

Input: Integer Variable *var* of function *func*

Output: Fixed-size integer *type* for *var* suggested by our bound analyser

1: **Variables**

2: *type*: Fixed-sized Integer types (*int16_t*, *int32_t*, *int64_t*, *uint16_t*,
 uint32_t, *uint64_t*)

3: $MAX(type)$: Maximal value of *type*

4: $MIN(type)$: Minimal value of *type*

5: **end Variables**

 // Use bound result to choose fixed-width integer type

6: **procedure** CHOOSEINTEGERTYPE(*var*, *func*)

7: *d* = *domain*(*var*)

8: *lower* = *d.getLower()* // Get lower bound

9: *upper* = *d.getUppser()* // Get upper bound

10: **if** $lower \geq 0$ **then** // Unsigned integer

11: **if** $upper \leq MAX(uint16_t)$ **then**

12: **return** *uint16_t*

13: **else if** $upper \leq MAX(uint32_t)$ **then**

14: **return** *uint32_t*

15: **else**

16: **return** *uint64_t*

17: **end if**

18: **else** // Signed integer

19: **if** $MIN(int16_t) \leq lower$ AND $upper \leq MAX(int16_t)$ **then**

20: **return** *int16_t*

21: **else if** $MIN(int32_t) \leq lower$ AND $upper \leq MAX(int32_t)$ **then**

22: **return** *int32_t*

23: **else**

24: **return** *int64_t*

25: **end if**

26: **end if**

27: **end procedure**