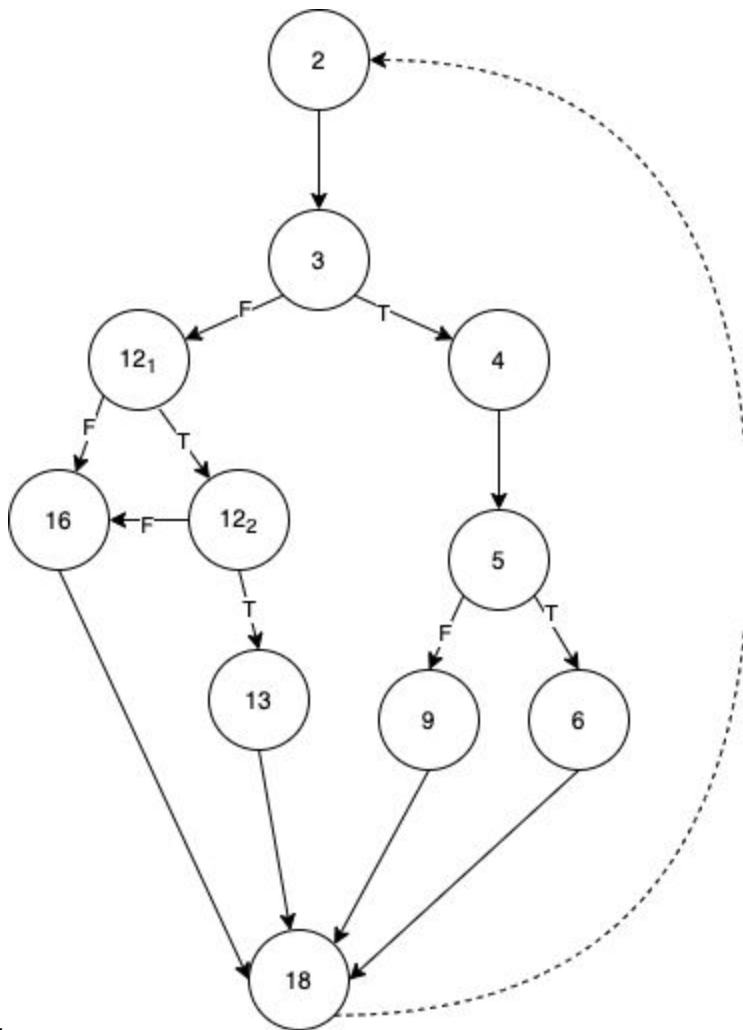


SQA Assignment 1
Sarah Pham

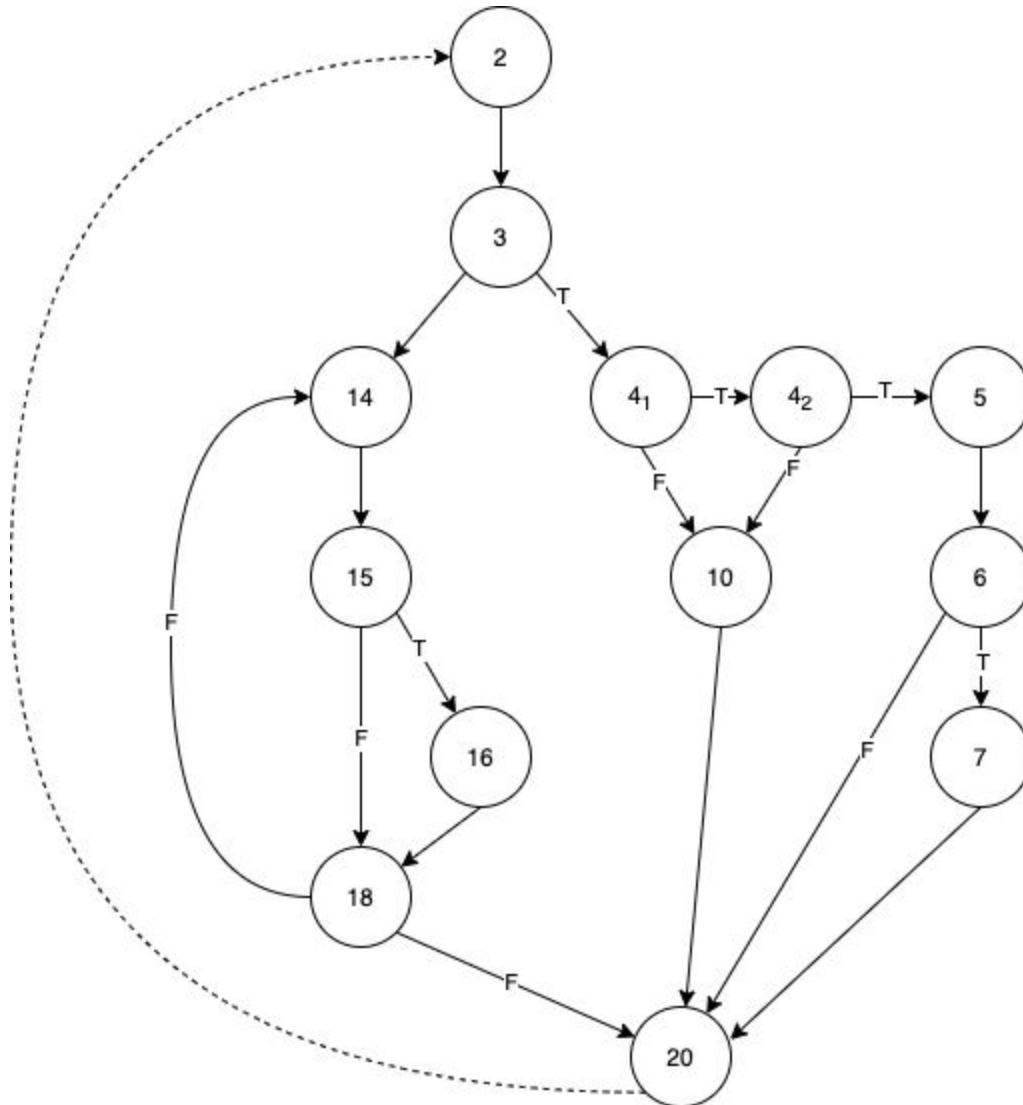


1a.

1b.

- $v(g) = p + 1$ (p is number of if statements)
 - 4 if-statements
 - $4 + 1 = 5$
- $v(g) = e - n + p$ (# of lines - # of nodes + # of strong connections)
 - 14 edges
 - 11 nodes
 - 2 Strong connections
 - $14 - 11 + 2 = 5$
- $v(g) = \# \text{ of regions}$
 - 5 regions

1c. [2-3-4-5-6-18],[2-3-4-5-9-18],[2-3-12₁-12₂-13-18],[2-3-12₁-12₂,16,18],[2-3-12₁-16-18] = 5 paths to get to the final node



2a.

2b.

- $v(g) = p + 1$ (p is # of if statements)
 - 6 if-statements (including do-while)
 - $6 + 1 = 7$
- $v(g) = e - n + p$ (# of lines - # of nodes + # of strong connections)
 - 18 lines
 - 13 nodes
 - 2 strong connection
 - $18 - 13 + 2 = 7$
- $v(g) = \# \text{ of regions}$

- 7 regions

2c. $P^* = P_{m1}^*$

= [2-3-4₁-4₂-5-6-7-20], [2-3-4₁-4₂-5-6-20], [2-3-4₁-4₂-10-20], [2-3-4₁-10-20] = 4 paths on the right side]

