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Branch - CBA Batch - 51
Microservices Practical 14

Aim : To understand the working of a Microservice that builds using Node JS and Docker mechanisms.

Scenario : You are asked to create a website that offers users information about sharks. The application will have a main entry point, app.js, and a views directory that will include the project's static assets. The landing page, index.html, will offer users some preliminary information and a link to a page with more detailed shark information, sharks.html. In the views directory, create both the landing page and sharks.html.

Tasks, codes and screenshots :

1. Create a directory for your project in your non-root user's home directory.

Command : **mkdir** (for linux systems or manually create directory)

2. Create a package.json file with your project's dependencies and other identifying information and install them.

```
{  
  "name": "practical_14",  
  "version": "1.0.0",  
  "description": "",  
  "main": "app.js",  
  "scripts": {  
    "test": "echo \"Error: no test specified\" && exit 1"  
  },  
  "author": "",  
  "license": "ISC",  
  "dependencies": {
```

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```
"express": "^4.18.2"  
  
}  
  
}
```

3. Open app.js in the main project directory to define the project's routes.

```
const express = require('express');  
const app = express();  
const router = express.Router();  
  
const path = __dirname + '/views/';  
const port = 8080;  
  
router.use(function (req, res, next) {  
  console.log('/') + req.method);  
  next();  
});  
  
router.get('/', function (req, res) {  
  res.sendFile(path + 'index.html');  
});  
  
router.get('/sharks', function (req, res) {  
  res.sendFile(path + 'sharks.html');
```

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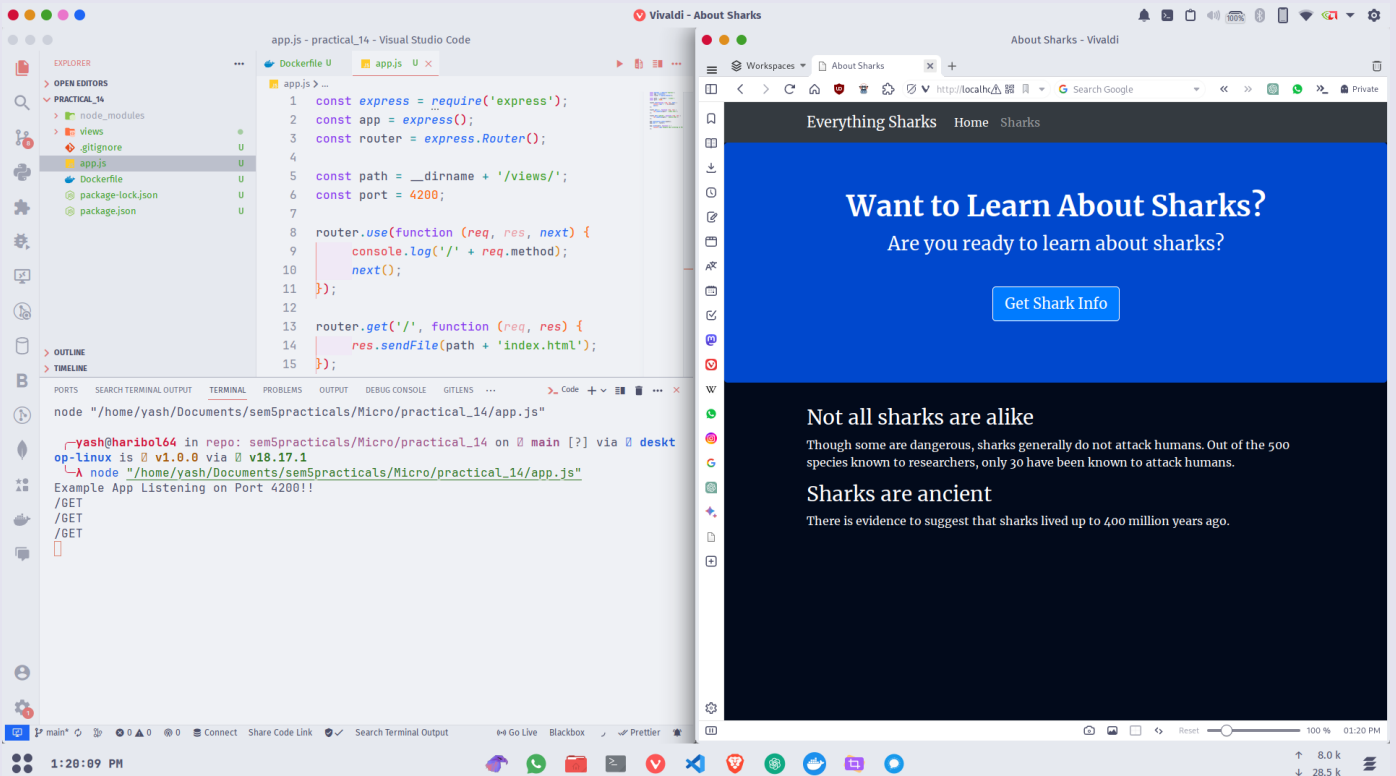
```
});  
  
