CSCI 320, Fall 2011
Homework 8, due Friday, November 11, **10am**

Show what will be printed by each program (below) if each of the following parameter passing mechanisms is used. Assume that if a parameter is not initialized by its method, the value in the parameter is garbage.

a. `VAL` pass by value
b. `RES` pass by result
c. `VALRES` pass by value-result
d. `REF` pass by reference
e. `NAME` pass by name

a. Consider the following program in the (made-up) programming language Leibniz.

```
main ( ) { // execution starts here
    int i, j, k;

    i := 12; j := 3; k := 0;
    Subtract(i, j, k);
    writeln("Difference = ", k);
}
method Subtract (VAL int minuend; // always a VAL parameter
                 VAL int subtrahend; // always a VAL parameter
                 difference: integer); // type changes based on problem
{
    difference := minuend - subtrahend;
}
```

b. Consider the following program in the (made-up) programming language Leibniz.

```
int a[2]; // declarations here are visible by all methods and main
main ( ) {
    int i;
    i    := 1;
    a[1] := 1;
    a[2] := 1;
    P(a[i]);
    writeln(a[1], a[2]);
}
method P (int x integer){
    x    := x + 2;
    a[i] := 10;
    i    := 2;
    x    := x + 2;
}
//  Careful: the method has side effects.
```

Notes:

- This is a paper and pencil homework – write clearly labeled answers and submit on paper.
- This assignment requires that you work alone – you may, of course, read Chapter 9 or look up definitions of parameter passing mechanisms on the internet – but you may not discuss these particular problems with others.
- Submit, on paper, by Friday 10am. Slip under my office door by **10am on Friday** (freeing up your weekend to do the Prolog stuff that Professor Boetje will give you on Wednesday).
- If you have questions about the assignment, contact me by email.