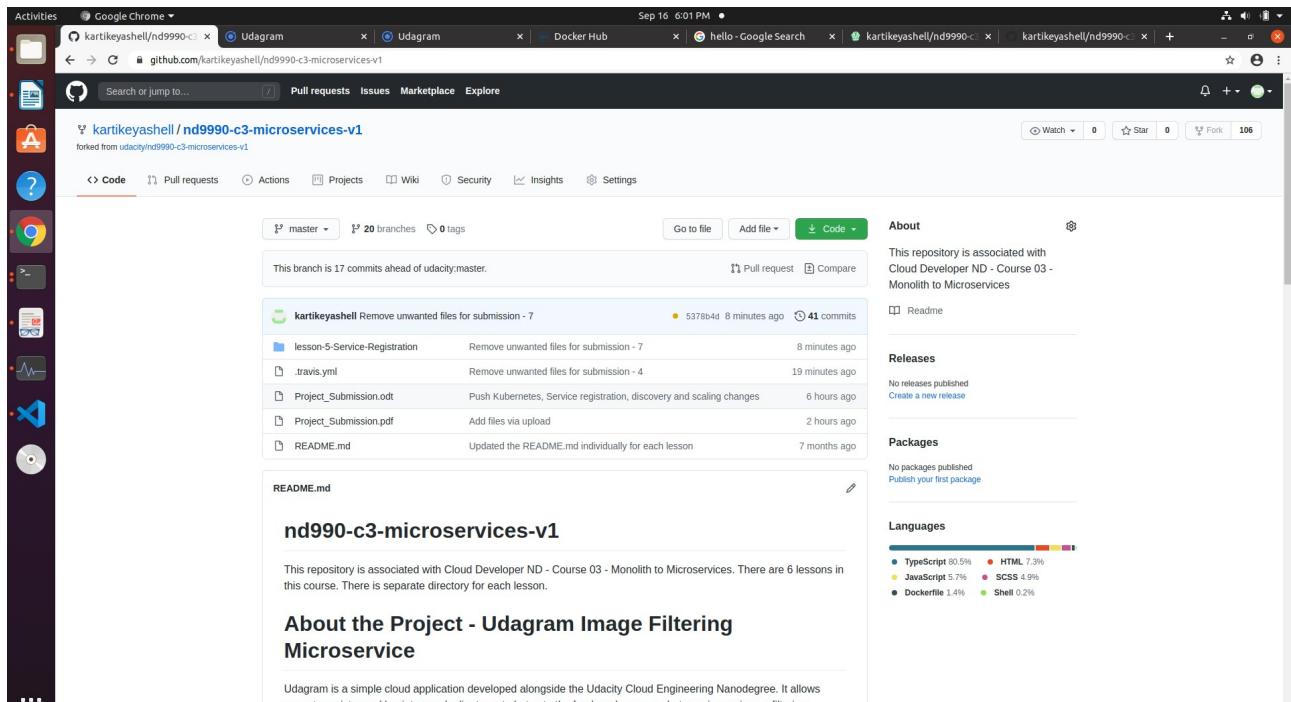


Course3: Refactor Udagram App into Microservices and Deploy

1. CI/CD, Github

- Git hub main repository: <https://github.com/kartikeyashell/nd9990-c3-microservices-v1>



- Using the starter files provided at the start of the course (which had lesson-1, lesson-2 etc.), changes were made to the exercises folders in the respective modules. For the purpose of submission, all changes were consolidated under **lesson-5-Service-Registration/exercises** folder in the repository. Apologies for the multiple redundant file deletions in the repository.

