Homework #7
Control Flow Analysis

1. Consider the following rather high-level intermediate code for a factorial function.:

```
                Factorial (X)

                I = 2
L1:             if  I > X
                    (then) go L2
                  Fact = Fact * I
                   I = I + 1
                   Dumb = 5
                   go L1
 L2:              Factorial = Fact
                 Return
```

You can presume that the only variable known outside the function is Factorial.

(a) (.25 points) Partition the program into basic blocks

(b) (.5 points) Number the Basic Blocks and show the Control flow Graph

2. (1 point) Using the blocks B_i in the CFG, compute, for all nodes *n*:

B_i DOM n

	For loop	**While loop1**	**While loop3**	**While loop3**
1				
2				
3				
4				

.

3. (.5 points) Show a cycle in the CFG and justify that it is a loop.

4. (.5 points) Show a DAG for the largest basic block.