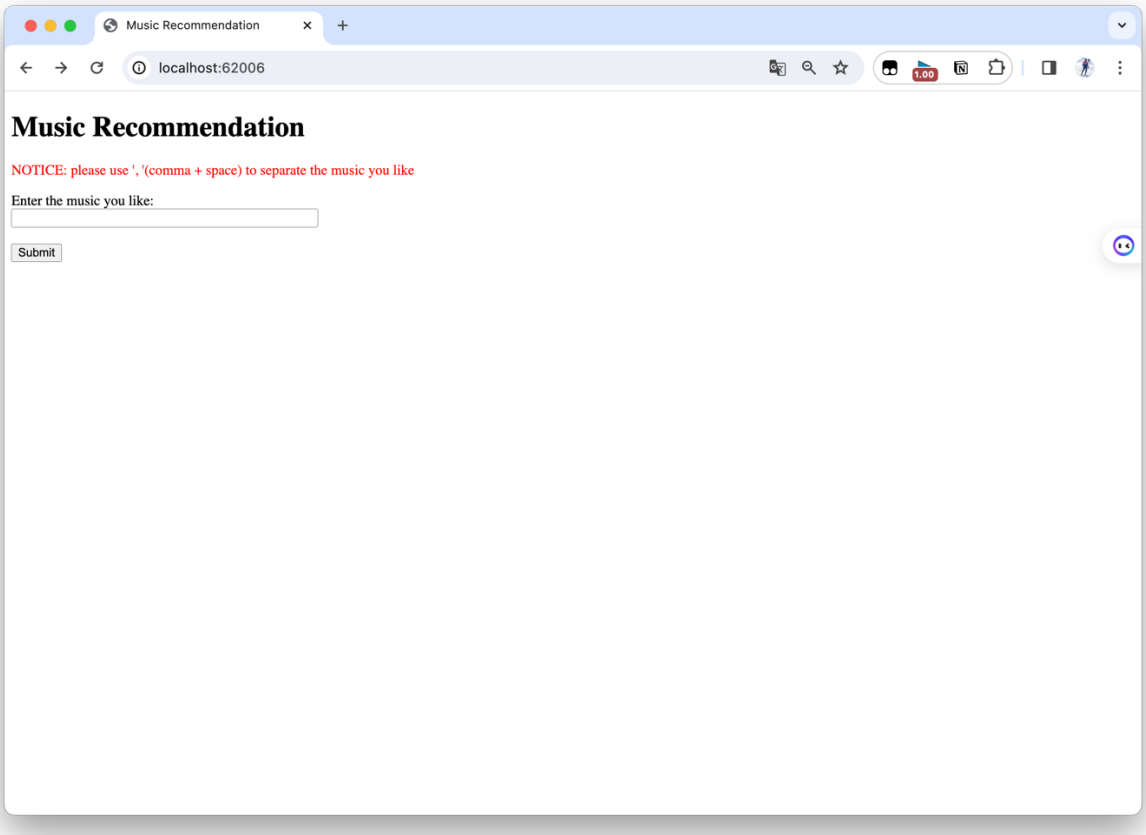
To use the song recommendation system:

1. Create a tunnel to the CLUSTER_IP

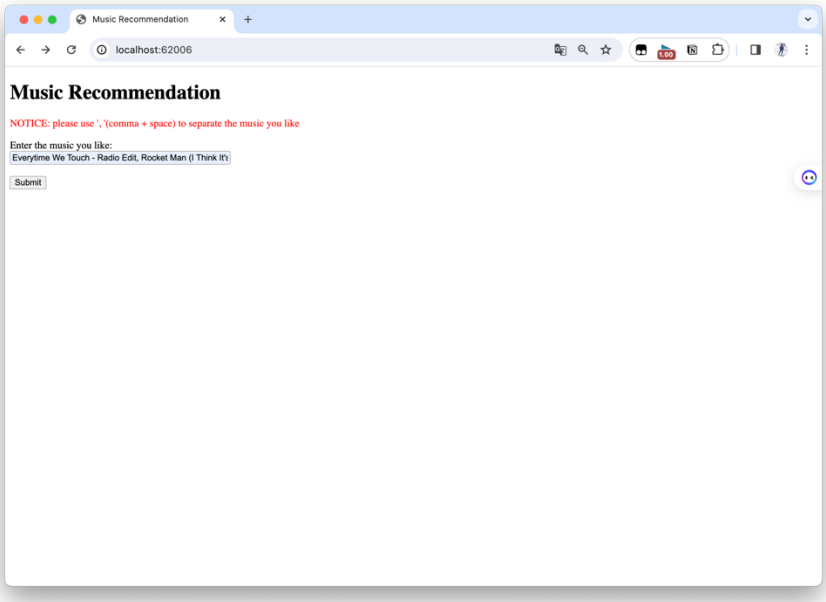
```
xs90@vcm-37920:~/Project2$ kubectl -n xs90 get services
NAME                          TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)     AGE
project2-client-service-xs90    ClusterIP   10.105.108.174   <none>        62006/TCP   115s
song-recommender-service-xs90   ClusterIP   10.101.86.115    <none>        52006/TCP   115s
```