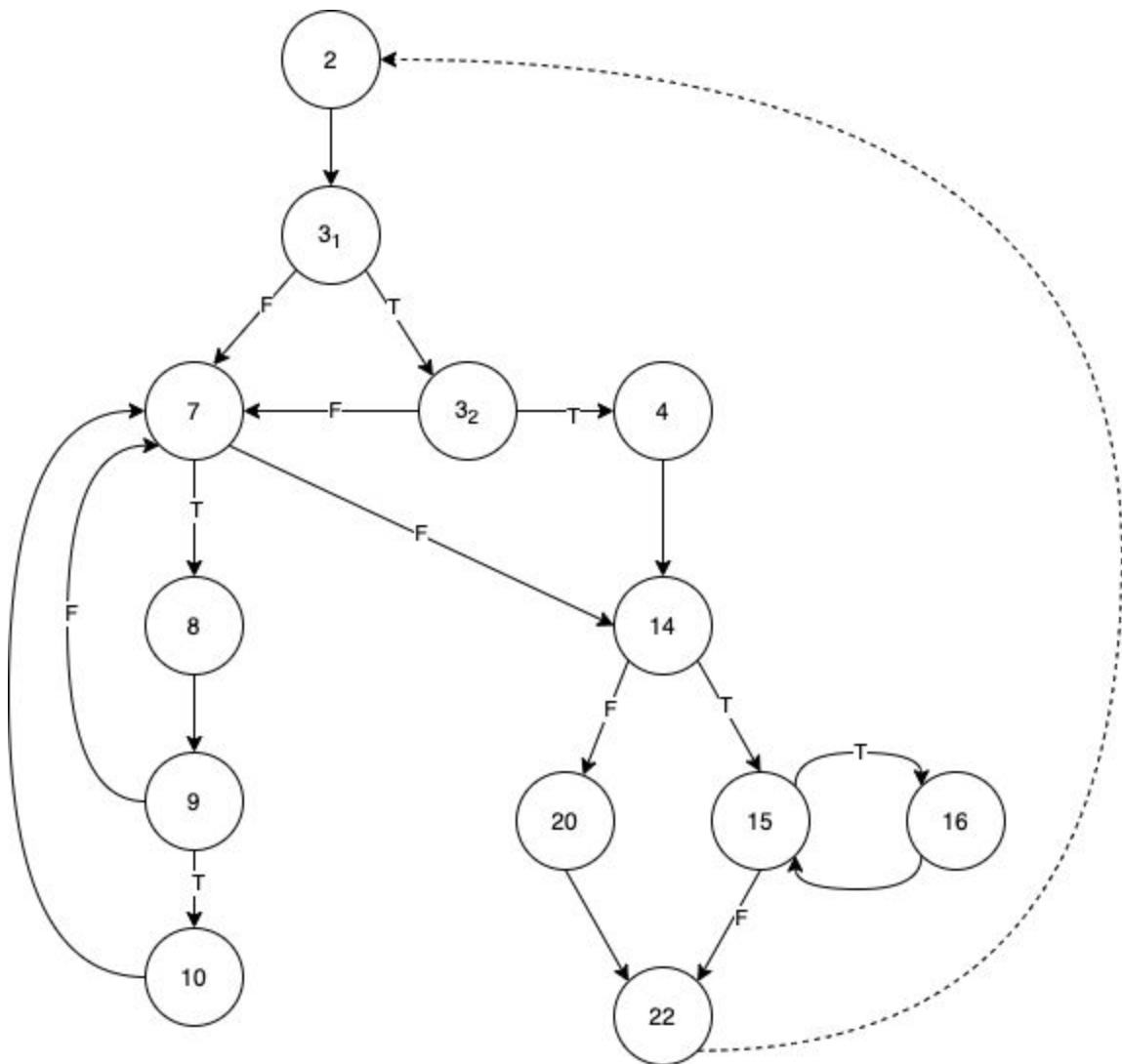
= $2^4 = 16$ paths on the left side (for loop)

= $16 * 4 = 64$

2.2. [7 counted regions] [13 nodes][18 lines]

$v(g) = 18 - 13 + 2 = 7$

If statements counted = 5



3a.

3b.

