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## **TASK - 2 :Containerize and Run Medusa Locally using Docker**

**steps to containerize and run Medusa locally:**

### **Step 1: Install Docker**

1. Download Docker Desktop:

- Visit the Docker website.
- Choose the appropriate version for your operating system (Windows, macOS, or Linux).

2. Install Docker Desktop:

- Follow the installation instructions provided on the Docker website or within the installer.

3. Verify Installation:

Open a terminal or command prompt and run

**1.docker --version**

**2.docker-compose --version**

```
Microsoft Windows [Version 10.0.19045.4780]
(c) Microsoft Corporation. All rights reserved.

C:\Users\kalya>docker --version
Docker version 26.1.1, build 4cf5afa

C:\Users\kalya>docker-compose --version
Docker Compose version v2.27.0-desktop.2

C:\Users\kalya>
```

## Step 2: Create a Dockerfile

### 1. Set Up Your Project Directory:

- Ensure you have a Medusa project set up. If not, you can initialize a new Medusa project following Medusa's documentation.

### 2. Create **Dockerfile**:

- In the root of your Medusa project directory, create a file named **Dockerfile**.

```
# Use an official Node.js runtime as a parent image
FROM node:18

# Set the working directory
WORKDIR /usr/src/app
```

```
# Copy the package.json and package-lock.json

COPY package*.json ./

# Install dependencies

RUN npm install

# Copy the rest of the application code

COPY . .

# Expose the port Medusa will run on

EXPOSE 9000

EXPOSE 7001

# Command to run the application

CMD [ "npm", "run", "dev" ]
```

#### Base Image:

- **FROM node:18:** Uses the official Node.js 18 image as the base.

#### Working Directory:

- **WORKDIR /usr/src/app:** Sets **/usr/src/app** as the working directory in the container.

#### Copy Dependency Files:

- **COPY package\*.json ./:** Copies **package.json** and **package-lock.json** into the container's working directory.

### Install Dependencies:

- **RUN npm install**: Installs the Node.js dependencies defined in **package.json**.

### Copy Application Code:

- **COPY . .**: Copies the rest of the application code into the container's working directory.

### Expose Ports:

- **EXPOSE 9000**
- **EXPOSE 7001**: container will use ports 9000 and 7001.

### Run Command:

- **CMD [ "npx", "medusa", "develop" ]**: Runs the Medusa application in development mode using **npx** when the container starts.

## Step 3: Create a Docker Compose File

### 1. Create **docker-compose.yml**:

- In the same directory as your **Dockerfile**, create a file named **docker-compose.yml**.

```
version: '3.8'

services:
  medusa:
    build: .
    container_name: medusa
    environment:
      - JWT_SECRET=key
      - COOKIE_SECRET=key
      - DATABASE_TYPE=postgres
      - DATABASE_URL=postgres://postgres:1234567890@postgres:5432/postgres
      - REDIS_URL=
```

```

•   ports:
•     - "9000:9000"
•     - "7001:7001"
•   depends_on:
•     - postgres
•   networks:
•     - medusa-network
•
•   postgres:
•     image: postgres:13
•     container_name: postgres
•     environment:
•       POSTGRES_USER: postgres
•       POSTGRES_PASSWORD: 1234567890
•       POSTGRES_DB: postgres
•     ports:
•       - "5432:5432"
•     networks:
•       - medusa-network
•
•   networks:
•     medusa-network:
•       driver: bridge

```

#### 1. Version:

- **version: '3.8'**: Specifies the version of the Docker Compose file format being used.

#### 2. Services:

- Defines the services (containers) that will be part of this Docker Compose setup.
- Medusa Service:
  - **build: .**: Builds the Medusa service image from the Dockerfile in the current directory.

