Lab: Setting Up a Simple Project with npm and Webpack

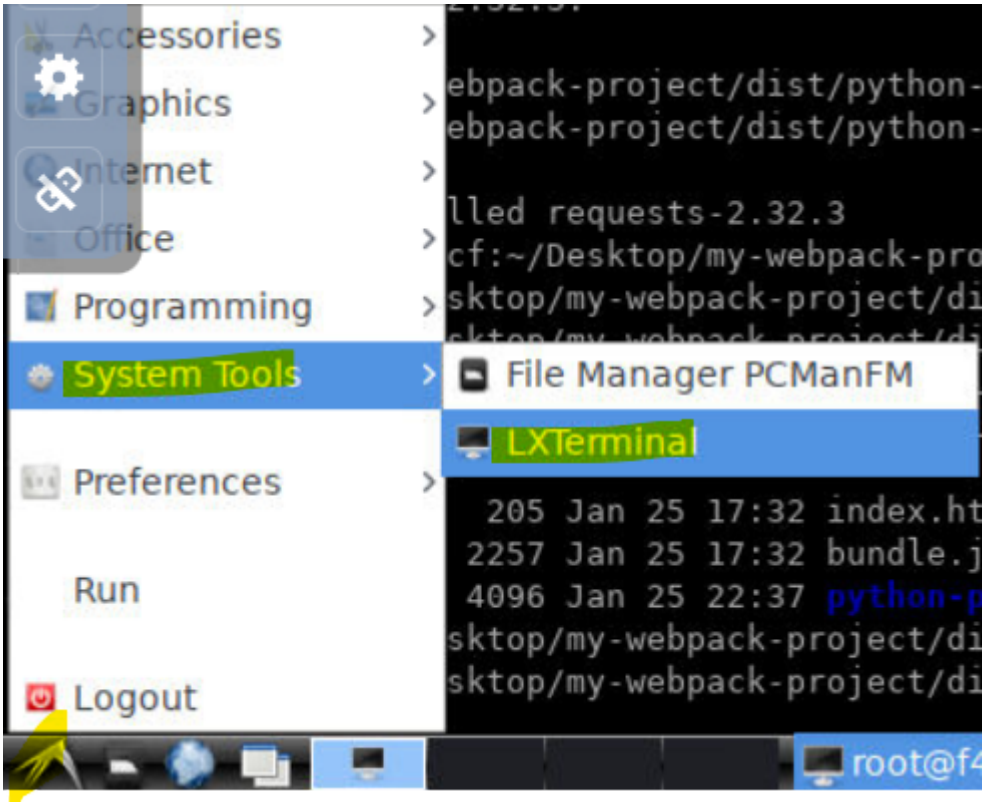
This guide will walk you through setting up a simple project using npm, installing dependencies, and creating a Webpack build script.

Prerequisites

Ensure you have the following installed on your system:

- Node.js 18 (which includes npm)
- A text editor (e.g., VS Code)

Open new terminal in the lab environment:



Steps

Step 1: Initialize a New npm Project

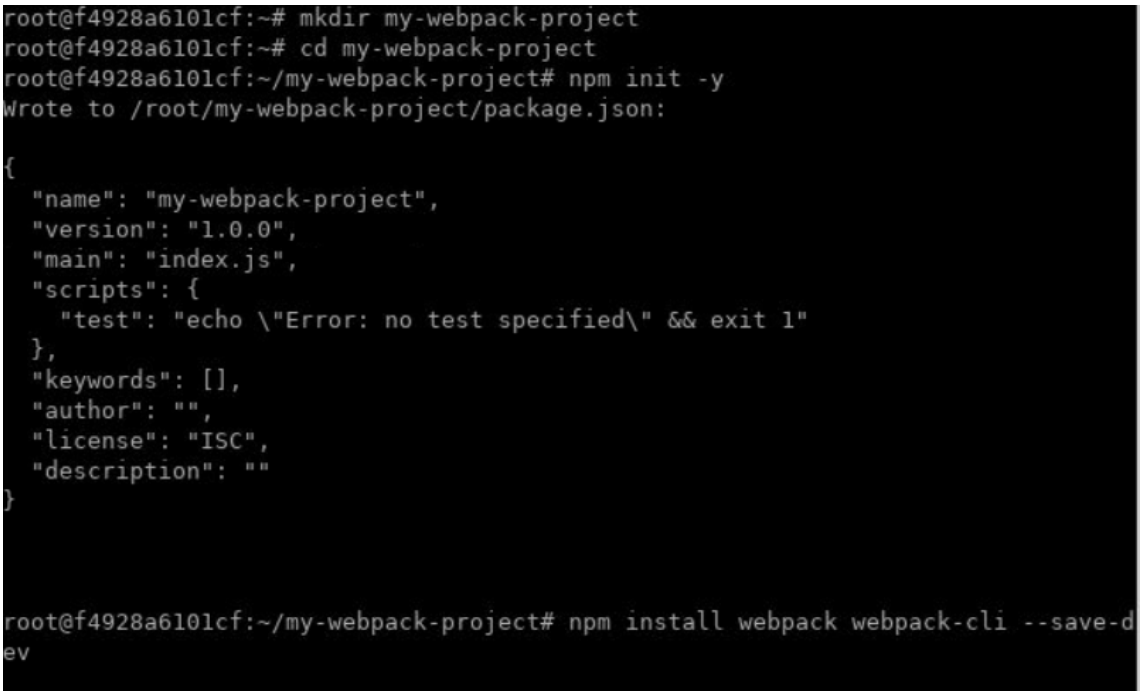
1. Create a new project directory:

```
cd ~/Desktop
mkdir my-webpack-project
cd my-webpack-project
```

2. Initialize the project:

```
npm init -y
```

This will create a `package.json` file with default values.



Step 2: Install Webpack and Dependencies

1. Install Webpack and Webpack CLI as development dependencies:

   ```
   npm install webpack webpack-cli --save-dev
   ```

2. Optionally, install a development server for live reloading:

   ```
   npm install webpack-dev-server --save-dev
   ```

3. Install Babel to transpile modern JavaScript (optional but recommended):

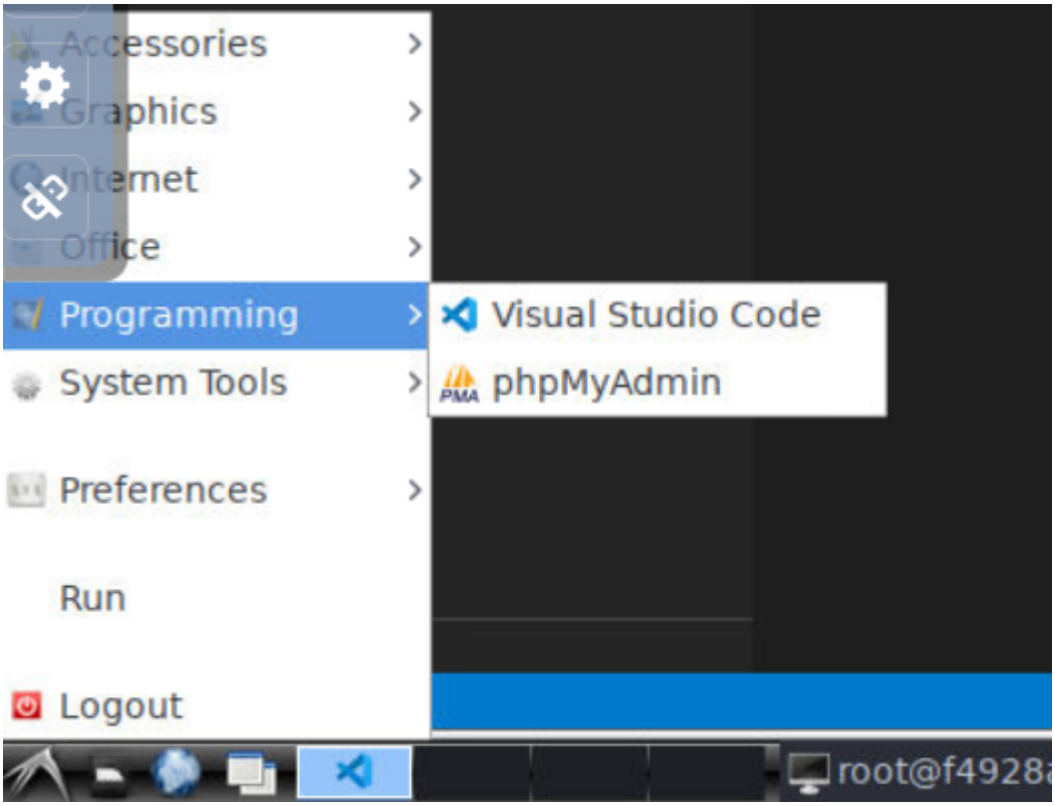
   ```
   npm install @babel/core babel-loader @babel/preset-env --save-dev
   ```

