Scenario: You are a data analyst working for a car manufacturing company. As part of your analysis, you have a dataset containing information about the fuel efficiency of different car models. The dataset is stored in a NumPy array named fuel\_efficiency, where each element represents the fuel efficiency (in miles per gallon) of a specific car model. Your task is to calculate the average fuel efficiency and determine the percentage improvement in fuel efficiency between two car models.

Question: How would you use NumPy arrays and arithmetic operations to calculate the average fuel efficiency and determine the percentage improvement in fuel efficiency between two car models?

Program:

import pandas as pd

df = pd.read\_csv("data/fuel\_efficiency.csv")

average\_efficiency = df["FuelEfficiency"].mean()

model\_a\_eff = df.loc[df["CarModel"] == "ModelB", "FuelEfficiency"].values[0]

model\_b\_eff = df.loc[df["CarModel"] == "ModelD", "FuelEfficiency"].values[0]

percentage\_improvement = ((model\_b\_eff - model\_a\_eff) / model\_a\_eff) \* 100

print("Average fuel efficiency:", average\_efficiency)

print("Percentage improvement from ModelB to ModelD:", percentage\_improvement)

output:

Average fuel efficiency: 29.2

Percentage improvement from ModelB to ModelD: 10.666666666666668