COMP - Dataflow Analysis: Liveness Analysis (2) (MIEIC - Compilers - 2021)

103	10:46	Active
Responses	Average time to complete	Status

1. The liveness analysis technique presented needs to be applied in a specific order of the CFG nodes to be right:

   77% of respondents (79 of 102) answered this question correctly.

True	23	
False	79	✓

2. Visiting the CFG nodes by a forward order than a backward order of the flow when iterating during the liveness analysis possibly results in

   88% of respondents (91 of 103) answered this question correctly.

more iterations	91	✓
wrong in and out sets	12	

3. In a pre-processing step to define the visiting order of the CFG nodes for liveness analysis, the suggestion is to use

   94% of respondents (97 of 103) answered this question correctly.

breath-first search (BFS)	6	
depth-first search (DFS)	97	✓

4. The variables we select for liveness analysis are the local scalar variables (and possibly the function parameters) because:

   97% of respondents (100 of 103) answered this question correctly.

We are interested to determin...	100	✓
They are the only variables for...	3	

5. In straight-line code (i.e., sequences of code without branches) what is the minimum number of iterations we need to output the liveness analysis results?

   78% of respondents (80 of 102) answered this question correctly.

1	16	
2	80	✓
3	6	
None of the options	0	

6. From which liveness analysis sets (i.e., use, def, in, out) we can identify all the lifetime interferences between variables?

80% of respondents (82 of 102) answered this question correctly.

in and out sets	82	✓
in sets	0	
out sets	3	
use, def, in, out sets	13	
use and def sets	4	

7. Instead of applying the dataflow analysis algorithm for liveness analysis one time (e.g., doing liveness analysis for all the considered variables at the same time), can it be used to determine the liveness of a single variable each time and, assuming N variables, apply it N times (each time for determining the liveness of a different variable)?

74% of respondents (76 of 103) answered this question correctly.

No	27	
Yes	76	✓

8. Given any CFG (with N nodes) and K scalar variables, what can be the maximum number of iterations one may expect for liveness analysis (and whatever is the visiting order of the CFG nodes)?

89

Responses

Latest Responses

"2N^2"

"inifinite"