

EXPERIMENT-8

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Subject: Full Stack

Section: 23BCC-1

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- **Aim:**

To create a **Dockerfile** that builds and packages a React application (developed using Vite) into a Docker container, making it portable and ready for deployment on any system with Docker installed.

- **Theory:**

Docker is a platform used to containerize applications, ensuring they run consistently across different environments. A **Dockerfile** is a text file that contains a set of instructions used by Docker to build an image.

When building a React (Vite) app, we can use Docker to:

- Build the frontend using Node.js.
- Serve the optimized static files using Nginx.

This approach creates a lightweight, production-ready image that contains everything needed to run the app.

- **Procedure:**

- 1. Create a Dockerfile**

- Navigate to your React project folder:

```
cd my-react-app
```

- Create a file named **Dockerfile**:

```
# Step 1: Build the React (Vite) app
```

```
FROM node:18-alpine AS build
```

```
WORKDIR /app
```

```
COPY package*.json ./
```

```
RUN npm install
```

```
COPY . .
```

```
RUN npm run build
```

```
# Step 2: Serve the build using Nginx
```

```
FROM nginx:alpine
```

```
COPY --from=build /app/dist /usr/share/nginx/html
EXPOSE 80
```

```
CMD ["nginx", "-g", "daemon off;"]
```

2. Build the Docker Image

- Builds the Docker image and tags it as my-vite-app:
`docker build -t my-vite-app .`

3. Run the Docker Container

- Run the container in detached mode and map your system's port **8080** to container's port **80**:

```
docker run -d -p 8080:80 my-vite-app
```

4. Test the Application

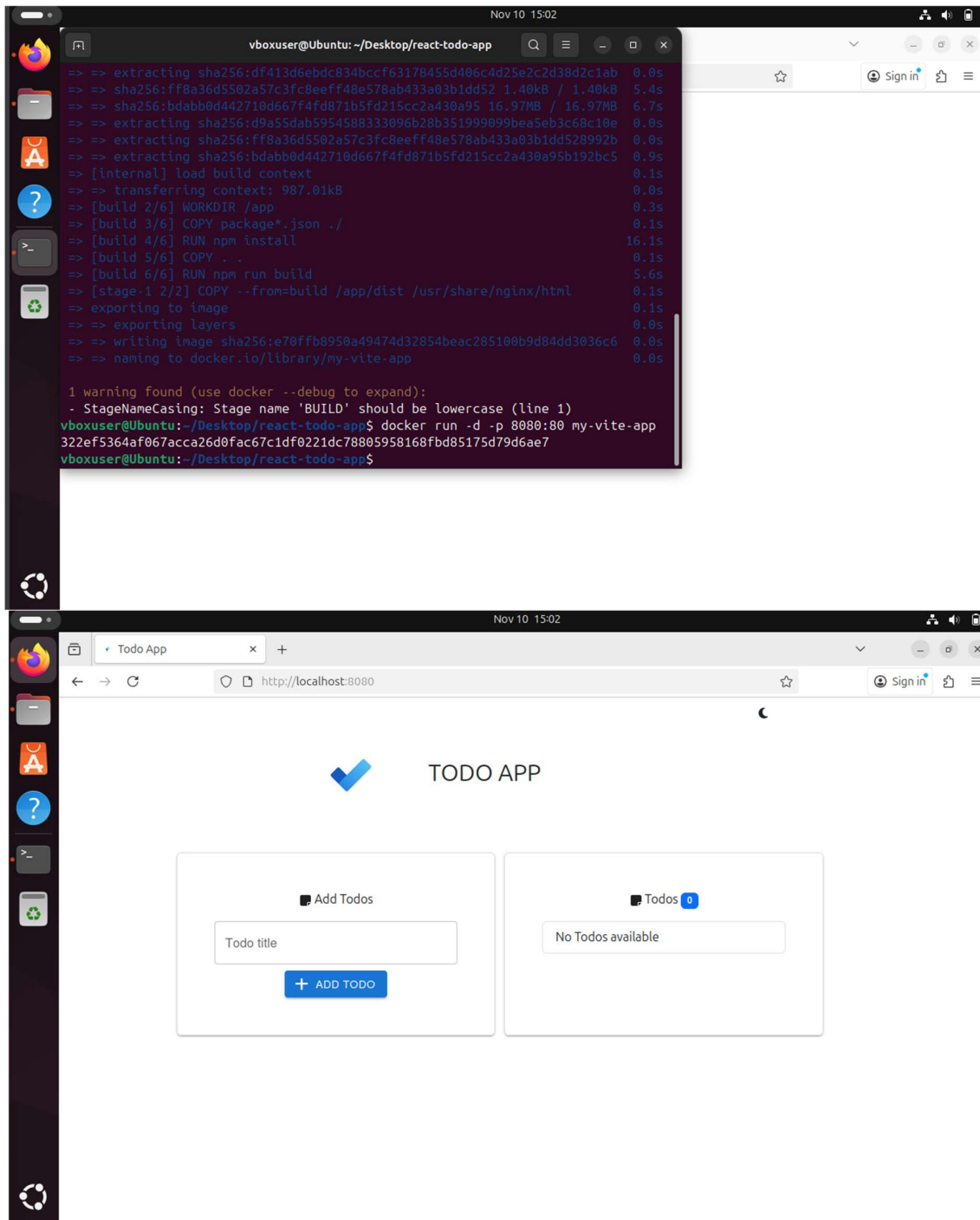
- Open a browser and visit::

```
http://localhost:8080
```

