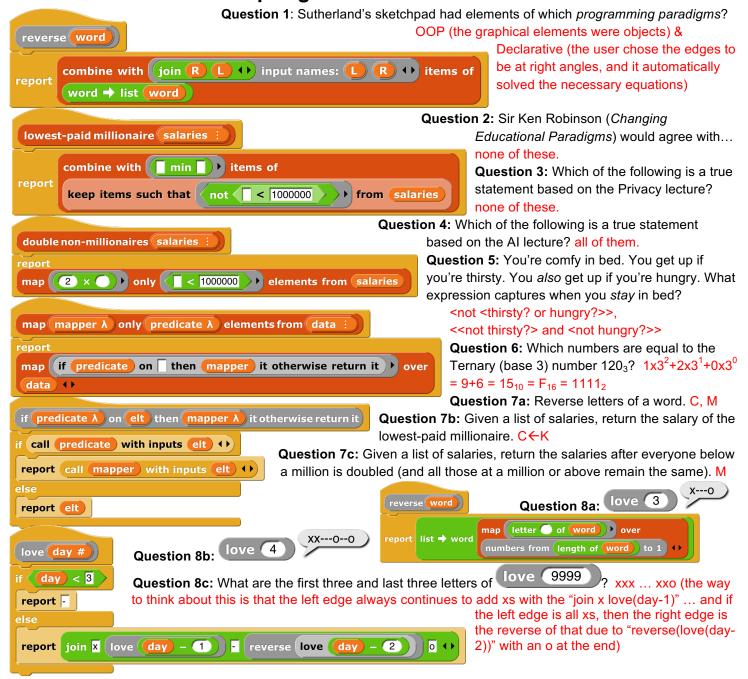
## CS10 Spring 2017 Midterm 1 Answers



Question 8d: For the following, choose either Possible or Impossible if it's ever possible to do these things someday.

- Hang out *four* times in a row (i.e., "----") **IMPOSSIBLE**. The ends of a love sequence for day ≥ 3 are x and o respectively. So the middle "-" will always be buffeted by an x or o, and there's no other way to have dashes in there, aside from recursive calls to love that have three in a row from love(3).
- Hug immediately followed by a kiss (i.e., "ox") POSSIBLE. Remember from 8c that the right two letters of love's output (for days ≥ 5) is always "xo". That means that for days ≥ 7 (because the reverse is wrapped around recursive call to "day -2") that "xo" will be reversed in the middle to be an "ox".
- Hug twice in a row (i.e., "oo") IMPOSSIBLE. Note that os only appear on the right, and next to a reversed recursive call. The left of any love (with day ≥ 3) is always x, so when reversed is next to the o on the right, so there's no "oo" there. The right of any love (with day ≥ 3) is always o, so when reversed the o sits next the "-", so there's no "oo" there either. Finally, when we check love (with day < 3), it only adds dashes, so no o there either.