Assignment 2

Tasks: Use Docker Compose to manage a multi-service application.

1. Define a multi-service application consisting of at least three services (e.g., a web app, a database, and a caching service) in a docker-compose.yml file.
2. Configure the services with appropriate environment variables and networking settings.
3. Build and run the Docker Compose application.
4. Test the connectivity between the services and the functionality of the application.

Steps to use docker compose for multi-service application:

1. I took my own react nodejs mysql and redis application.
2. I added Dockerfile to each api and client directory.
   /api/Dockerfile:

   ```
   FROM node:latest
   WORKDIR /app
   COPY package.json ./
   RUN npm install
   COPY . .
   EXPOSE 8800
   CMD [ "npm", "start" ]
   ```

   /client/Dockerfile:

   ```
   FROM node:latest
   WORKDIR /app
   COPY package.json ./
   RUN npm install
   COPY . .
   EXPOSE 3000
   CMD [ "npm", "start" ]
   ```

3. Now create a new Directory (docker-compose-app) and add docker-compose.yaml
   ./docker-compose-app/docker-compose.yaml:

   ```
   version: "3.0"
   services:
     #mysql service
     mysqldb:
   ```

```yaml
    image: mysql:8.0
    container_name: mysqlcontainer
    restart: unless-stopped
    # creating volumes to keep the database data
consistent and intializing the database with initial data
    volumes:
      - ./mydb.sql:/docker-entrypoint-initdb.d/0_init.sql
      - $HOME/database:/var/lib/mysql
    # exposing differenct port because port is already in
use
    ports:
      - 3900:${MYSQL_PORT}
    expose:
      - ${MYSQL_PORT}
    environment:
      MYSQL_DATABASE: ${MYSQL_DATABASE}
      MYSQL_USER: ${MYSQL_USER}
      MYSQL_PASSWORD: ${MYSQL_PASSWORD}
      MYSQL_ROOT_PASSWORD: ${MYSQL_ROOT_PASSWORD}
      SERVICE_TAGS: dev
      SERVICE_NAME: mysqldb
    # using custom bridge network to isolate the
containers
    networks:
      - internalnet

  nodejsapi:
    container_name: node-js-api
    build: ../api/
    image: jainilp12/nodejsapi:1.0
    ports:
      - 8800:${SERVER_PORT}
    expose:
      - ${SERVER_PORT}
    environment:
      DB_HOST: mysqldb
      DB_PORT: ${MYSQL_PORT}
      DB_NAME: ${MYSQL_DATABASE}
      DB_USER: ${MYSQL_USER}
      DB_PASSWORD: ${MYSQL_PASSWORD}
```

```yaml
      REDIS_HOST: ${REDIS_HOST}
      REDIS_PORT: ${REDIS_PORT}
      REDIS_PASSWORD: ${REDIS_PASSWORD}

      SERVICE_TAGS: dev
      SERVICE_NAME: nodejsapi
      SERVER_PORT: ${SERVER_PORT}
    networks:
      - internalnet
    depends_on:
      - mysqldb
      - redisdb

  reactwebapp:
    container_name: react-web-app-container
    build: ../client/
    image: jainilp12/reactwebapp:1.0
    ports:
      - 3000:${REACT_PORT}
    expose:
      - ${REACT_PORT}
    environment:
      SERVICE_TAGS: dev
      SERVICE_NAME: reactwebapp
    networks:
      - internalnet
    depends_on:
      - nodejsapi

  redisdb:
    image: redis:latest
    container_name: rediscontainer
    restart: always
    ports:
      - 6379:${REDIS_PORT}
    environment:
      SERVICE_TAGS: dev
      SERVICE_NAME: redisdb
    volumes:
      - ./cache:/data
    networks:
```

```
        - internalnet

networks:
  internalnet:
    driver: bridge
```

