CS 6340 – Spring 2013 – Assignment 5
Assigned: January 30, 2013
Due: February 6, 2013

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At the beginning of class on the due date, submit your neatly presented solution with this page stapled to the front (60 points).

NOTE: All work on this problem set is to be done with your partner and without solutions from other past or current students. Any violations will be dealt with according to the Georgia Tech Academic Honor Code and according to the College of Computing process for resolving academic honor code violations. All work must be done using some document creation tool. In addition, graphs must be drawn with a graph-drawing tool—no hand-drawn graphs will be accepted.

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
```

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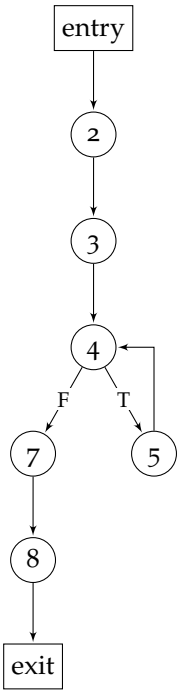
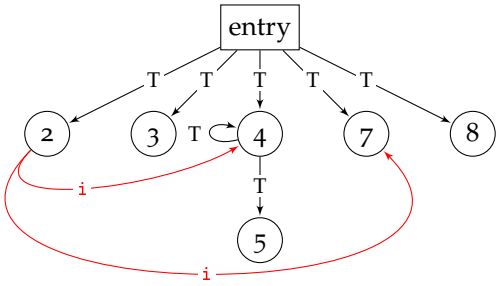
1. Augmented CDGs and PDGs for each of the three programs are shown below. Edges corresponding to data dependencies on the PDGs are shown in red, and are labeled by the variable they represent.†

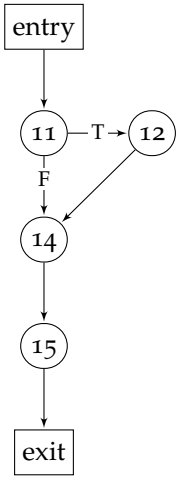
†show parameter copying? exit nodes?



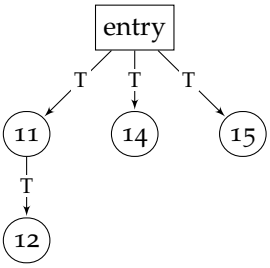
The CFG for program M.



The PDG for program M.

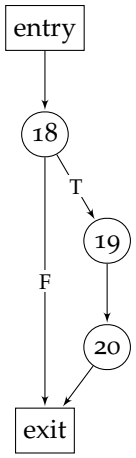


The CFG for procedure B.

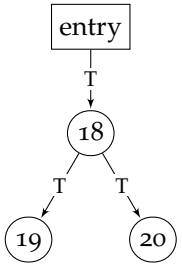


The PDG for procedure B.†

†data edges?

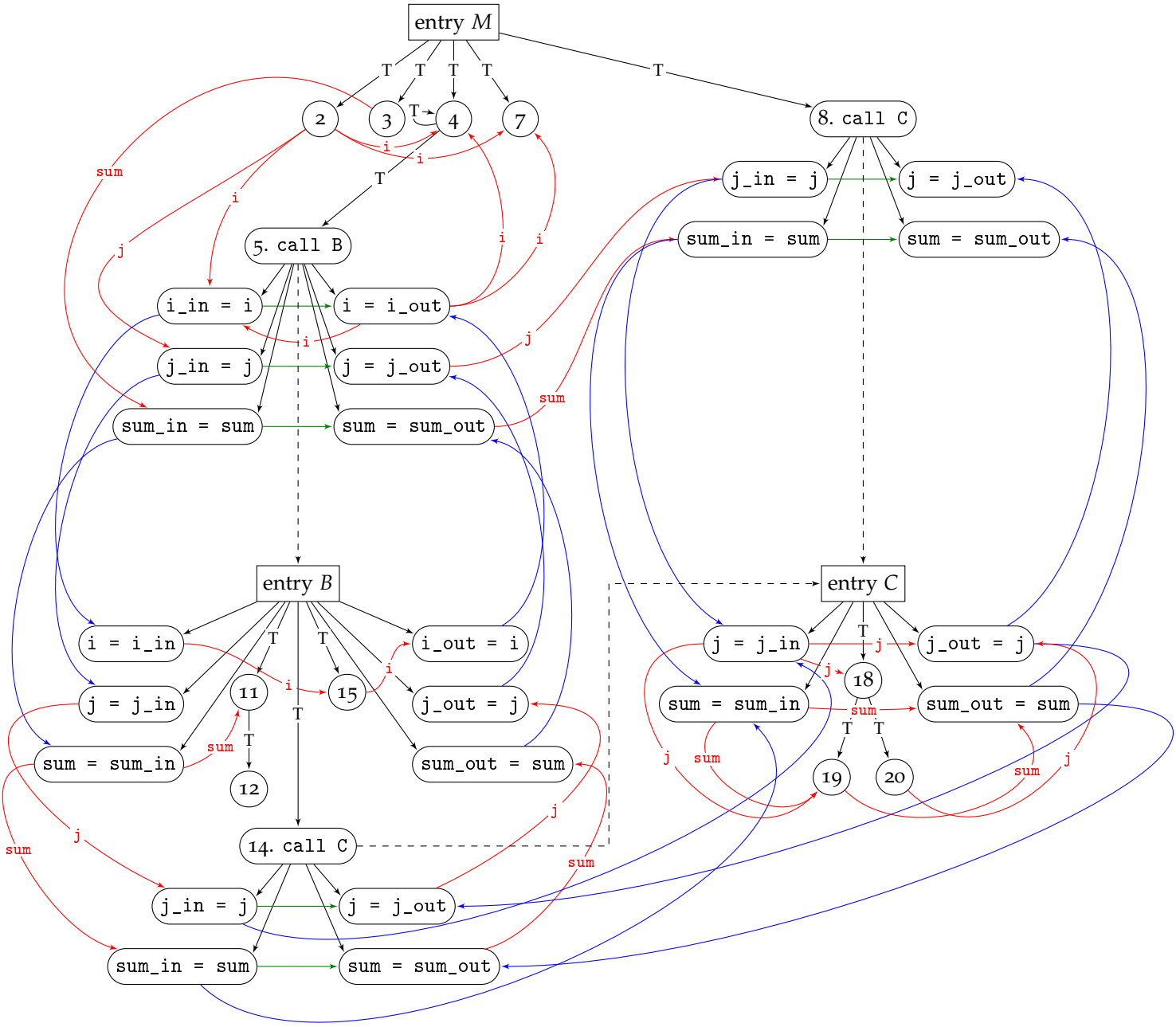


The CFG for procedure C.



The PDG for procedure C.[†]

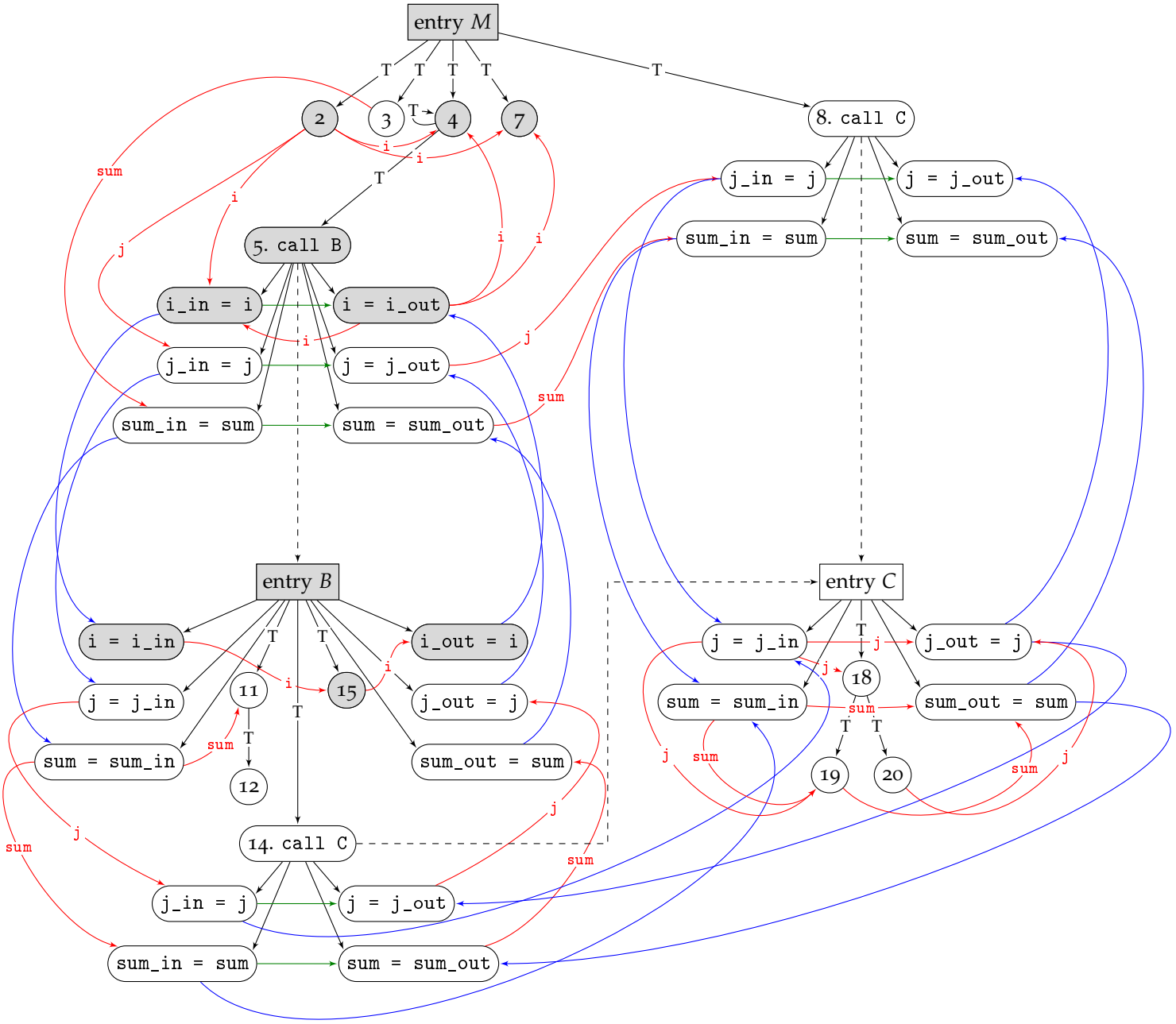
[†]data edges?