- TravisCI successful build

The screenshot shows the TravisCI web interface for the repository `kartikeyashell/nd9990-c3-microservices-v1`. The build status is **passing**. The build log shows the following steps:

- Worker information
- Build system information
- 110
- 111
- 112 \$ sudo systemctl start docker
- 113 \$ git clone --depth=50 --branch=master https://github.com/kartikeyashell/nd9990-c3-microservices-v1.git
- 114
- 115 Setting environment variables from .travis.yml
- 116 \$ export DOCKER_COMPOSE_VERSION=1.23.2
- 117

The build log also shows the following steps:

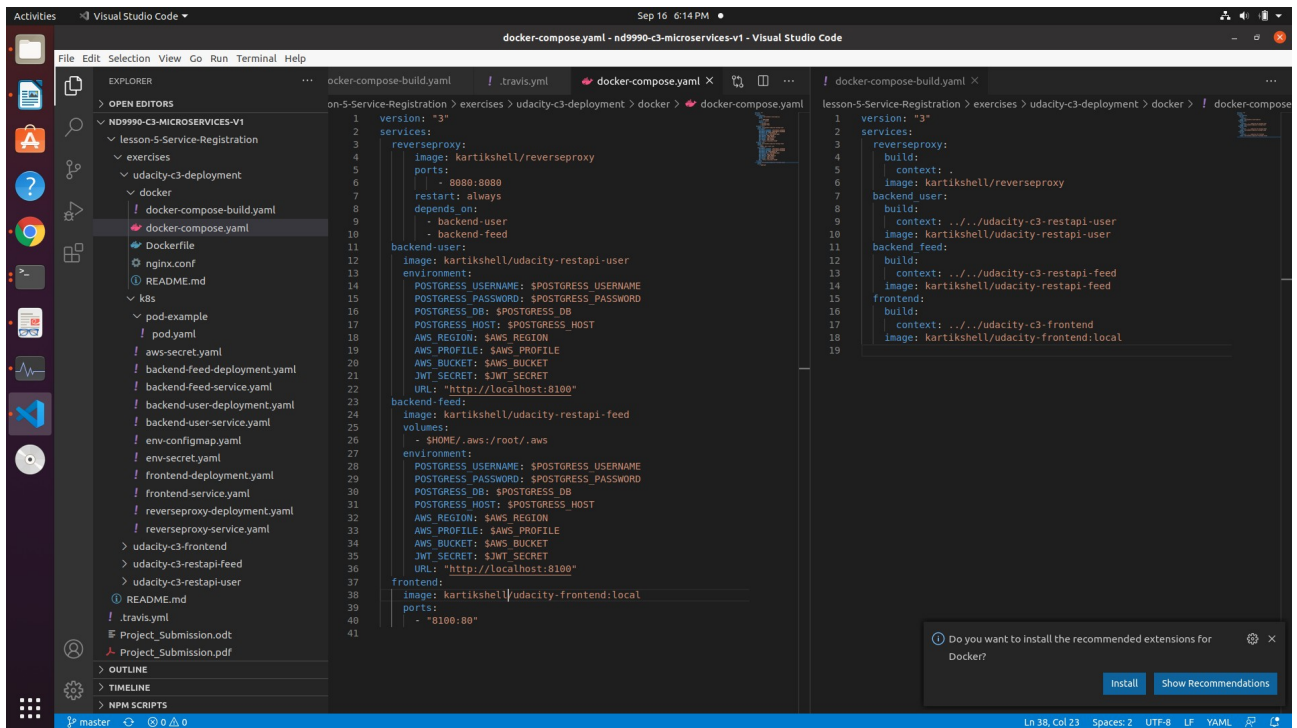
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The screenshot shows the TravisCI web interface for the repository `kartikeyashell/nd9990-c3-microservices-v1`. The build status is **passing**. The build log shows the following steps:

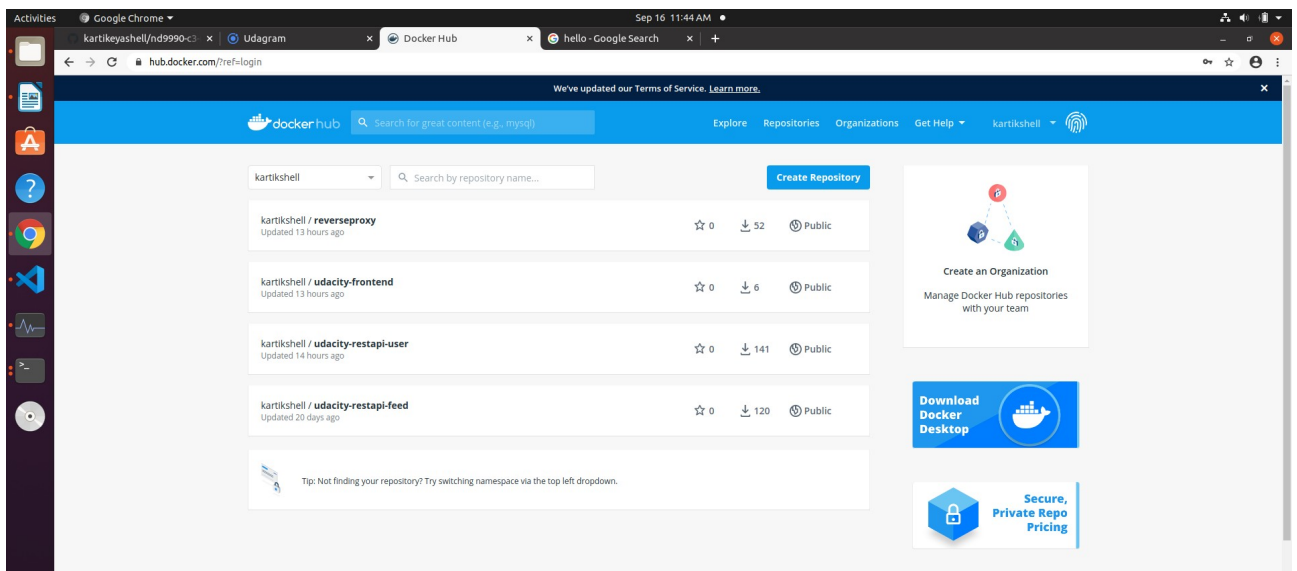
- Worker information
- Build system information
- 110
- 111
- 112 \$ sudo systemctl start docker
- 113 \$ git clone --depth=50 --branch=master https://github.com/kartikeyashell/nd9990-c3-microservices-v1.git
- 114
- 115 Setting environment variables from .travis.yml
- 116 \$ export DOCKER_COMPOSE_VERSION=1.23.2
- 117
- 118 \$ bash -c 'echo \$BASH_VERSION'
- 119 4.3.48(1)-release
- 120
- 121
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- 130
- 131 \$ docker -v && docker-compose -v
- 132 \$ sudo rm -rf /usr/local/bin/docker-compose
- 133 \$ curl -L https://github.com/docker/compose/releases/download/\${DOCKER_COMPOSE_VERSION}/docker-comp
- 134 \$ chmod +x docker-compose
- 135 \$ sudo mv docker-compose /usr/local/bin
- 136 \$ curl -LO https://storage.googleapis.com/kubernetes-release/release/\${curl -s
- 137 \$ chmod +x ./kubectl
- 138 \$ sudo mv ./kubectl /usr/local/bin/kubectl
- 139
- 140 \$ docker-compose -f lesson-5-Service-Registration/exercises/udacity-c3-deployment/docker-
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2. Container