4. Now use docker compose up to run/build/pull all the containers.

docker compose up -d -build

```
PS C:\Users\promact\delthis\docker-compose-app> docker compose up -d --build
time="2024-02-27T15:10:28+05:30" level=warning msg="The \"HOME\" variable is not set. Defaulting to a blank string."
[+] Running 21/21
 ✓ mysqldb 11 layers [###########]      0B/0B      Pulled                                                           41.5s
   ✓ 81badc5f380f Pull complete                                                                                      14.5s
   ✓ 6a81d7aa4708 Pull complete                                                                                       4.9s
   ✓ a7d2a50df679 Pull complete                                                                                       5.9s
   ✓ 4b16e7be1767 Pull complete                                                                                       7.3s
   ✓ 3205e7b85ef5 Pull complete                                                                                       7.4s
   ✓ d8b021d6b4e1 Pull complete                                                                                       8.1s
   ✓ 8df9a740b0d6 Pull complete                                                                                      19.5s
   ✓ 734b576d7682 Pull complete                                                                                       9.0s
   ✓ c88d6cb0b217 Pull complete                                                                                      17.5s
   ✓ 20e828a3ad27 Pull complete                                                                                      15.6s
   ✓ fb468cb0f95b Pull complete                                                                                      16.7s
 ✓ redisdb 8 layers [########]        0B/0B      Pulled                                                             20.3s
   ✓ e1caac4eb9d2 Pull complete                                                                                       2.7s
   ✓ 7469c6c5b625 Pull complete                                                                                       0.9s
   ✓ a3d1b68c4a62 Pull complete                                                                                       0.9s
   ✓ 152cbe749752 Pull complete                                                                                       1.9s
   ✓ 7218480dfba1 Pull complete                                                                                       6.4s
   ✓ e61c48a0d344 Pull complete                                                                                       2.9s
   ✓ 4f4fb700ef54 Pull complete                                                                                       3.7s
   ✓ 82adb0efabd8 Pull complete                                                                                       4.3s
2024/02/27 15:11:10 http2: server: error reading preface from client //./pipe/docker_engine: file has already been closed
[+] Building 3.2s (18/18) FINISHED                                                                         docker:default
 => [nodejsapi internal] load build definition from Dockerfile                                                       0.0s
 => => transferring dockerfile: 153B                                                                                 0.0s
 => [reactwebapp internal] load metadata for docker.io/library/node:latest                                          2.2s
 => [nodejsapi auth] library/node:pull token for registry-1.docker.io                                               0.0s
 => [nodejsapi internal] load .dockerignore                                                                          0.0s
 => => transferring context: 53B                                                                                     0.0s
 => [reactwebapp 1/5] FROM docker.io/library/node:latest@sha256:65998e325b06014d4f1417a8a6afb1540d1ac66521cca76f2221a6953947f9ee  0.0s
 => [nodejsapi internal] load build context                                                                          0.0s
 => => transferring context: 701B                                                                                    0.0s
 => [reactwebapp internal] load metadata for docker.io/library/node:latest                                          2.2s
 => [nodejsapi auth] library/node:pull token for registry-1.docker.io                                               0.0s
 => [nodejsapi internal] load .dockerignore                                                                          0.0s
 => => transferring context: 53B                                                                                     0.0s
 => [reactwebapp 1/5] FROM docker.io/library/node:latest@sha256:65998e325b06014d4f1417a8a6afb1540d1ac66521cca76f2221a6953947f9ee  0.0s
 => [nodejsapi internal] load build context                                                                          0.0s
 => => transferring context: 701B                                                                                    0.0s
 => CACHED [reactwebapp 2/5] WORKDIR /app                                                                            0.0s
 => CACHED [nodejsapi 3/5] COPY package.json ./                                                                      0.0s
 => CACHED [nodejsapi 4/5] RUN npm install                                                                           0.0s
 => CACHED [nodejsapi 5/5] COPY . .                                                                                  0.0s
 => [nodejsapi] exporting to image                                                                                   0.0s
 => => exporting layers                                                                                              0.0s
 => => writing image sha256:49d21f1cd669980ef0832ee90885a15c13ae7723942e3c1f06ccbe49229b01b7                         0.0s
 => => naming to docker.io/jainilp12/nodejsapi:1.0                                                                   0.0s
 => [reactwebapp internal] load build definition from Dockerfile                                                     0.0s
 => => transferring dockerfile: 153B                                                                                 0.0s
 => [reactwebapp internal] load .dockerignore                                                                        0.0s
 => => transferring context: 53B                                                                                     0.0s
 => [reactwebapp internal] load build context                                                                        0.0s
 => => transferring context: 4.09kB                                                                                  0.0s
 => CACHED [reactwebapp 3/5] COPY package.json ./                                                                    0.0s
 => CACHED [reactwebapp 4/5] RUN npm install                                                                         0.0s
 => CACHED [reactwebapp 5/5] COPY . .                                                                                0.0s
 => [reactwebapp] exporting to image                                                                                 0.0s
 => => exporting layers                                                                                              0.0s
 => => writing image sha256:23eb3fbbd27b2661c2dc9fcf6e58771bbfad59b745f6ed8f7908cd3401641b31                         0.0s
 => => naming to docker.io/jainilp12/reactwebapp:1.0                                                                 0.0s
[+] Running 4/5
 - Network docker-compose-app_internalnet  Created                                                                   3.8s
 ✓ Container mysqlcontainer              Started                                                                     1.7s
 ✓ Container rediscontainer              Started                                                                     1.6s
 ✓ Container node-js-api                 Started                                                                     1.8s
 ✓ Container react-web-app-container     Started                                                                     2.8s
PS C:\Users\promact\delthis\docker-compose-app> |
```