- **Result**

A Docker image was successfully created for the React (Vite) project, and the app was deployed and served inside a Docker container using Nginx.

- **Output:**



The image shows a terminal window and a web browser side-by-side. The terminal window displays the output of a Docker build process for a React application. The build steps include extracting files, transferring context, and running npm install and npm run build. The resulting Docker image is named 'my-vite-app' and is pushed to the Docker Hub. A warning message indicates that the stage name 'BUILD' should be lowercase. The web browser shows the running application at http://localhost:8080, which is a TODO app with a form to add todos and a list of todos.

```
vboxuser@Ubuntu: ~/Desktop/react-todo-app
=> => extracting sha256:df413d6ebdc834bccf63178455d406c4d25e2c2d38d2c1ab 0.0s
=> => sha256:ff8a36d5502a57c3fc8eeff48e578ab433a03b1dd52 1.40kB / 1.40kB 5.4s
=> => sha256:bdabb0d442710d667f4fd871b5fd215cc2a430a95 16.97MB / 16.97MB 6.7s
=> => extracting sha256:d9a55dab5954588333096b28b351999099bea5eb3c68c10e 0.0s
=> => extracting sha256:ff8a36d5502a57c3fc8eeff48e578ab433a03b1dd528992b 0.0s
=> => extracting sha256:bdabb0d442710d667f4fd871b5fd215cc2a430a95b192bc5 0.9s
=> [internal] load build context 0.1s
=> => transferring context: 987.01kB 0.0s
=> [build 2/6] WORKDIR /app 0.3s
=> [build 3/6] COPY package*.json ./ 0.1s
=> [build 4/6] RUN npm install 16.1s
=> [build 5/6] COPY . . 0.1s
=> [build 6/6] RUN npm run build 5.6s
=> [stage-1 2/2] COPY --from=build /app/dist /usr/share/nginx/html 0.1s
=> exporting to image 0.1s
=> => exporting layers 0.0s
=> => writing image sha256:e70ffb8950a49474d32854beac285100b9d84dd3036c6 0.0s
=> => naming to docker.io/library/my-vite-app 0.0s

1 warning found (use docker --debug to expand):
 - StageNameCasing: Stage name 'BUILD' should be lowercase (line 1)
vboxuser@Ubuntu:~/Desktop/react-todo-app$ docker run -d -p 8080:80 my-vite-app
322ef5364af067acca26d0fac67c1df0221dc78805958168fbd85175d79d6ae7
vboxuser@Ubuntu:~/Desktop/react-todo-app$
```

The web browser shows the running application at http://localhost:8080. The application is a TODO app with a form to add todos and a list of todos. The form has a text input for the todo title and a blue button labeled '+ ADD TODO'. The list of todos is empty, showing 'No Todos available'.