app.use(express.static(path));  
app.use('/', router);  
  
app.listen(port, function () {  
  console.log('Example App Listening on Port 8080!!');  
});
```

4. Add some static content to the application, and create the custom CSS style sheet that you've linked to in index.html and sharks.html by first creating a css folder in the views directory.

Code already given in practical

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5. Start the application.



The screenshot displays a development environment with Visual Studio Code on the left and a web browser (Vivaldi) on the right. The Visual Studio Code interface shows a project named 'practical_14' with files like 'app.js', 'Dockerfile', 'package-lock.json', and 'package.json'. The 'app.js' file is open, showing an Express.js application setup. The terminal output indicates the application is running on port 4200. The web browser shows the 'About Sharks' application, which has a blue header with the text 'Everything Sharks' and 'Home Sharks'. The main content area has a blue background with the text 'Want to Learn About Sharks? Are you ready to learn about sharks?' and a 'Get Shark Info' button. The footer shows the time as 1:20:09 PM.

```
1 const express = require('express');
2 const app = express();
3 const router = express.Router();
4
5 const path = __dirname + '/views/';
6 const port = 4200;
7
8 router.use(function (req, res, next) {
9   console.log('/', req.method);
10  next();
11 });
12
13 router.get('/', function (req, res) {
14   res.sendFile(path + 'index.html');
15 });
```

node "/home/yash/Documents/sem5practicals/Micro/practical_14/app.js"

yash@haribol64 in repo: sem5practicals/Micro/practical_14 on main [?] via desktop
op-linux is v1.0.0 via v18.17.1
A node "/home/yash/Documents/sem5practicals/Micro/practical_14/app.js"
Example App Listening on Port 4200!!
/GET
/GET
/GET

About Sharks - Vivaldi

Everything Sharks Home Sharks

Want to Learn About Sharks?

Are you ready to learn about sharks?

