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# **Docker Deployment for Simple Addition Program (Java)**

## **Step-by-Step Deployment Guide**

### **Prerequisites**

* Docker installed on your system
* Java 8+ (for building the Java application, if not already built)
* Maven (for building the Java application, if not already built)
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### **Step 1: Build the Java Application (if not pre-built)**

* **Command:**

mvn clean package

* **Location:** Run in the project directory containing the pom.xml file (assuming you have a Maven project setup for your Java application)
* **Outcome:** A JAR file (e.g., AdditionProgram.jar) in the target directory

### **Step 2: Create a Dockerfile for the Java Application**

* **File Name:** Dockerfile
* **File Location:** Root of your project directory
* **Dockerfile Contents:**

# Use an official Java runtime as a parent image  
FROM openjdk:8-jdk-alpine  
  
# Set the working directory in the container  
WORKDIR /app  
  
# Copy the JAR file into the container  
COPY target/AdditionProgram.jar /app/  
  
# Expose the port (not necessary for this console app, but good practice)  
EXPOSE 8080  
  
# Run the command to execute the JAR file when the container launches  
CMD ["java", "-jar", "AdditionProgram.jar"]

* **Note:** Ensure the Dockerfile is in the same directory as your target folder or adjust the COPY path accordingly.

### **Step 3: Build the Docker Image**

* **Command:**

docker build -t addition-program .

* **Location:** Run in the directory where your Dockerfile is located
* **Outcome:** A Docker image with the name addition-program

### **Step 4: Run the Docker Container**

* **Command:**

docker run -it --name addition-app addition-program

* **Explanation:**
* -it allows for interactive shell, necessary for console input/output
* --name specifies the container name
* addition-program is the image name to run from
* **Outcome:** The container starts, and you can interact with your Simple Addition Program

### **Step 5: Stop and Remove the Container (Optional)**

* **Stop Container:**

docker stop addition-app

* **Remove Container:**

docker rm addition-app

* **Note:** If you want to keep the container for future use, only stop it. Remove if you're sure you won't need it again.

### **Troubleshooting Tips**

* **Verify Docker Installation:** Ensure Docker is correctly installed and functioning.
* **Check Java and Maven Versions:** Confirm your Java and Maven versions meet the project's requirements.
* **Inspect Docker Logs:** For issues during container runtime, inspect logs with docker logs -f addition-app to diagnose problems.

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