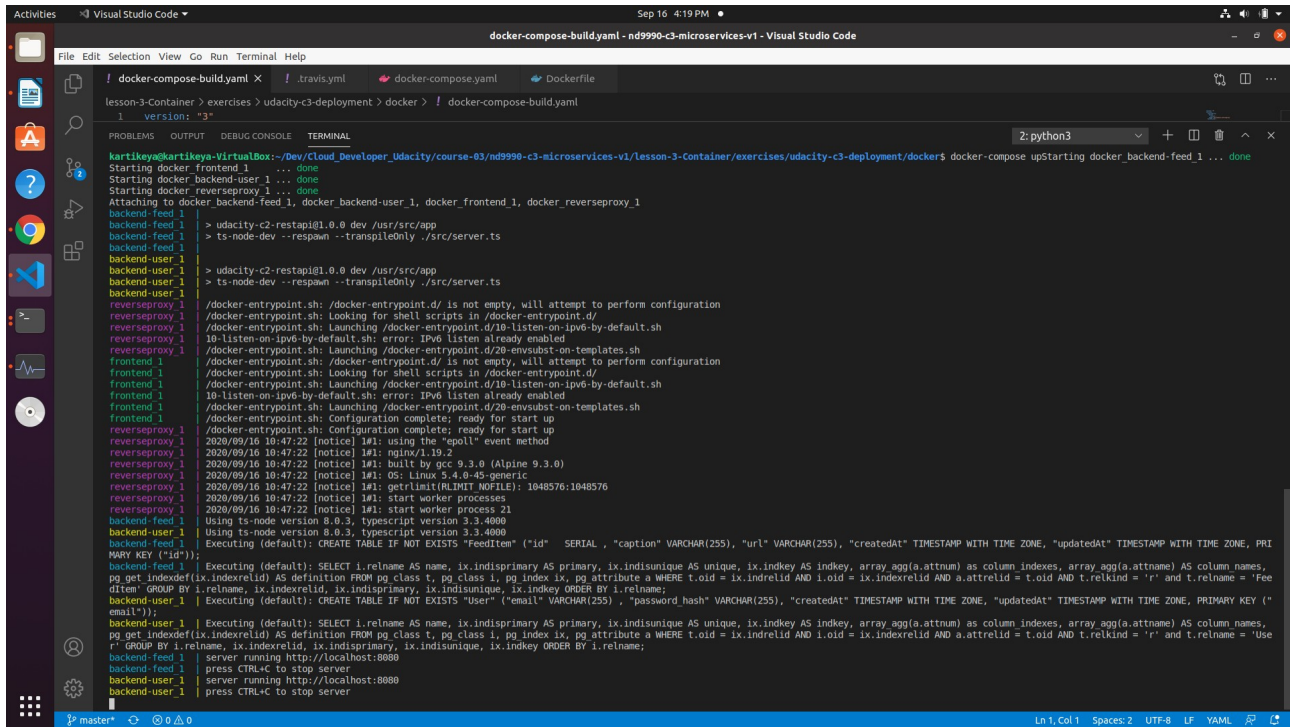
- Docker files, docker-compose.yaml, docker-compose-build.yaml