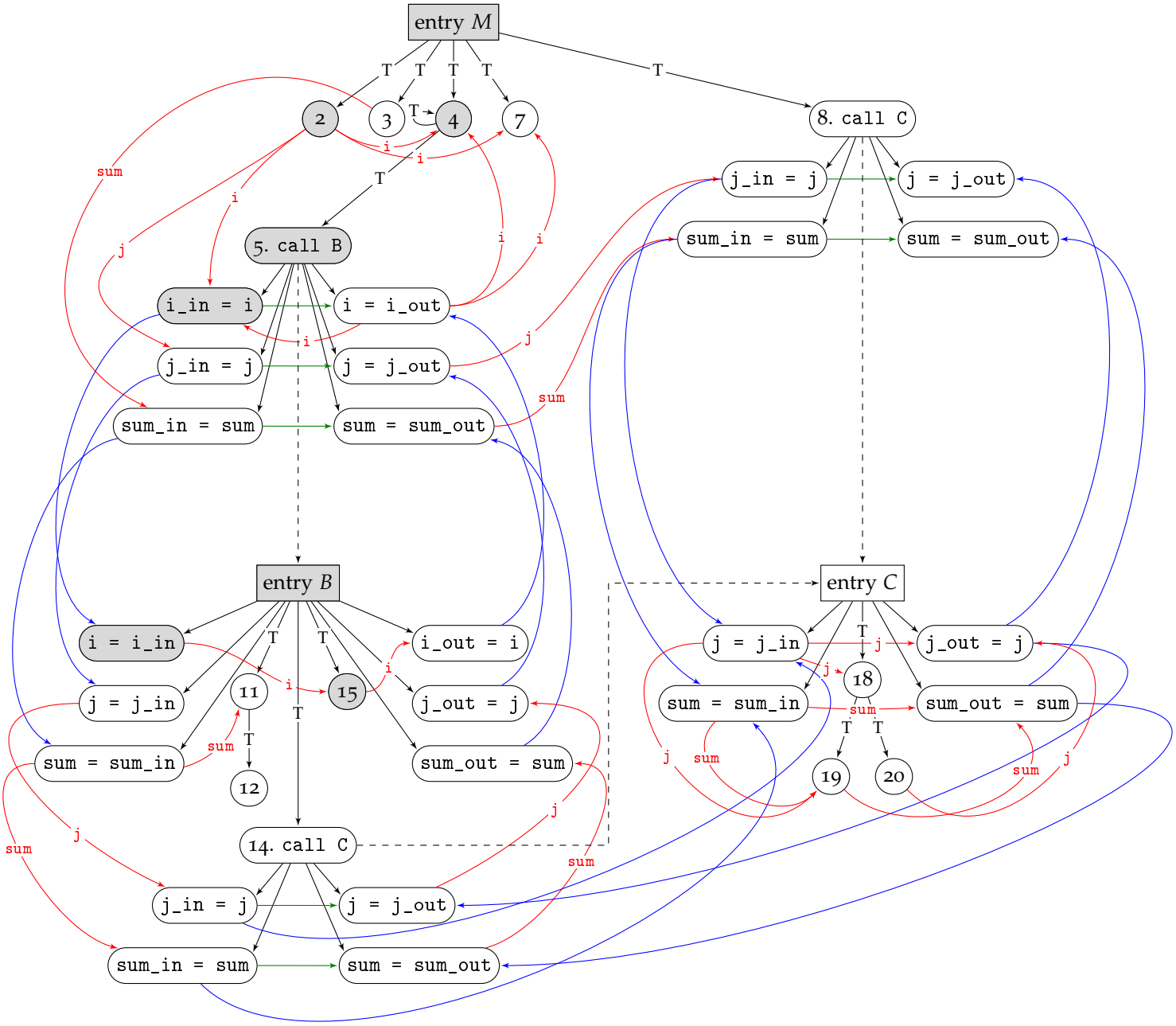
2.

3. In the following, nodes included in the slice are shaded.

(a) The slice according to $\langle 7, \mathtt{i} \rangle$



(b) The slice according to $\langle 15, \mathtt{i} \rangle$



(c) The slice according to $\langle 18, \mathtt{j} \rangle$