Homework Assignment: Exploring Arithmetic Operations and Logical Expressions in Python

Objective: The main objective of this assignment is to teach students arithmetic operations, comparison operators, and logical expressions in Python. Students will gain hands-on experience with performing calculations and making logical decisions in a programming context.

Problem 1: Arithmetic Operations

1. Write a Python script that defines two variables: `num1` and `num2`. Assign them any integer values of your choice.

2. Use the following arithmetic operations with `num1` and `num2`:
   - Addition
   - Subtraction
   - Multiplication
   - Division
   - Modulus (remainder of the division)

3. Print the results of each operation in a formatted manner. For example:
   - "The sum is ____."
   - "The difference is ____."
   - "The product is ____."
   - "The quotient is ____."
   - "The remainder is ____."

Problem 2: Comparison Operators and Logical Expressions

4. Extend the script to compare `num1` and `num2` using the following comparison operators:
   - Equal to (`==`)
   - Not equal to (`!=`)
   - Greater than (`>`)
   - Less than (`<`)
   - Greater than or equal to (`>=`)
   - Less than or equal to (`<=`)

5. Print the results of each comparison, indicating whether the comparison is True or False. For example:
   - "Is num1 equal to num2? True/False."
   - "Is num1 not equal to num2? True/False."
   - "Is num1 greater than num2? True/False."
   - "Is num1 less than num2? True/False."
   - "Is num1 greater than or equal to num2? True/False."
   - "Is num1 less than or equal to num2? True/False."

6. Implement a logical expression using the `and`, `or`, and `not` operators. For example:
   - "Is num1 greater than 0 and num2 less than 10? True/False."
   - "Is num1 equal to 5 or num2 equal to 8? True/False."
   - "Is not(num1 equals num2)? True/False."

Additional Tips:

- Utilize online resources, Python documentation, and course materials to reinforce your understanding.
- Collaborate with classmates to discuss concepts and problem-solving.
- Seek assistance from your instructor or classmates if you encounter difficulties.