	Name	Image	Status	CPU (%)	Port(s)	Last	Actions
☑	docker-compose-app		Running (4/4)	1.13%		7 mir	■ ⋮ 🗑
☑	mysqlcontainer 70a739e4fd4d	mysql:8.0	Running	0.92%	3900:3306	7 mir	■ ⋮ 🗑
☑	rediscontainer dce683cec68e	redis:latest	Running	0.2%	6379:6379	7 mir	■ ⋮ 🗑
☑	node-js-api ec996a2e040d	jainilp12/nc	Running	0%	8800:8800	7 mir	■ ⋮ 🗑
☑	react-web-app-container 13c5ceb2097f	jainilp12/re	Running	0.01%	3000:3000	7 mir	■ ⋮ 🗑

node-js-api

jainilp12/nodejsapi:1.0
ec996a2e040d
8800:8800

STATUS
Running (8 minutes ago)

Logs Inspect Bind mounts Exec Files Stats

```
2024-02-27 15:11:18
2024-02-27 15:11:18 > api@1.0.0 start
2024-02-27 15:11:18 > node index.js
2024-02-27 15:11:18
2024-02-27 15:11:21 Connected t0 8800
```

react-web-app-container

jainilp12/reactwebapp:1.0
13c5ceb2097f
3000:3000

STATUS
Running (8 minutes ago)

Logs Inspect Bind mounts Exec Files Stats

```
2024-02-27 15:11:50 src/pages/Home.jsx
2024-02-27 15:11:50    Line 2:29:  'useSearchParams' is defined but never used   no-unused-vars
2024-02-27 15:11:50
2024-02-27 15:11:50 src/pages/Login.jsx
2024-02-27 15:11:50    Line 1:8:   'axios' is defined but never used   no-unused-vars
2024-02-27 15:11:50
2024-02-27 15:11:50 src/pages/Register.jsx
2024-02-27 15:11:50    Line 25:13:  'res' is assigned a value but never used   no-unused-vars
2024-02-27 15:11:50
2024-02-27 15:11:50 src/pages/Single.jsx
2024-02-27 15:11:50    Line 4:5:    'faC' is defined but never used
     no-unused-vars
2024-02-27 15:11:50    Line 5:5:    'faCoffee' is defined but never used
     no-unused-vars
2024-02-27 15:11:50    Line 7:5:    'faMonument' is defined but never used
     no-unused-vars
2024-02-27 15:11:50    Line 9:5:    'faTrashAlt' is defined but never used
     no-unused-vars
2024-02-27 15:11:50    Line 11:16:  'Navigate' is defined but never used
     no-unused-vars
2024-02-27 15:11:50    Line 62:13:  img elements must have an alt prop, either with meaningful text, or an empty string for decorative ima
ges  jsx-a11y/alt-text
2024-02-27 15:11:50    Line 64:17:  img elements must have an alt prop, either with meaningful text, or an empty string for decorative ima
ges  jsx-a11y/alt-text
2024-02-27 15:11:50
2024-02-27 15:11:50 webpack compiled with 2 warnings
```