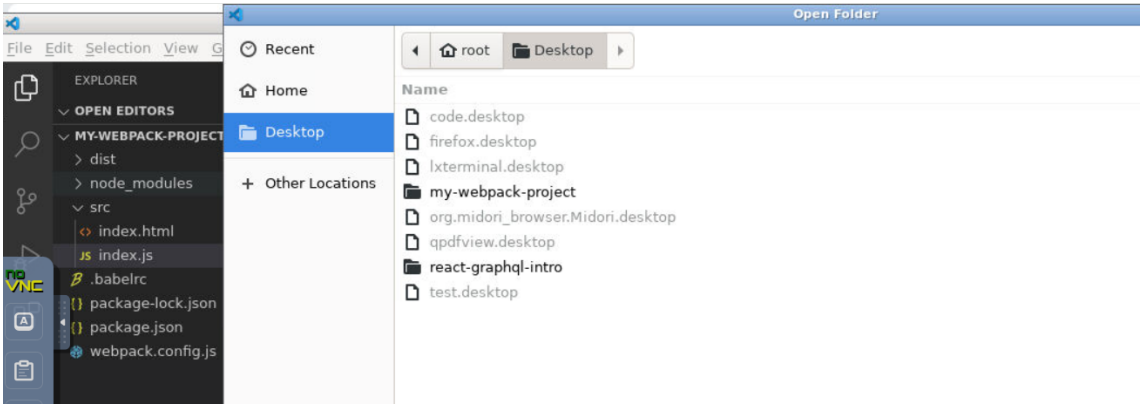
4. Install HTML Webpack Plugin to handle HTML files:

   ```
   npm install html-webpack-plugin --save-dev
   ```

Step 3: Create the Project Structure

Note: You can open project in VsCode as shown below:





Create the following file structure:

```
my-webpack-project/
|-- src/
|   |-- index.js
|   |-- index.html
|-- dist/
|-- .babelrc
|-- webpack.config.js
|-- package.json
```

1. Create a `src` folder and add an `index.js` file:

```
mkdir src
touch src/index.js
```

Add some basic JavaScript to `src/index.js`:

```
document.addEventListener('DOMContentLoaded', () => {
  const app = document.getElementById('app');
  app.innerHTML = '<h1>Hello, Software Ecosystem!</h1>';
});
```

2. Create an empty `dist` folder:

```
mkdir dist
```

3. Create a `.babelrc` file for Babel configuration:

```
touch .babelrc
```

Add the following content to `.babelrc`:

```
{
  "presets": ["@babel/preset-env"]
}
```

4. Create a `webpack.config.js` file:

```
touch webpack.config.js
```

Add the following content to `webpack.config.js`:

```
import path from 'path';
import HtmlWebpackPlugin from 'html-webpack-plugin';

export default {
entry: './src/index.js',
output: {
   filename: 'bundle.js',
   path: path.resolve(process.cwd(), 'dist'),
},
module: {
   rules: [
      {
      test: /\.js$/,
      exclude: /node_modules/,
      use: {
         loader: 'babel-loader',
      },
      },
   ],
},
plugins: [
   new HtmlWebpackPlugin({
```

```
      template: './src/index.html',
    }),
],
devServer: {
    static: './dist',
    open: true,
},
mode: 'development',
};
```

5. Create an `index.html` file inside `src`:

```
touch src/index.html
```

Add the following content to `src/index.html`:

```
<!DOCTYPE html>
<html>
  <head>
    <title>Webpack Project</title>
  </head>
  <body>
    <div id="app"></div>
    <script src="bundle.js"></script>
  </body>
</html>
```

Step 4: Add npm Scripts

1. Open `package.json` and add the following scripts:

```
"scripts": {
  "start": "webpack-dev-server --open",
  "build": "webpack"
}
```

   - `start`: Runs the development server.
   - `build`: Builds the project for production.

