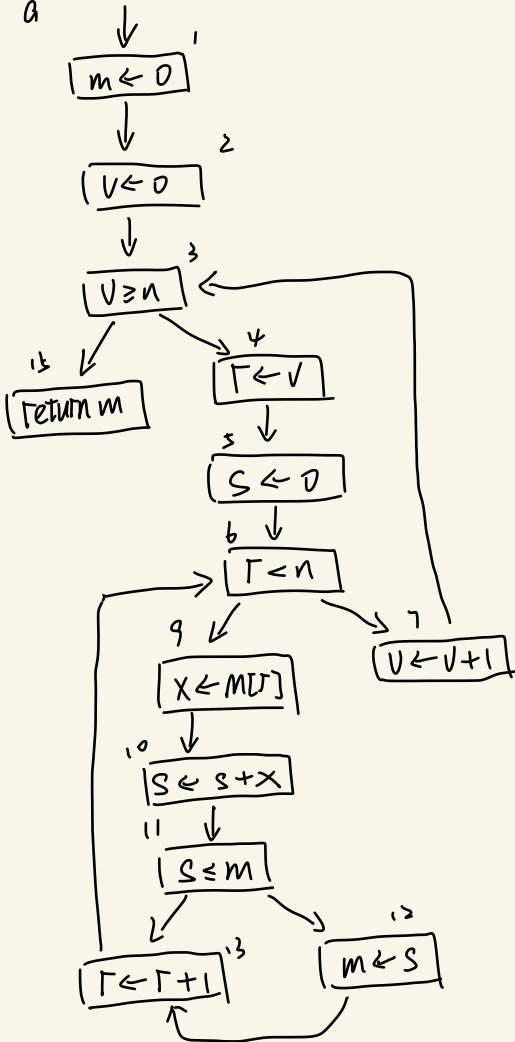


Perform flow analysis on the program of [Exercise 8.6](#):

- Draw the control-flow graph.
- Calculate live-in and live-out at each statement.
- Construct the register interference graph.

| | | | |
|---|-----------------------|----|-----------------------|
| 1 | $m \leftarrow 0$ | 9 | $x \leftarrow M[r]$ |
| 2 | $v \leftarrow 0$ | 10 | $s \leftarrow s + x$ |
| 3 | if $v \geq n$ goto 15 | 11 | if $s \leq m$ goto 13 |
| 4 | $r \leftarrow v$ | 12 | $m \leftarrow s$ |
| 5 | $s \leftarrow 0$ | 13 | $r \leftarrow r + 1$ |
| 6 | if $r < n$ goto 9 | 14 | goto 6 |
| 7 | $v \leftarrow v + 1$ | 15 | return m |
| 8 | goto 3 | | |

a.



b.

| | |
|-------------|----------------------|
| $in[15] =$ | m |
| $out[15] =$ | \checkmark |
| $in[13] =$ | Γ, n, m, s, v |
| $out[13] =$ | Γ, n, m, s, v |
| $in[12] =$ | s, n, r, v |
| $out[12] =$ | Γ, n, m, s, v |
| $in[11] =$ | m, r, s, n, v |
| $out[11] =$ | s, Γ, m, n, v |
| $in[10] =$ | m, r, s, x, n, v |
| $out[10] =$ | m, r, s, n, v |
| $in[9] =$ | Γ, m, s, n, v |
| $out[9] =$ | m, r, s, x, n, v |
| $in[7] =$ | v, m, n |
| $out[7] =$ | v, m, n |
| $in[6] =$ | Γ, n, m, s, v |
| $out[6] =$ | Γ, m, s, v |
| $in[5] =$ | Γ, n, m, v |
| $out[5] =$ | Γ, n, m, s, v |
| $in[4] =$ | n, m, v |
| $out[4] =$ | Γ, n, m, v |
| $in[3] =$ | m, n, v |
| $out[3] =$ | m, n, v |
| $in[2] =$ | m, n |
| $out[2] =$ | m, n, v |
| $in[1] =$ | n |
| $out[1] =$ | m, n |