rediscontainer
redis:latest
dce683cec68e

6379:6379

STATUS
Running (8 minutes ago)

Logs | Inspect | Bind mounts | Exec | Files | Stats

```
2024-02-27 15:11:16 1:C 27 Feb 2024 09:41:16.018 * oO0oOo0OoOo0Oo Redis is starting oO0oOo0OoOo0Oo
2024-02-27 15:11:16 1:C 27 Feb 2024 09:41:16.018 * Redis version=7.2.4, bits=64, commit=00000000, modified=0, pid=1, just started
2024-02-27 15:11:16 1:C 27 Feb 2024 09:41:16.018 # Warning: no config file specified, using the default config. In order to specify a con
fig file use redis-server /path/to/redis.conf
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.019 * monotonic clock: POSIX clock_gettime
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.020 * Running mode=standalone, port=6379.
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.020 * Server initialized
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.023 * Loading RDB produced by version 7.2.4
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.023 * RDB age 60 seconds
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.023 * RDB memory usage when created 0.85 Mb
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.023 * Done loading RDB, keys loaded: 0, keys expired: 0.
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.025 * DB loaded from disk: 0.004 seconds
2024-02-27 15:11:16 1:M 27 Feb 2024 09:41:16.025 * Ready to accept connections tcp
```

Search for images, containers, volume... Ctrl+K

mysqlcontainer
mysql:8.0
70a739e4fd4d

3900:3306

STATUS
Running (8 minutes ago)

Logs | Inspect | Bind mounts | Exec | Files | Stats

```
2024-02-27 15:11:16 2024-02-27 09:41:16+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.36-1.el8 started.
2024-02-27 15:11:16 2024-02-27 09:41:16+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
2024-02-27 15:11:16 2024-02-27 09:41:16+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.0.36-1.el8 started.
2024-02-27 15:11:17 '/var/lib/mysql/mysql.sock' -> '/var/run/mysqld/mysqld.sock'
2024-02-27 15:11:19 2024-02-27T09:41:18.904387Z 0 [Warning] [MY-011068] [Server] The syntax '--skip-host-cache' is deprecated and will be
removed in a future release. Please use SET GLOBAL host_cache_size=0 instead.
2024-02-27 15:11:19 2024-02-27T09:41:19.014978Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.0.36) starting as process 1
2024-02-27 15:11:19 2024-02-27T09:41:19.182157Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
2024-02-27 15:11:23 2024-02-27T09:41:23.516054Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2024-02-27 15:11:24 2024-02-27T09:41:24.855321Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
2024-02-27 15:11:24 2024-02-27T09:41:24.855375Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS. Encrypted c
onnections are now supported for this channel.
2024-02-27 15:11:24 2024-02-27T09:41:24.873541Z 0 [Warning] [MY-011810] [Server] Insecure configuration for --pid-file: Location '/var/ru
n/mysqld' in the path is accessible to all OS users. Consider choosing a different directory.
2024-02-27 15:11:25 2024-02-27T09:41:25.027027Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Bind-address: '::' port:
33060, socket: /var/run/mysqld/mysqlx.sock
2024-02-27 15:11:25 2024-02-27T09:41:25.027097Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.36
'  socket: '/var/run/mysqld/mysqld.sock'  port: 3306  MySQL Community Server - GPL.
```

localhost:3000/register

Import bookmarks... | Getting Started | slack | github | Office Timer | learn.promact | Terraform cloud | Console | aws_instance resource...