- `container_name: medusa`: Names the container `medusa`.
- `environment`: Sets environment variables needed for the Medusa application.
  - `JWT_SECRET=key`: Secret key for JSON Web Token.
  - `COOKIE_SECRET=key`: Secret key for cookies.
  - `DATABASE_TYPE=postgres`: Specifies the database type as PostgreSQL.
  - `DATABASE_URL=postgres://postgres:1234567890@postgres:5432/postgres`: Connection URL for the PostgreSQL database.
  - `REDIS_URL=`: Empty URL for Redis; not currently used.
- `ports`: Maps ports on the host to ports on the container.
  - `9000:9000`: Maps host port 9000 to container port 9000.
  - `7001:7001`: Maps host port 7001 to container port 7001.
- `depends_on`: Specifies that the Medusa service depends on the PostgreSQL service being started first.
- `networks`: Connects the service to the `medusa-network` network.
- Postgres Service:
  - `image: postgres:13`: Uses the PostgreSQL 13 image from Docker Hub.
  - `container_name: postgres`: Names the container `postgres`.
  - `environment`: Sets environment variables for PostgreSQL.
    - `POSTGRES_USER=postgres`: Sets the PostgreSQL user.
    - `POSTGRES_PASSWORD=1234567890`: Sets the PostgreSQL password.
    - `POSTGRES_DB=postgres`: Sets the name of the default database.
  - `ports`: Maps ports on the host to ports on the container.
    - `5432:5432`: Maps host port 5432 to container port 5432.

- `networks`: Connects the service to the `medusa-network` network.

### 3. Networks:

- `medusa-network`: Defines a custom network for the services.
  - `driver: bridge`: Uses the bridge network driver, which is the default driver for Docker networks and allows containers to communicate with each other.
- The configuration sets up two services: Medusa (a web application) and PostgreSQL (a database).
- Medusa depends on PostgreSQL and both services are connected via a custom bridge network.
- Ports are mapped to expose services to the host machine, and environment variables are used for configuration.

