**CS 6501- Spring 2020 - Problem 3 Name:**

Assigned: January 23, 2020

Due: January 30, 2020

At the beginning of class on the due date, submit your solution on Collab.

(20 points).

Given the following control flow graph:

* 1. Compute the reaching definitions for each node in the control-flow graph: create a table that shows the initial values of the IN, OUT, GEN, and KILL sets, along with the results of the first and second iterations of the reaching-definition data-flow analysis algorithm.
  2. Compute the reachable uses for each node in the control-flow graph: create a table that shows the initial values of the IN, OUT, GEN, and KILL sets, along with the results of the first and second iterations of the reachable-use data-flow analysis algorithm.
  3. Calculate definition-use pairs (du-pairs) for the program: create a table that shows, for each node that contains a use, the du-pairs that involve that use.
  4. Compute DU-Chains and UD-Chains for the program.

3 i:

entry

1 i : m-1

2 j := n

3 a := r

1. i= i + 1
2. j := j – 1

6. If j < n

7 a := p

8 j := j + 2

9 i := a + j

10 If I > 10

exit

B1

B2

B3

B5

B6