**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.