2. Configure Node.js to treat your project as an ES Module:

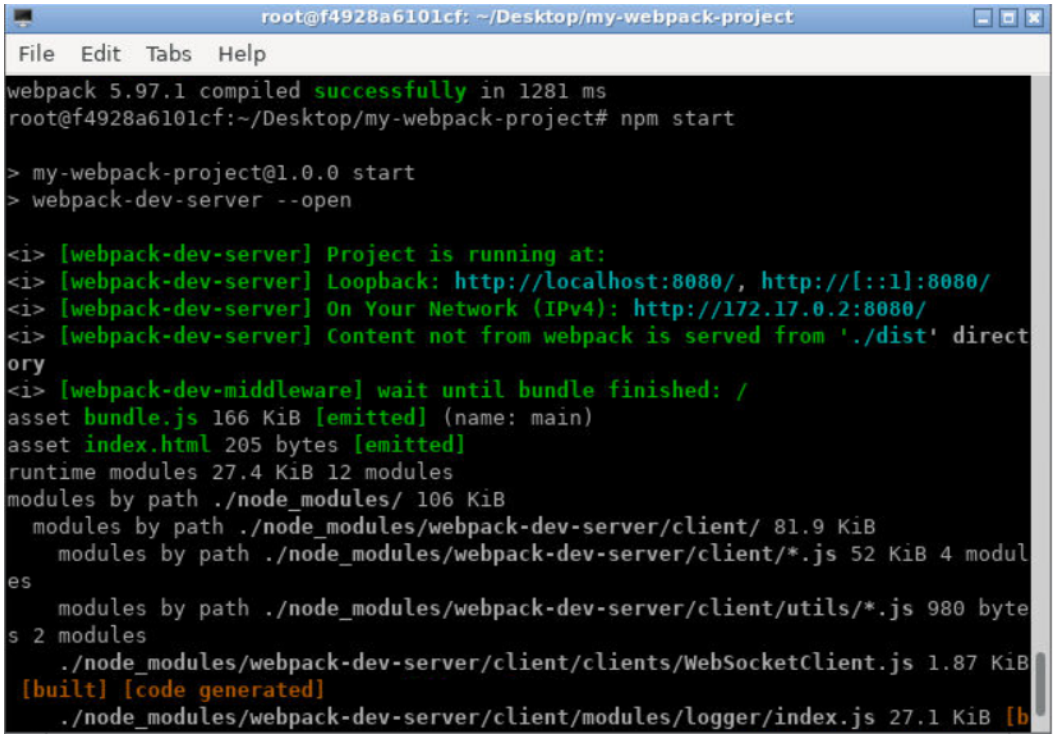
Update `package.json` to include:

```
"type": "module"
```

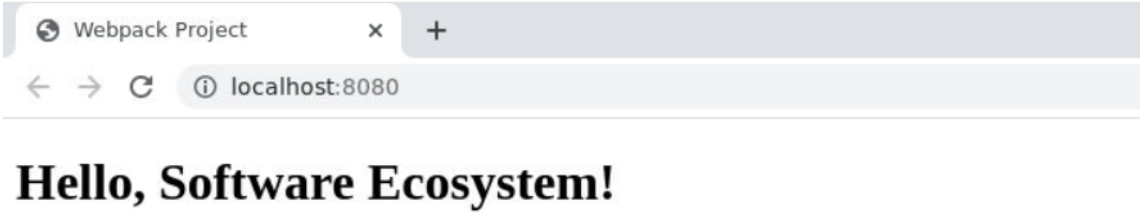
Step 5: Run and Build the Project

1. Start the development server:

```
npm start
```



This will open your project in the browser and watch for changes.