## Step 4: Build and Run Your Containers

- `docker-compose up --build` builds or rebuilds the Docker images for your services as defined in `docker-compose.yml`
- After building, it starts the containers and sets up networking and port mappings.
- This command starts the container and runs Medusa, mapping it to port 9000 on your localhost.

```
Command Prompt - docker-compose up --build
Microsoft Windows [Version 10.0.19045.4780]
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C:\Users\kalya>cd C:\Users\kalya\OneDrive\Desktop\Task-1\my-medusa-store

C:\Users\kalya\OneDrive\Desktop\Task-1\my-medusa-store>docker-compose up --build
time="2024-09-11T18:29:51+05:30" level=warning msg="C:\\Users\\kalya\\OneDrive\\Desktop\\Task-1\\my-medusa-store\\docker-compose.yml: 'version' is obsolete"
[+] Running 15/15
  postgres Pulled                                145.4s
  a2318d6c47ec Pull complete                    22.7s
  f29ecd7d1618 Pull complete                    24.1s
  60c9f6d649d4 Pull complete                   25.8s
  cab8740fdd56 Pull complete                   27.2s
  84ea3c162c46 Pull complete                   29.3s
  9633ee13b142 Pull complete                   30.6s
  0b395dd80892 Pull complete                   31.5s
  7d6567b03997 Pull complete                   32.4s
  da4990b85c70 Pull complete                  100.4s
  85d5c9c180d3 Pull complete                  112.2s
  4aa58d1adb9 Pull complete                   116.1s
  4129bfcc48c3 Pull complete                  125.6s
  21f4381d94e7 Pull complete                  128.0s
  e833a193ea76 Pull complete                  131.7s
[+] Building 0.0s (0/0) docker:default
2024/09/11 18:32:26 http2: server: error reading preface from client //./pipe/docker_engine: file has already been close[+] Building 385.2s (5/10)
  docker:default
  => [medusa internal] load build definition from Dockerfile                2.3s
  => => transferring dockerfile: 4638                                      1.1s
  => [medusa internal] load metadata for docker.io/library/node:18         7.9s
  => [medusa auth] library/node:pull token for registry-1.docker.io        0.0s
  => [medusa internal] load .dockerignore                                  0.5s
  => => transferring context: 28                                           0.0s
  => [medusa 1/5] FROM docker.io/library/node:18@sha256:ca07c02d13baf021ff5aadb3b48bcd1fcdd454826266ac313ce858676e 2.8s
  => => resolve docker.io/library/node:18@sha256:ca07c02d13baf021ff5aadb3b48bcd1fcdd454826266ac313ce858676e8c1548 2.8s
  => [medusa internal] load build context                                  372.9s
  => => transferring context: 109.34MB                                     370.9s
[+] Building 2967.9s (11/11) FINISHED
  docker:default
  => [medusa internal] load build definition from Dockerfile                2.3s
  => => transferring dockerfile: 4638                                      1.1s
  => [medusa internal] load metadata for docker.io/library/node:18         7.9s
  => [medusa auth] library/node:pull token for registry-1.docker.io        0.0s
  => [medusa internal] load .dockerignore                                  0.5s
  => => transferring context: 28                                           0.0s
postgres | 2024-09-11 14:38:24.960 UTC [1] LOG: received fast shutdown request
```

```
Command Prompt - docker-compose up --build
postgres exited with code 0
medusa exited with code 137
View in Docker Desktop | Enable Watch
=> [medusa] exporting to image
=> => exporting layers                                                    20.7s
=> => writing image sha256:41666baf5d07eb35c7c85241e946b328caa1ee6e7e230f87fcfa31399efe323 17.5s
=> => naming to docker.io/library/my-medusa-store-medusa                 0.2s
[+] Running 3/3
  Network my-medusa-store_medusa-network Created                    5.1s
  Container postgres Created                                       7.4s
  Container medusa Created                                         2.3s
Attaching to medusa, postgres
postgres | The files belonging to this database system will be owned by user "postgres".
postgres | This user must also own the server process.
postgres |
postgres | The database cluster will be initialized with locale "en_US.utf8".
postgres | The default database encoding has accordingly been set to "UTF8".
