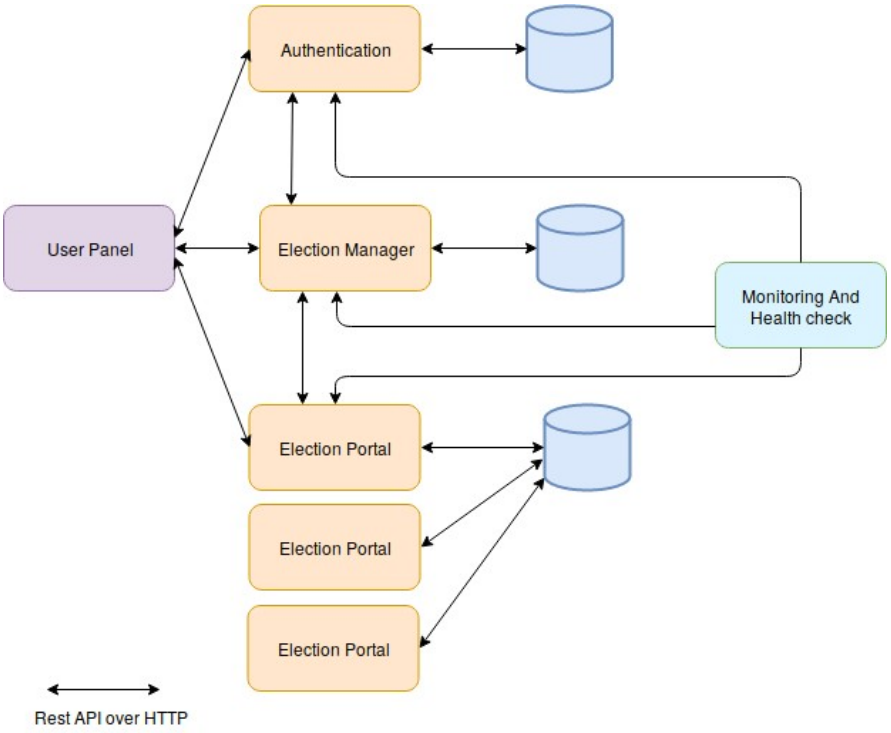
Cloud Computing Course Project, Phase 1
Submission Deadline: 17 khordad , 1398

Project Outline :

In this phase you will learn how to :
1) dockerize projects and create docker images from them
2) deploy a microservice project from docker images of its modules and creating one cohesive application for the end user.

In this phase, we provide you with source code and docker images of other images needed. You will see further explanation later in this document. Let's start then, shall we?

This is the project we want to build :



you can see what the final projects look like in :
193.176.242.68:80 and 193.176.242.68:8181 is a monitoring visualizer

Part 1)
First, you should start with dockerizing your Election Manager module from the last phase. If you have not developed any module for last phase you will not get any points from this section but we have provided an docker image of election manager module for you to use in the next section of project.
After dockerizing the Election Manager module and having the docker image of it, you should upload it to docker hub.

If you want to use your own docker image with other modules for the micro-service project which has extra credit, it is worth noting that there is a chance that you need to tweak it a little bit to work with other modules, since signature of APIs might not be exactly the same as other modules call them. For this reason you can see the documentation of our module to see how are exactly the signatures.

Part 2)

After having all docker images ready, you can start to deploy them... but how exactly? you could run every image with docker run command and configuring it with docker but that doesn't seem practical!

Using Docker compose

for starting to deploy a micro-service project, you could start with docker-compose, however it is only good for test setup. As a result this part of project has extra credit if you submit a YAML file for docker compose.

Using Dokcer swarm

In order to make a cohesive, elastic system, you'll need to use a docker orchestration tool. The one you should use is Docker Swarm. You declare all needed configuration in a YAML file and then you deploy it using Docker Swarm. After that, if you have done everything done this phase is finished. Although this is not as easy as said,first, you need to have a couple of virtual machines, you could create a couple of virtual machines locally on your system that represent your virtual machines on the cloud and install docker on them, note that you should connect them via a network so they can see each other. You could also try a cloud like arvan cloud and deploy it there which is our recommendation or you could deploy in a single node swarm which will not get the full mark. Lastly you should use the "dockersamples/visualizer" image for monitoring your docker containers

Resources :

These are the links to the 4 module source codes on github :

1. https://github.com/ardalanfp/FUM_Election_ElectionPortal
2. https://github.com/ardalanfp/ElectionPortalDb
3. https://github.com/ardalanfp/ElectionManagerDb
4. https://github.com/SayidHosseini/AuthenticationService
5. https://github.com/SayidHosseini/ElectionUIService

These are the names and link of the docker images of modules and their databases :

1. https://hub.docker.com/r/ardalanfp/election_portal_db
2. https://hub.docker.com/r/ardalanfp/election_manager_db
3. https://hub.docker.com/r/ardalanfp/fum_election_electionmanager
4. https://hub.docker.com/r/ardalanfp/fum_election_electionportal
5. https://hub.docker.com/r/sayid/auth
6. https://hub.docker.com/r/sayid/election_ui
7. https://hub.docker.com/_/mongo
8. https://hub.docker.com/r/dockersamples/visualizer

Project Submission :

you should upload your files in git on a new git repository. Add your Dockerfile and YAML files and any descriptions needed in a txt file.