Get Shark Info

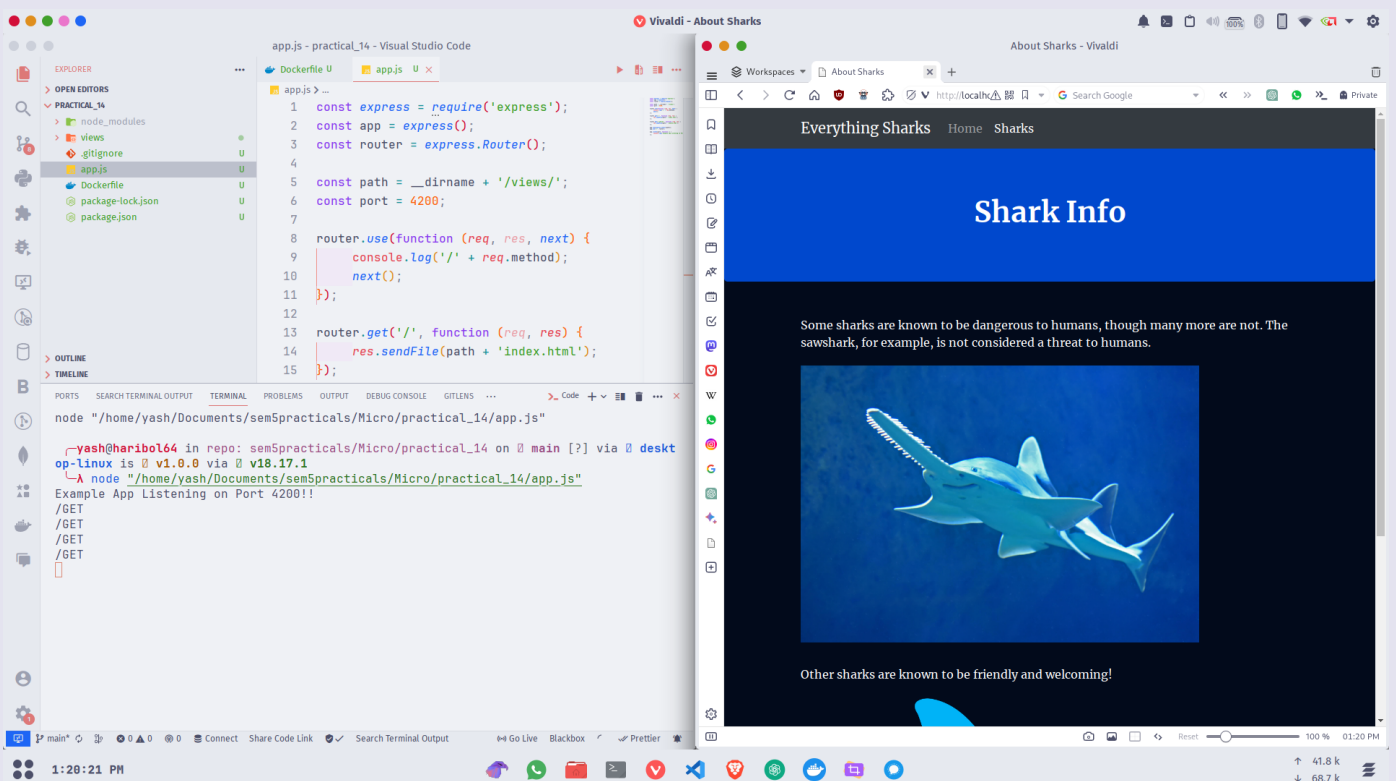
Not all sharks are alike

Though some are dangerous, sharks generally do not attack humans. Out of the 500 species known to researchers, only 30 have been known to attack humans.

Sharks are ancient

There is evidence to suggest that sharks lived up to 400 million years ago.

1:20:09 PM



The screenshot displays the same development environment as the previous one, but the web browser now shows the 'Shark Info' page. The Visual Studio Code interface remains the same, showing the 'app.js' file and the terminal output. The web browser shows the 'About Sharks' application with a blue header and the text 'Shark Info'. The main content area has a blue background with the text 'Some sharks are known to be dangerous to humans, though many more are not. The sawshark, for example, is not considered a threat to humans.' and an image of a sawshark. The footer shows the time as 1:20:21 PM.

```
1 const express = require('express');
2 const app = express();
3 const router = express.Router();
4
5 const path = __dirname + '/views/';
6 const port = 4200;
7
8 router.use(function (req, res, next) {
9   console.log('/', req.method);
10  next();
11 });
12
13 router.get('/', function (req, res) {
14   res.sendFile(path + 'index.html');
15 });
```

node "/home/yash/Documents/sem5practicals/Micro/practical_14/app.js"

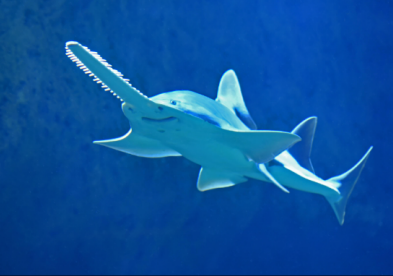
yash@haribol64 in repo: sem5practicals/Micro/practical_14 on main [?] via desktop
op-linux is v1.0.0 via v18.17.1
A node "/home/yash/Documents/sem5practicals/Micro/practical_14/app.js"
Example App Listening on Port 4200!!
/GET
/GET
/GET

About Sharks - Vivaldi

Everything Sharks Home Sharks

Shark Info

Some sharks are known to be dangerous to humans, though many more are not. The sawshark, for example, is not considered a threat to humans.



Other sharks are known to be friendly and welcoming!

1:20:21 PM

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6. Create the Dockerfile.