postgres | The default text search configuration will be set to "english".
postgres |
postgres | Data page checksums are disabled.
postgres |
postgres | fixing permissions on existing directory /var/lib/postgresql/data ... ok
postgres | creating subdirectories ... ok
postgres | selecting dynamic shared memory implementation ... posix
postgres | selecting default max_connections ... 100
postgres | selecting default shared_buffers ... 128MB
postgres | selecting default time zone ... Etc/UTC
postgres | creating configuration files ... ok
postgres | running bootstrap script ... ok
postgres | performing post-bootstrap initialization ... ok
postgres | syncing data to disk ... ok
postgres |
postgres | Success. You can now start the database server using:
postgres |
postgres |     pg_ctl -D /var/lib/postgresql/data -l logfile start
postgres |
postgres | initdb: warning: enabling "trust" authentication for local connections
postgres | You can change this by editing pg_hba.conf or using the option -A, or
postgres | --auth-local and --auth-host, the next time you run initdb.
postgres | waiting for server to start....2024-09-11 13:53:45.605 UTC [50] LOG: starting PostgreSQL 13.16 (Debian 13.16-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled
by gcc (Debian 12.2.0-14) 12.2.0, 64-bit
postgres | 2024-09-11 13:53:45.859 UTC [50] LOG: listening on Unix socket "/var/run/postgresql/.s.PGSQL.5432"
postgres | ....2024-09-11 13:53:50.031 UTC [51] LOG: database system was shut down at 2024-09-11 13:53:40 UTC
```



```
Command Prompt - docker-compose up --build

medusa Error: Migrations missing. Please run "medusa migrations run" and try again.
medusa at handlePostgresDatabaseError (/usr/src/app/node_modules/@medusajs/utils/dist/common/handle-postgres-database-error.js:26:15)
medusa at process.processTicksAndRejections (node:internal/process/task_queues:95:5)
medusa 1:55:27 PM [medusajs/admin] Started development server on http://localhost:7001/
medusa <i> [webpack-dev-server] Project is running at:
medusa <i> [webpack-dev-server] Loopback: http://localhost:7001/, http://[::1]:7001/
medusa <i> [webpack-dev-server] Content not from webpack is served from '/usr/src/app/public' directory
medusa <i> [webpack-dev-server] 404s will fallback to '/'
medusa assets by path *.js 36.3 MiB 25 assets
medusa assets by path public/ 2.75 MiB
medusa   asset public/locales/tm/translation.json 193 KiB [emitted] [from: node_modules/@medusajs/admin-ui/ui/public/locales/tm/translation.json] [copied]
medusa   + 21 assets
medusa assets by path *.ttf 1.24 MiB
medusa   asset 442f6a4cc2f03aaf41f6.ttf 398 KiB [emitted] [immutable] [from: .cache/admin/src/fonts/Inter-SemiBold.ttf] (auxiliary name: main)
medusa   + 4 assets
medusa assets by path *.css 307 KiB
medusa   asset main.css 232 KiB [emitted] (name: main)
medusa   + 2 assets
medusa assets by path images/*.svg 2.33 KiB
medusa   asset images/icon-plus-gray.svg 1.46 KiB [emitted] [from: node_modules/react-nestable/dist/styles/icon-plus-gray.svg] (auxiliary id hint: vendors)
medusa   asset images/icon-minus-gray.svg 884 bytes [emitted] [from: node_modules/react-nestable/dist/styles/icon-minus-gray.svg] (auxiliary id hint: vendors)
medusa   asset index.html 437 bytes [emitted]
medusa Entrypoint main 9.58 MiB (1.24 MiB) = runtime-main.bundle.js 117 KiB main.css 232 KiB main.bundle.js 9.24 MiB 5 auxiliary assets
medusa orphan modules 1.37 MiB (javascript) 1.24 MiB (asset) 15.3 KiB (runtime) [orphan] 656 modules
medusa runtime modules 84.5 KiB 49 modules
medusa modules by path ./node_modules/ 9.98 MiB (javascript) 26.8 KiB (css/mini-extract)
medusa   javascript modules 9.98 MiB 2123 modules
medusa   css modules 26.8 KiB
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./node_modules/react-nestable/dist/styles/index.css 1.76 KiB [built]
medusa [code generated]
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./node_modules/react-datepicker/dist/react-datepicker.css 25.1 KiB [
medusa built] [code generated]
medusa     ./node_modules/axios/package.json 1.92 KiB [built] [code generated]
medusa modules by path ./cache/admin/src/ 8.41 MiB (javascript) 157 KiB (css/mini-extract)
medusa   javascript modules 8.41 MiB 788 modules
medusa   css modules 157 KiB