- Docker hub screenshot: All images pushed



- docker-compose up after building the images

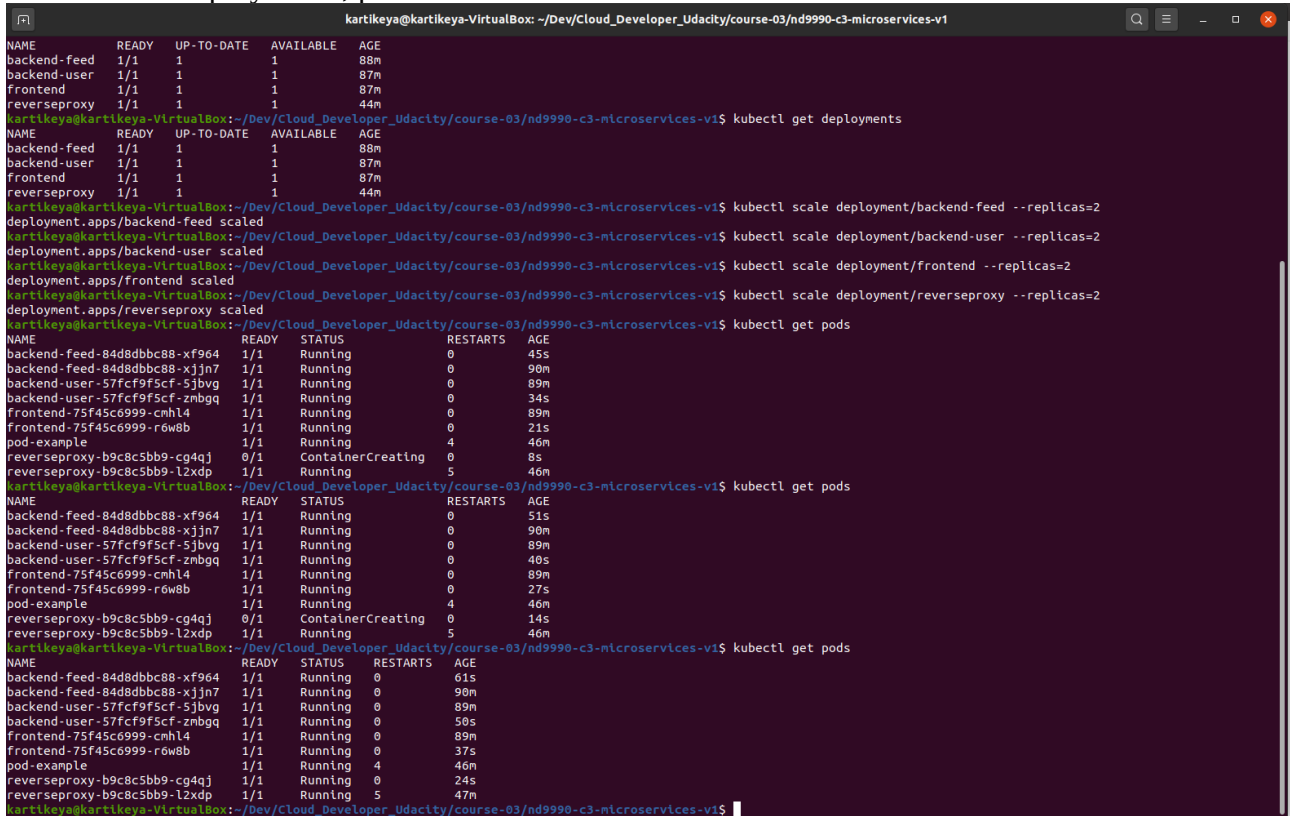


```
docker-compose-build.yaml - nd9990-c3-microservices-v1 - Visual Studio Code
File Edit Selection View Go Run Terminal Help
lesson-3-Container > exercises > udacity-c3-deployment > docker > ! docker-compose-build.yaml
1 version: "3"

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1/lesson-3-Container/exercises/udacity-c3-deployment/docker$ docker-compose upstarting docker backend-feed 1 ... done
Starting docker frontend 1 ... done
Starting docker backend-user 1 ... done
Starting docker reverseproxy 1 ... done
Attaching to docker_backend-feed_1, docker_backend-user_1, docker_frontend_1, docker_reverseproxy_1
backend-feed_1 | > udacity-c2-restapi@1.0.0 dev /usr/src/app
backend-feed_1 | > ts-node-dev --respawn --transpileOnly ./src/server.ts
backend-user_1 | > udacity-c2-restapi@1.0.0 dev /usr/src/app
backend-user_1 | > ts-node-dev --respawn --transpileOnly ./src/server.ts
reverseproxy_1 | /docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
reverseproxy_1 | /docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
reverseproxy_1 | /docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
reverseproxy_1 | 10-listen-on-ipv6-by-default.sh: error: IPv6 listen already enabled
reverseproxy_1 | /docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
reverseproxy_1 | /docker-entrypoint.sh: Configuration complete; ready for start up
reverseproxy_1 | /docker-entrypoint.sh: Configuration complete; ready for start up
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: using the "poll" event method
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: nginx/1.19.2
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: built by gcc 9.3.0 (Alpine 9.3.0)
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: OS: Linux 5.4.0-45-generic
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: start worker processes
