

CS 6340 – Fall 2009 – Problem Set 4

Name _____

Assigned: September 8, 2009

Due: September 15, 2009

At the beginning of class on the due date, submit your neatly presented solution with this page stapled to the front (70 pts).

Given the following C program,

Program M

```
1.  begin M
2.    read i, j
3.    sum = 0
4.    while i <= 10 do
5.      call B
6.    endwhile
7.    print (i)
8.    call C
9.  end M
```

Procedure B

```
10. begin B
11.   if sum > 10 then
12.     print (error)
13.   endif
14.   call C
15.   i = i + 1
16. end B
```

Procedure C

```
17. begin C
18.   if j >= 0 then
19.     sum = sum + j
20.     read j
21.   endif
22. end C
```

1. Construct the PDGs for M, B, and C in the program above. The control-flow graphs should have one node for each statement.
2. Use the PDGs from (1) to construct the system dependence graph for M.
3. Compute the slices for the program with the criteria
 - a. $\langle 7, i \rangle$
 - b. $\langle 15, i \rangle$
 - c. $\langle 18, j \rangle$Justify the results for all the slices by describing the way you computed them.