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./cache/admin/src/assets/styles/global.css 157 KiB [built] [code ge
medusa nerated]
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./cache/admin/src/domain/product-categories/styles/product-categori
medusa es.css 365 bytes [built] [code generated]
medusa   ./util.inspect (ignored) 15 bytes [built] [code generated]
medusa webpack 5.91.0 compiled successfully in 117503 ms
medusa assets by status 4.29 MiB [cached] 33 assets
medusa assets by status 36.3 MiB [emitted]
```

```
Command Prompt - docker-compose up --build

medusa runtime modules 84.5 KiB 49 modules
medusa modules by path ./node_modules/ 9.98 MiB (javascript) 26.8 KiB (css/mini-extract)
medusa   javascript modules 9.98 MiB 2123 modules
medusa   css modules 26.8 KiB
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./node_modules/react-nestable/dist/styles/index.css 1.76 KiB [built]
medusa [code generated]
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./node_modules/react-datepicker/dist/react-datepicker.css 25.1 KiB [
medusa built] [code generated]
medusa     ./node_modules/axios/package.json 1.92 KiB [built] [code generated]
medusa modules by path ./cache/admin/src/ 8.41 MiB (javascript) 157 KiB (css/mini-extract)
medusa   javascript modules 8.41 MiB 788 modules
medusa   css modules 157 KiB
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./cache/admin/src/assets/styles/global.css 157 KiB [built] [code ge
medusa nerated]
medusa     css ./node_modules/css-loader/dist/cjs.js!./node_modules/postcss-loader/dist/cjs.js!./cache/admin/src/domain/product-categories/styles/product-categori
medusa es.css 365 bytes [built] [code generated]
medusa   ./util.inspect (ignored) 15 bytes [built] [code generated]
medusa webpack 5.91.0 compiled successfully in 117503 ms
medusa assets by status 4.29 MiB [cached] 33 assets
medusa assets by status 36.3 MiB [emitted]
medusa   assets by chunk 16.9 MiB (id hint: vendors)
medusa     asset vendors-node_modules_iso8601-duration_lib_index_js-node_modules_lodash_isEqual_js-node_modules-b01569.chunk.js 7.51 MiB [emitted] [minimized] (id h
medusa int: vendors)
medusa     asset vendors-node_modules_medusajs_ui_dist_cjs_index_js-node_modules_radix-ui_react-accordion_dist-1308db.chunk.js 7.45 MiB [emitted] [minimized] (id h
medusa int: vendors)
medusa     asset vendors-node_modules_emoji-picker-react_dist_emoji-picker-react_esm_js-node_modules_react-col-bb12f4.chunk.js 1.43 MiB [emitted] [minimized] (id h
medusa int: vendors)
medusa     asset tsuib-middleware.chunk.js 357 KiB [emitted] [minimized] (name: tsuib-middleware) (id hint: vendors)
medusa     asset ajs-destination.chunk.js 67.1 KiB [emitted] [minimized] (name: ajs-destination) (id hint: vendors)
medusa     asset vendors-node_modules_segment_analytics_js-video-plugins_dist_index_umd_js.chunk.js 53 KiB [emitted] [minimized] (id hint: vendors)
medusa     asset vendors-node_modules_radix-ui_react-collapsible_dist_index_mjs-node_modules_radix-ui_react-co-1fa14b.chunk.js 35.3 KiB [emitted] [minimized] (id h
medusa int: vendors)
medusa   assets by info 3.05 KiB [immutable]
medusa     asset main.a487d9d3ac68f95fdf35.hot-update.js 2.41 KiB [emitted] [immutable] [hmr] [minimized] (name: main)
medusa     asset runtime-main.a487d9d3ac68f95fdf35.hot-update.js 613 bytes [emitted] [immutable] [hmr] [minimized] (name: runtime-main)
medusa     asset runtime-main.a487d9d3ac68f95fdf35.hot-update.json 43 bytes [emitted] [immutable] [hmr]
medusa   + 18 assets
medusa Entrypoint main 9.58 MiB (1.24 MiB) = runtime-main.bundle.js 117 KiB runtime-main.a487d9d3ac68f95fdf35.hot-update.js 613 bytes main.css 232 KiB main.bundle.
medusa js 9.24 MiB main.a487d9d3ac68f95fdf35.hot-update.js 2.41 KiB 5 auxiliary assets
medusa   cached modules 19.5 MiB (javascript) 184 KiB (css/mini-extract) 1.24 MiB (asset) 15.3 KiB (runtime) [cached] 3566 modules
medusa runtime modules 38.6 KiB 21 modules
medusa   orphan modules 216 KiB [orphan] 1 module
medusa   ./cache/admin/src/assets/styles/global.css 716 bytes [built] [code generated]
medusa webpack 5.91.0 compiled successfully in 142753 ms
```

## Step 5: Access Medusa

## 1. Open a Web Browser:

- Go to `http://localhost:9000`.
- You should see Medusa running and be able to interact with it through the browser.