Register

jainil12356

jainilll2@gmail.com

••••

Login

Do you have an account? Login

Jainil Patel First Post

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

Read More

5. Now push the images to the docker hub (I am already logged in), use the following command:

```
docker compose push
```

```
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 10/26d                                                                                    0.0s
[+] Pushing 11/26d                                                                                    0.0s
 ✓ redisdb Skipped                                                                                    0.0s
 ✓ mysqldb Skipped                                                                                    0.0s
 ✓ Pushing jainilp12/nodejsapi:1.0: 0d598e980410 Pushed                                               7.1s
 ✓ Pushing jainilp12/nodejsapi:1.0: 8505caf39226 Pushed                                              13.5s
 ✓ Pushing jainilp12/nodejsapi:1.0: bc0dbec8b96a Pushed                                               6.4s
 ✓ Pushing jainilp12/nodejsapi:1.0: 31f6fb76481c Pushed                                               6.9s
 ✓ Pushing jainilp12/nodejsapi:1.0: 0b609c0d4b71 Pushed                                               5.7s
 - Pushing jainilp12/nodejsapi:1.0: 54ec21bbb047 Mounted from jainilp12/assignment1                  90.7s
 - Pushing jainilp12/nodejsapi:1.0: ec1836af8e1e Mounted from jainilp12/assignment1                  90.7s
 ✓ Pushing jainilp12/nodejsapi:1.0: 2c2decbeb47f Pushed                                              17.0s
 - Pushing jainilp12/nodejsapi:1.0: 9fe4e8a1862c Mounted from jainilp12/assignment1                  90.7s
 - Pushing jainilp12/nodejsapi:1.0: 909275a3eaaa Mounted from jainilp12/assignment1                  90.7s
 - Pushing jainilp12/nodejsapi:1.0: f3f47b3309ca Mounted from jainilp12/assignment1                  90.7s
 - Pushing jainilp12/nodejsapi:1.0: 1a5fc1184c48 Mounted from jainilp12/assignment1                  90.7s
 ✓ Pushing jainilp12/reactwebapp:1.0: 953a6be5b632 Pushed                                            25.5s
 ✓ Pushing jainilp12/reactwebapp:1.0: e93c15a9fb9c Pushed                                            84.6s
 ✓ Pushing jainilp12/reactwebapp:1.0: bb136c042257 Pushed                                            23.9s
 - Pushing jainilp12/reactwebapp:1.0: 31f6fb76481c Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: 0b609c0d4b71 Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: 54ec21bbb047 Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: ec1836af8e1e Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: 2c2decbeb47f Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: 9fe4e8a1862c Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: 909275a3eaaa Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: f3f47b3309ca Mounted from jainilp12/nodejsapi                  90.6s
 - Pushing jainilp12/reactwebapp:1.0: 1a5fc1184c48 Mounted from jainilp12/nodejsapi                  90.6s
PS C:\Users\promact\delthis\docker-compose-app> |
```

https://hub.docker.com/repositories/jainilp12

⊟ Import bookmarks... 🐦 Getting Started 💬 slack 🐙 github ✓ Office Timer 🟠 learn.promact 📁 Terraform cloud 🟠 Console 🟢 aws_instance resource...

dockerhub   Explore   **Repositories**   Organizations   🔍 Search Docker Hub   ctrl+K   ❓   ▦   J

| jainilp12 ▾ | Search by repository name 🔍 | All Content ▾ | **Create repository** |

| **jainilp12 / reactwebapp** | | | |
| Contains: Image \| Last pushed: 26 minutes ago | ⊘ Inactive ☆ 0 ⬇ 4 | 🌐 Public |

| **jainilp12 / nodejsapi** | | | |
| Contains: Image \| Last pushed: 27 minutes ago | ⊘ Inactive ☆ 0 ⬇ 4 | 🌐 Public |

| **jainilp12 / assignment1** | | | |
| Contains: Image \| Last pushed: about 3 hours ago | ⊘ Inactive ☆ 0 ⬇ 4 | 🌐 Public |