47. Write a python program to perform arithmetic operations and create Docker image accordingly.

Run the Docker container with created image .

To create a Python program that performs arithmetic operations and then package it in a Docker image, follow these steps:

Step 1: Write the Python Program

First, let's write a simple Python program `arithmetic_operations.py` that takes two numbers and performs basic arithmetic operations like addition, subtraction, multiplication, and division.

python

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```
# arithmetic_operations.py

def add(a, b):

    return a + b

def subtract(a, b):

    return a - b

def multiply(a, b):

    return a * b

def divide(a, b):

    if b != 0:

        return a / b

    else:

        return "Cannot divide by zero"

def main():
```

```
    print("Enter first number:")
    a = float(input())
    print("Enter second number:")
    b = float(input())


    print(f"Addition: {add(a, b)}")
    print(f"Subtraction: {subtract(a, b)}")
    print(f"Multiplication: {multiply(a, b)}")
    print(f"Division: {divide(a, b)}")
if __name__ == "__main__":
    main()
```

Step 2: Create a Dockerfile

To create a Docker image, we need to create a `Dockerfile` that will specify how to build the image. This will include using a Python base image and copying the Python program into the container.

Here's a `Dockerfile`:

Dockerfile

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```
# Use the official Python image from the Docker Hub
FROM python:3.9-slim
# Set the working directory in the container
WORKDIR /usr/src/app
# Copy the current directory contents into the container
```

```
COPY . .

# Install any necessary dependencies (if any)

# RUN pip install --no-cache-dir -r requirements.txt

# Command to run the Python program when the container starts

CMD ["python", "arithmetic_operations.py"]
```

Step 3: Create the Docker Image

Now, navigate to the directory containing the `arithmetic_operations.py` and `Dockerfile`. Open a terminal and run the following commands to build the Docker image.

bash

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```
# Build the Docker image

docker build -t arithmetic-operations .

# Verify the image is created

docker images
```

Step 4: Run the Docker Container

Once the image is built, you can run the Docker container using the following command:

bash

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```
# Run the Docker container

docker run -it arithmetic-operations
```

This will run the Python program in an interactive terminal, allowing you to input two numbers and see the results of the arithmetic operations.

Final Notes:

- **Ensure you have Docker installed on your machine before running these commands.**
- **This is a basic setup; if you need additional Python dependencies, you can add them to a `requirements.txt` file and install them in the Dockerfile.**