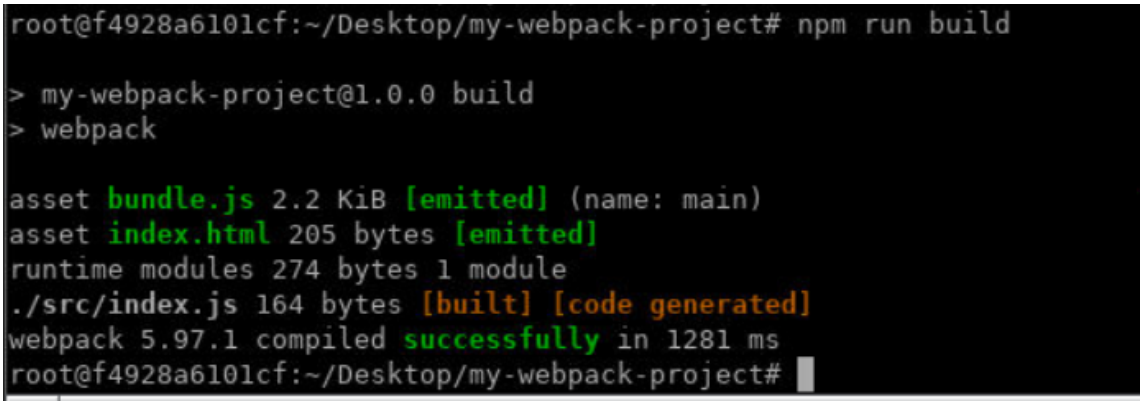


Hello, Software Ecosystem!

2. Build the project for production:

```
npm run build
```

This will create a `bundle.js` file inside the `dist` folder.



Step 6: Run the Build Output in the Browser

After building your project, you can view the output in a browser by following these steps:

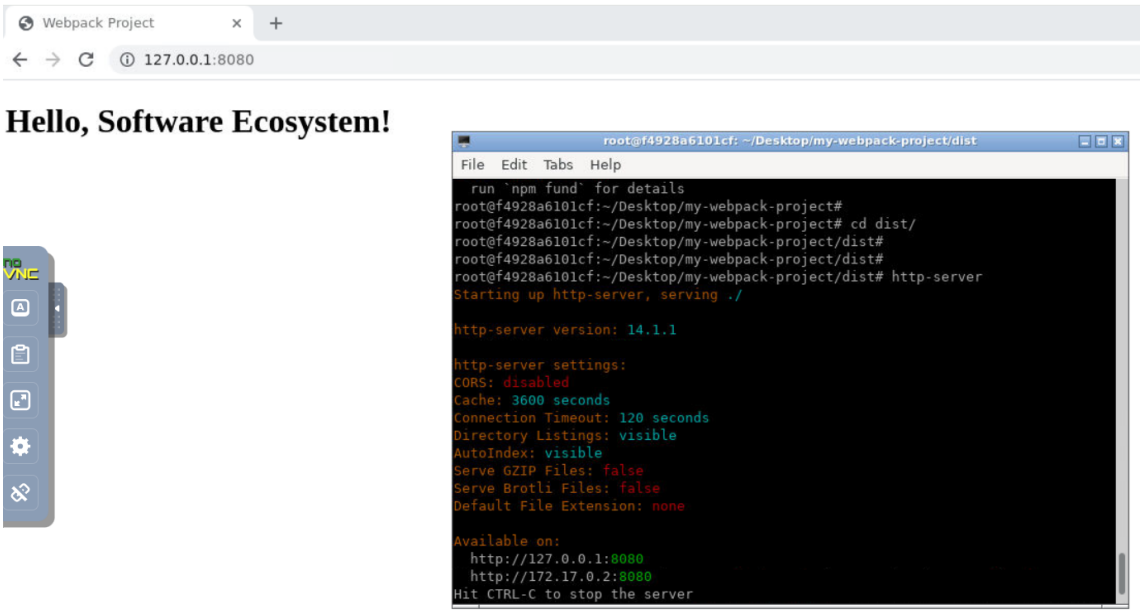
1. **Locate the Built Files:** Ensure the build output files (e.g., `bundle.js`) are in the `dist` folder after running `npm run build`.
2. **Serve the `dist` Folder:** Use one of the following methods to serve the `dist` folder:
   - **Using a Simple HTTP Server:** Install a simple server globally:

     ```
     npm install -g http-server
     ```

     Navigate to the `dist` folder and start the server:

     ```
     cd dist
     http-server
     ```

     This will provide a URL (e.g., `http://localhost:8080`) to open in your browser.
   - **Direct File Opening:** Open the `index.html` file in the `dist` folder directly in a browser. Note that this method might not work correctly if your app uses dynamic imports or other features requiring a web server.



Important! Make sure to stop any running server from the lab terminal before proceeding to next lab.

You have successfully set up a nodejs project using npm and Webpack!