CITC1301: Introduction to Programming & Logic

Hands-On Coding Activity: Python Operators

Due Date: As listed in eLearn
Estimated Duration: 30 minutes
Objective: Practice using Python operators to perform basic mathematical operations. This activity is designed for students with a limited background in programming.

Instructions:

Complete the following six hands-on coding activities using Python's operators. Submit your Python code and screenshots of your code's output in eLearn by the due date.

Activity 1: Simple Arithmetic Operations

Task:
Write a Python program that takes two numbers as input from the user and performs addition, subtraction, multiplication, and division. The program should then display the results of each operation.

Code Example:

```
# Get two numbers from the user
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))

# Perform basic arithmetic operations
addition = num1 + num2
subtraction = num1 - num2
multiplication = num1 * num2
division = num1 / num2

# Print the results
print(f"Addition: {addition}")
print(f"Subtraction: {subtraction}")
print(f"Multiplication: {multiplication}")
print(f"Division: {division}")
```

Expected Output:

```
Enter the first number: 10
Enter the second number: 5
Addition: 15.0
Subtraction: 5.0
Multiplication: 50.0
Division: 2.0
```

Activity 2: Modulus Operator

Task:
Write a Python program that asks the user for two numbers and calculates the remainder when the first number is divided by the second number using the modulus operator (`%`).

Expected Output:

```
Enter the first number: 17
Enter the second number: 5
The remainder is: 2
```

Activity 3: Exponentiation Operator

Task:
Create a Python program that prompts the user for a base number and an exponent. The program should calculate the result of raising the base to the power of the exponent using the exponentiation operator (`**`).

Expected Output:

```
Enter the base: 2
Enter the exponent: 3
The result is: 8
```

Activity 4: Floor Division Operator

Task:
Write a Python program that asks the user to input two numbers and performs floor division on them using the floor division operator (`//`). Display the result.

Expected Output:

```
Enter the first number: 10
Enter the second number: 3
The result of floor division is: 3
```

Activity 5: Operator Precedence

Task:
Write a Python program that calculates and displays the result of the following expression:
`result = 5 + 3 * 2 - 8 / 4`
Have the program display the result to demonstrate the order of operations.

Expected Output:

```
The result of the expression is: 9.0
```

Activity 6: Mixed Operators

Task:
Write a Python program that asks the user for two numbers and performs a series of mixed operations (addition, multiplication, and division) in one line. Display the result of the operation.

Expected Output:

```
Enter the first number: 6
Enter the second number: 2
The result of the mixed operation is: 18.0
```

References for Possible Answers:

- **Python Operators Documentation**: Python Official Docs - Operators
- **Python Arithmetic Operators**: W3Schools - Python Operators

- **Python Operator Precedence**: GeeksforGeeks - Operator Precedence

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Further Exploration:

For more practice with Python operators, check out these resources:

- Programiz - Python Operators
- Real Python - Arithmetic Operators

Submission Instructions:

- Ensure your code runs without errors and provides the expected output.
- Include a screenshot of your program's output along with your code.
- Submit the Python code and output screenshots via the eLearn platform by the due date.

Assessment Criteria:

- **Correct Use of Operators**: Proper use of arithmetic operators in Python.
- **Order of Operations**: Correct understanding of operator precedence.
- **Code Clarity**: Proper structure and readability of code (clear comments, consistent formatting).