

# UMSL CMPSCI4250 Homework 3

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1. Describe a situation when the arithmetical 'add' operator in a programming language would not be commutative.
2. Describe a situation when the arithmetical 'add' operator in a programming language would not be associative.
3. Consider the following C program:

```
int fun(int *i) {  
    *i += 5;  
    return 4;  
}  
  
void main() {  
    int x = 3;  
    x = x + fun(&x);  
}
```

What is the value of  $x$  after the assignment statement in main, assuming

a. operands are evaluated left to right.

$x = 7$  // since  $x = 3 + 4$

b. operands are evaluated right to left.

$x = 12$  // since  $x = 8 + 4$

4. Indicate 3 general characteristics of a subprogram.

Three general characteristics of a subprogram are as follows:

- 1) Each subprogram has a single entry point