Problem Set from Sebesta

* 1. What advantages does static type checking have over dynamic type checking? (Ch. 6)
  2. Consider the integer expression A + B + C. Suppose the values of A, B, and C are 20,000, 25,000, and -20,000, respectively, and the machine has a maximum integer value of 32,767. Explain difference of left-to-right evaluation and right-to-left evaluation. Show it, yes, but also include an explanation. (Ch. 7)
  3. What are arguments for and against a user program building additional definitions for existing operators, as in C++? (Ch. 9)
  4. (Also Ch. 9) For each parameter passing method listed below, show all of the values of value and list after each of the three calls to swap.   
     Assume each call begins with val=2 and list = {1,3,5,7,9}.

void swap(int a, int b) {

int temp;

temp = a;

a = b;

b = temp;

}

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter passing method | Method call | Value of val after call | Value of list after call |
| pass by value | swap(value, list[0]) |  |  |
|  | swap(list[0], list[1]) |  |  |
|  | swap(value, list[value]) |  |  |
| pass by reference | swap(value, list[0]) |  |  |
|  | swap(list[0], list[1]) |  |  |
|  | swap(value, list[value]) |  |  |
| pass by value-result | swap(value, list[0]) |  |  |
|  | swap(list[0], list[1]) |  |  |
|  | swap(value, list[value]) |  |  |

* 1. What dangers are avoided in Java by having implicit garbage collection, relative to C++? (Ch. 11)
  2. Create a 1-dimensional Fortran array B of 300 real numbers, indexed from -149 to +150.