   ssh -fNT -L 62006:10.105.108.174:62006 xs90@vcm-37920.vm.duke.edu

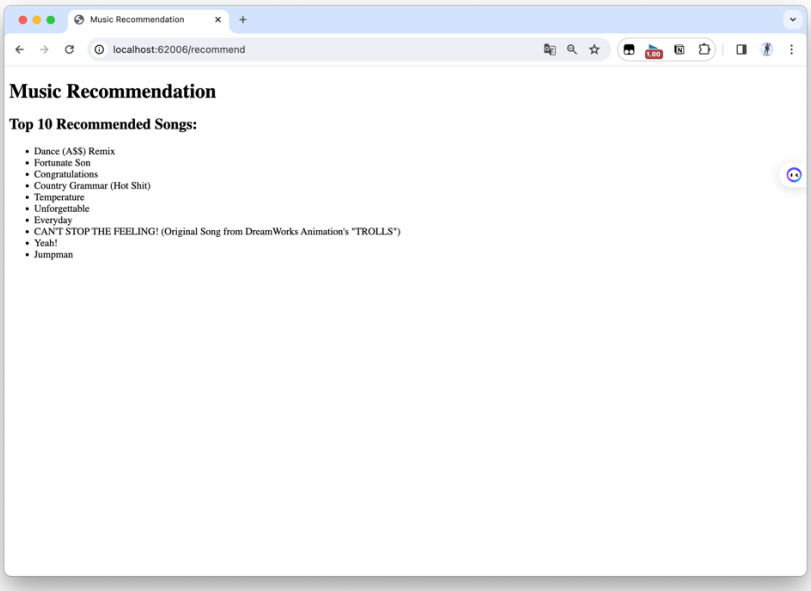
2. Open http://localhost:62006/ on our own computer



3. Enter the music list and press Submit:



4. Result:



ML code folder: /recSystem

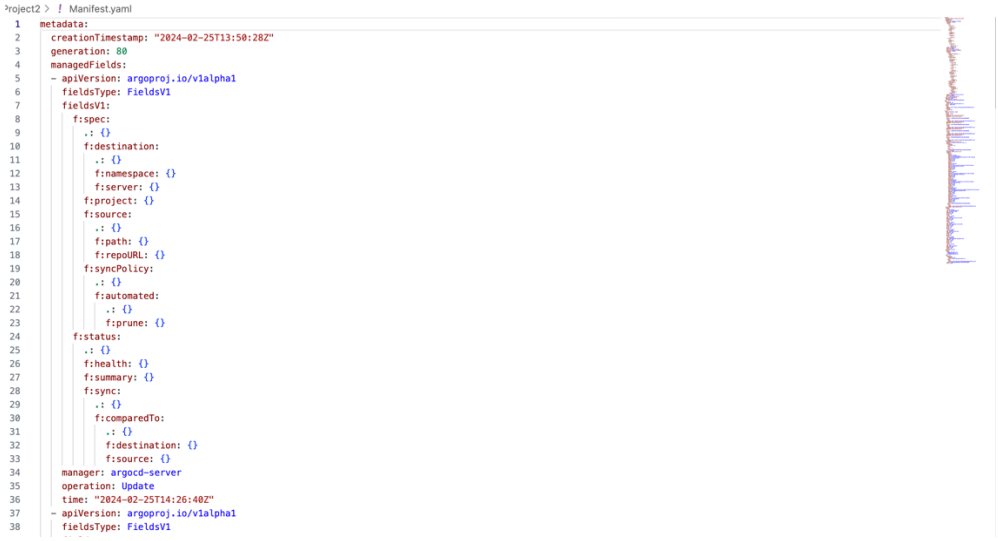
Flask code/ Web front end folder: /client

Server code/back end folder: /server

All the Dockerfiles are in the corresponding folder

The yaml files to control Kubernetes: deployment.yaml, service.yaml

The YAML file describing the ArgoCD application： Manifest.yaml



I have test Argo CD and it does works to deploy the app. When I make changes to the Git Repo: https://github.com/shenxingy/Song_Recommendation, Argo CD would make adjustments.

Update the number of replicas: very fast.

Update the dataset of playlists: slow, need to update image and retrain the ml model (using matrix factorization).

Update one of the container images: slow.