reverseproxy_1 | 2020/09/16 10:47:22 [notice] 1#1: start worker process 21
backend-feed_1 | Using ts-node version 8.0.3, typescript version 3.3.4000
backend-user_1 | Using ts-node version 8.0.3, typescript version 3.3.4000
backend-feed_1 | Executing (default): CREATE TABLE IF NOT EXISTS "FeedItem" ("id" SERIAL , "caption" VARCHAR(255), "url" VARCHAR(255), "createdAt" TIMESTAMPT WITH TIME ZONE, "updatedAt" TIMESTAMPT WITH TIME ZONE, PRI
PRIMARY KEY ("id"));
backend-feed_1 | Executing (default): SELECT i.relname AS name, ix.indisprimary AS primary, ix.indisunique AS unique, ix.index AS index, array_agg(a.attname) AS column_indexes, array_agg(a.attname) AS column_names,
pg_get_indexdef(ix.indexrelid) AS definition FROM pg_class t, pg_class i, pg_index ix, pg_attribute a WHERE t.oid = ix.indexrelid AND a.attrelid = t.oid AND t.relkind = 'r' and t.relname = 'FeedItem' GROUP BY i.relname, ix.indexrelid, ix.indisprimary, ix.indisunique, ix.index ORDER BY i.relname;
backend-user_1 | Executing (default): CREATE TABLE IF NOT EXISTS "User" ("email" VARCHAR(255) , "passwordHash" VARCHAR(255), "createdAt" TIMESTAMPT WITH TIME ZONE, "updatedAt" TIMESTAMPT WITH TIME ZONE, PRIMARY KEY ("email"));
backend-user_1 | Executing (default): SELECT i.relname AS name, ix.indisprimary AS primary, ix.indisunique AS unique, ix.index AS index, array_agg(a.attname) AS column_indexes, array_agg(a.attname) AS column_names,
pg_get_indexdef(ix.indexrelid) AS definition FROM pg_class t, pg_class i, pg_index ix, pg_attribute a WHERE t.oid = ix.indexrelid AND a.attrelid = t.oid AND t.relkind = 'r' and t.relname = 'User' GROUP BY i.relname, ix.indexrelid, ix.indisprimary, ix.indisunique, ix.index ORDER BY i.relname;
backend-feed_1 | server running http://localhost:8080
backend-user_1 | press CTRL-C to stop server
backend-feed_1 | server running http://localhost:8080
backend-user_1 | press CTRL-C to stop server
```