- $v(g) = p + 1$ (p is number of if statements)
 - 6 if-statements (including for loop)
 - $6 + 1 = 7$
- $v(g) = e - n + p$ (# of lines - # of nodes + # of strong connections)

- 19 edges
- 13 nodes
- 1 strong connection
- $19 - 13 + 1 = 7$
- $v(g) = \# \text{ of regions}$
 - 7 regions

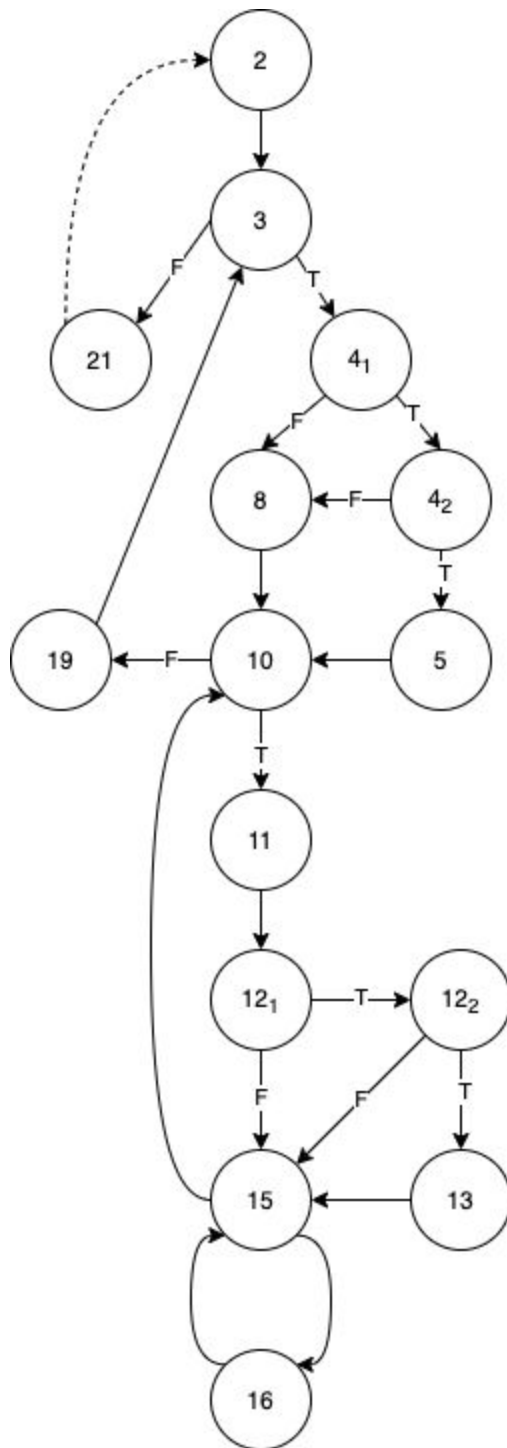
3c. $P^* = P_{m1}^*$

$= [2-3_1-3_2-4-14-20-22], [2-3_1-3_2-7-14-20-22], [2-3_1-7-14-20-22] = 3 \text{ paths before the loops}$

$= [15-16] = 1^3 = 1 \text{ path}$

$= [7-8-9-10] = 2^0 + 2^1 + 2^2 + 2^3 = 12 \text{ paths}$

$= 3 * 1 * 12 = 36 \text{ paths}$



4a.

4b.

- $v(g) = p + 1$ (p is number of if statements)
 - 7 if-statements (including while loop)
 - $7 + 1 = 8$
- $v(g) = e - n + p$ (# of lines - # of nodes + # of strong connections)
 - 23 edges
 - 15 nodes

- 0 strong connections
- $23 - 15 = 8$
- $v(g) = \#$ of regions
 - 8 regions

4c. $P^* = P_{m1}^*$

$$= [15-16] = 1^3 = 1 \text{ paths}$$

$$= [10-11-12_1-15] = 2^2 = 4 \text{ paths}$$

$$= [3-4_1-4_2-5-10], [3-4_1-4_2-8-10], [3-4_1-8-10] = 3^2 = 9 \text{ paths}$$

$$= 1 * 4 * 9 = 36 \text{ paths}$$