```
# our base image
FROM node:14-alpine

RUN mkdir -p /home/node/app/node_modules && chown -R node:node
/home/node/app

#Creating directory
WORKDIR /home/node/app

# Copy files required for the app to run
COPY package*.json ./

#install module such as npm
RUN npm install

#bundle app source
COPY --chown=node:node . .
EXPOSE 4202
CMD ["node", "app.js"]
```

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7. Build the image and run the container that has this image.

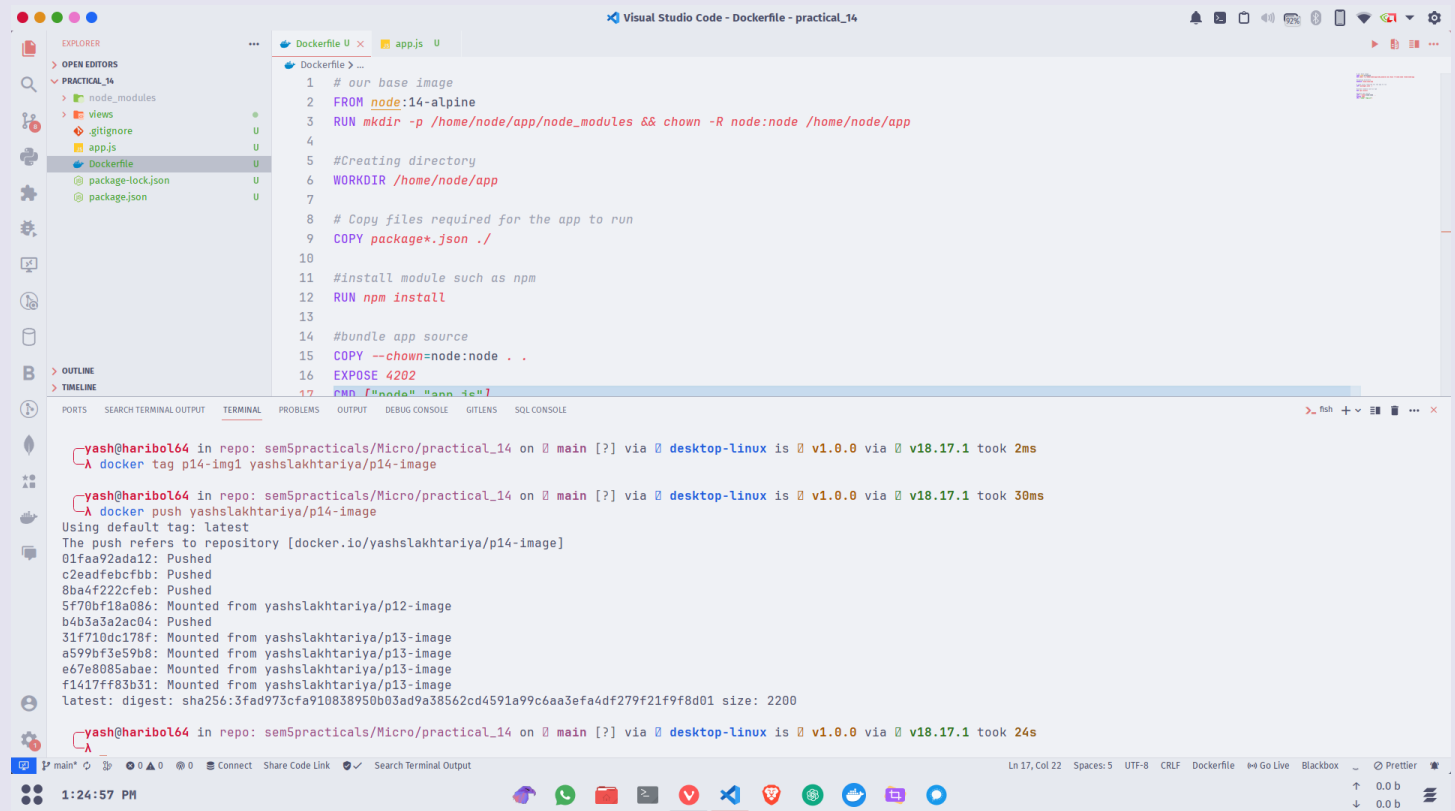
The image shows a Docker build and container run process. The terminal output on the left displays the steps taken to build the Docker image, including creating the directory, copying the package.json, installing dependencies, and exporting the image. The resulting image is named p14-img1. The terminal also shows the command to run the container, which is docker run --name p14 -p 4202:8080 p14-img1. The output of the container run shows the application listening on port 8080.

The browser window on the right shows the web application running at http://localhost:4202. The application has a dark blue header with the text "Everything Sharks" and "Home Sharks". The main content area has a blue background with the text "Want to Learn About Sharks?" and "Are you ready to learn about sharks?". There is a button labeled "Get Shark Info". Below this, there is a section titled "Not all sharks are alike" with the text "Though some are dangerous, sharks generally do not attack humans. Out of the 500 species known to researchers, only 30 have been known to attack humans." and another section titled "Sharks are ancient" with the text "There is evidence to suggest that sharks lived up to 400 million years ago."

The second screenshot shows the same process, but the browser window now displays the "Shark Info" page. The page has a blue header with the text "Shark Info". The main content area has a dark blue background with the text "Some sharks are known to be dangerous to humans, though many more are not. The sawshark, for example, is not considered a threat to humans." and an image of a shark. Below the image, there is text that says "Other sharks are known to be friendly and welcoming!"

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8. Push the image to Docker Hub



The screenshot shows the Visual Studio Code interface with a Dockerfile open in the editor and a terminal window at the bottom. The Dockerfile contains the following instructions:

```
1 # our base image
2 FROM node:14-alpine
3 RUN mkdir -p /home/node/app/node_modules && chown -R node:node /home/node/app
4
5 #Creating directory
6 WORKDIR /home/node/app
7
8 # Copy files required for the app to run
9 COPY package*.json ./
10
11 #install module such as npm
12 RUN npm install
13
14 #bundle app source
15 COPY --chown=node:node . .
16 EXPOSE 4202
17 CMD ["node", "p14.js"]
```

The terminal window shows the following commands and output:

```
yash@haribol64 in repo: sem5practicals/Micro/practical_14 on  main [?] via  desktop-linux is  v1.0.0 via  v18.17.1 took 2ms
docker tag p14-img1 yashslakhtariya/p14-image

yash@haribol64 in repo: sem5practicals/Micro/practical_14 on  main [?] via  desktop-linux is  v1.0.0 via  v18.17.1 took 30ms
docker push yashslakhtariya/p14-image
Using default tag: latest
The push refers to repository [docker.io/yashslakhtariya/p14-image]
01faa92ada12: Pushed
c2eadfebcbfb: Pushed
8ba4f222cfef: Pushed
5f70bf18a086: Mounted from yashslakhtariya/p12-image
b4b3a3a2ac04: Pushed
31f710dc178f: Mounted from yashslakhtariya/p13-image
a599bf3e59b8: Mounted from yashslakhtariya/p13-image
e67e8085abae: Mounted from yashslakhtariya/p13-image
f1417ff83b31: Mounted from yashslakhtariya/p13-image
latest: digest: sha256:3fad973cfa910838950b03ad9a38562cd4591a99c6aa3efa4df279f21f9f8d01 size: 2200

yash@haribol64 in repo: sem5practicals/Micro/practical_14 on  main [?] via  desktop-linux is  v1.0.0 via  v18.17.1 took 24s
```

The status bar at the bottom indicates the file is at line 17, column 22, with 5 spaces, UTF-8 encoding, CRLF line endings, and the Dockerfile extension. The bottom right corner shows the file size as 0.0 b.