3. Deployment

- Kubernetes deployments, pods



```
NAME READY UP-TO-DATE AVAILABLE AGE
backend-feed 1/1 1 1 88m
backend-user 1/1 1 1 87m
frontend 1/1 1 1 87m
reverseproxy 1/1 1 1 44m

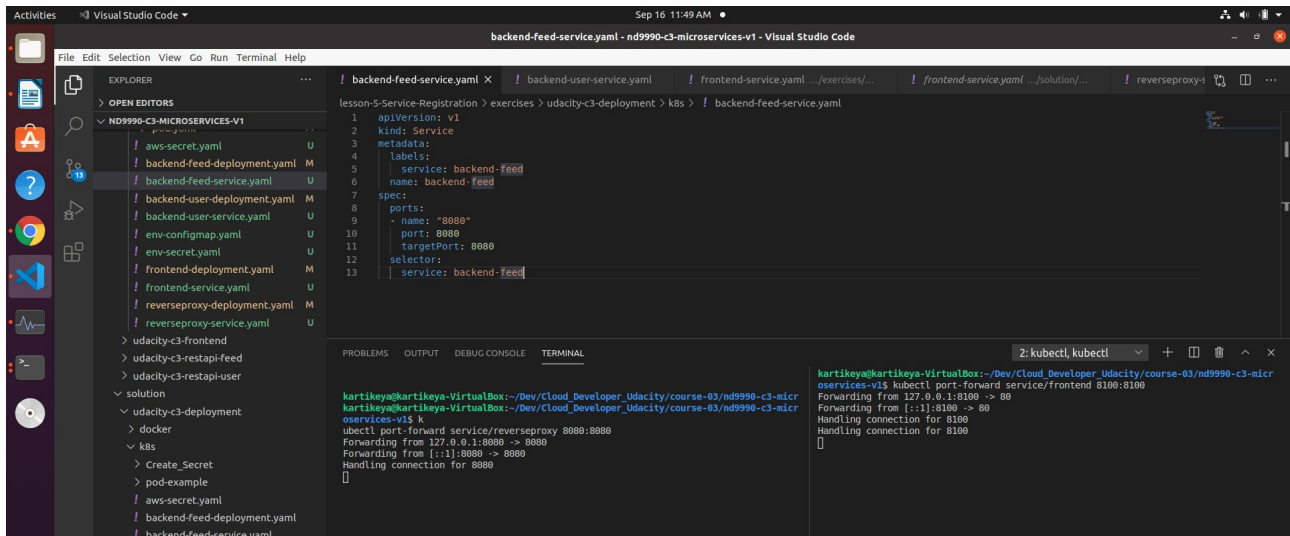
kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
backend-feed 1/1 1 1 88m
backend-user 1/1 1 1 87m
frontend 1/1 1 1 87m
reverseproxy 1/1 1 1 44m

kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl scale deployment/backend-feed --replicas=2
deployment.apps/backend-feed scaled
kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl scale deployment/backend-user --replicas=2
deployment.apps/backend-user scaled
kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl scale deployment/frontend --replicas=2
deployment.apps/frontend scaled
kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl scale deployment/reverseproxy --replicas=2
deployment.apps/reverseproxy scaled
kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl get pods
NAME READY STATUS RESTARTS AGE
backend-feed-84d8dbbc88-xf964 1/1 Running 0 45s
backend-feed-84d8dbbc88-xjjn7 1/1 Running 0 90m
backend-user-57fcf9f5cf-5jbgv 1/1 Running 0 89m
backend-user-57fcf9f5cf-zmbgq 1/1 Running 0 34s
frontend-75f45c6999-cmh14 1/1 Running 0 89m
frontend-75f45c6999-r6w8b 1/1 Running 0 21s
pod-example 1/1 Running 4 46m
reverseproxy-b9c8c5bb9-cg4qj 0/1 ContainerCreating 0 8s
reverseproxy-b9c8c5bb9-lzxdp 1/1 Running 5 46m

kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl get pods
NAME READY STATUS RESTARTS AGE
backend-feed-84d8dbbc88-xf964 1/1 Running 0 51s
backend-feed-84d8dbbc88-xjjn7 1/1 Running 0 90m
backend-user-57fcf9f5cf-5jbgv 1/1 Running 0 89m
backend-user-57fcf9f5cf-zmbgq 1/1 Running 0 40s
frontend-75f45c6999-cmh14 1/1 Running 0 89m
frontend-75f45c6999-r6w8b 1/1 Running 0 27s
pod-example 1/1 Running 4 46m
reverseproxy-b9c8c5bb9-cg4qj 0/1 ContainerCreating 0 14s
reverseproxy-b9c8c5bb9-lzxdp 1/1 Running 5 46m

kartikkeya@kartikkeya-VirtualBox: ~/Dev/Cloud_Developer_Udacity/course-03/nd9990-c3-microservices-v1$ kubectl get pods
NAME READY STATUS RESTARTS AGE
backend-feed-84d8dbbc88-xf964 1/1 Running 0 61s
backend-feed-84d8dbbc88-xjjn7 1/1 Running 0 90m
backend-user-57fcf9f5cf-5jbgv 1/1 Running 0 89m
backend-user-57fcf9f5cf-zmbgq 1/1 Running 0 50s
frontend-75f45c6999-cmh14 1/1 Running 0 89m
frontend-75f45c6999-r6w8b 1/1 Running 0 37s
pod-example 1/1 Running 4 46m
reverseproxy-b9c8c5bb9-cg4qj 1/1 Running 0 24s
reverseproxy-b9c8c5bb9-lzxdp 1/1 Running 5 47m
```

- Port forwarding



- Application

