UC Berkeley's CS10 Spring 2017 Midterm 1 : Instructor Dan Garcia
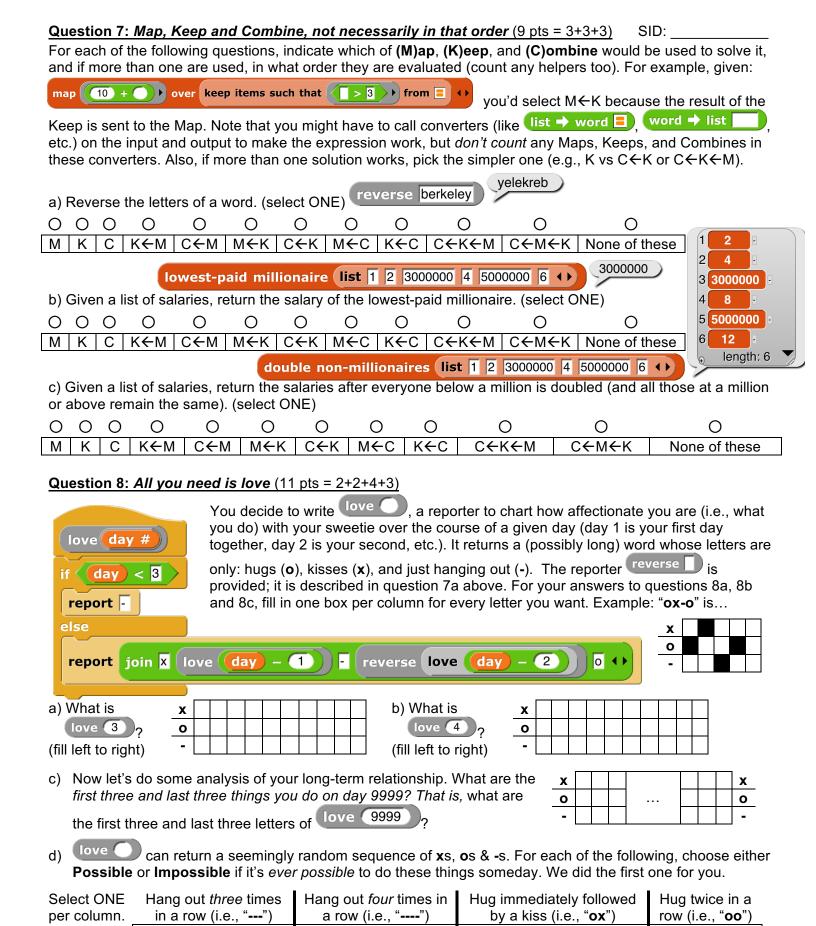
_____   _____   _____
Your Name (first last)   *SID*   *Lab TA's Name*

_____   _____
← *Name of person on left (or aisle)*   *Name of person on right (or aisle)* →

What's that Smell? Oh, it's Potpourri! (2 pts each for 1-6, low score dropped)

Fill in the correct circles & squares completely…like this: ● *(select ONE)* ■ *(select ALL that apply)*

Question 1: Sutherland's *sketchpad* had elements of which *programming paradigms*? (select ALL that apply)

☐	☐	☐	☐	☐	☐	☐	☐
Imperative	Functional	OOP	Graphical	Clustered	Textual	Declarative	None of these

Question 2: Sir Ken Robinson (*Changing Educational Paradigms*) would *agree*… (select ALL that apply)
☐ with the benefits to efficiency of *educating our young people in batches*, as we mostly do today.
☐ that traditional schooling has *increased* the lateral/non-linear thinking in students from kindergarten on up
☐ that we should *lower* standards so that more students pass and gain confidence in their success.
☐ with the idea about human capacity that it *cleanly divides* into academic and non-academic/vocational roles
☐ ADHD is an *epidemic* that has made it so difficult for children to pay attention in such stimulating times
☐ none of these

Question 3: Which of the following is a *true statement* based on the Privacy lecture? (select ALL that apply)
☐ You can avoid having an information footprint simply by *not going online*.
☐ The online world and the physical world *are separate*.
☐ With the right software and configuration, you can effectively *"undo" the sharing of content*.
☐ With the right software and configuration, you can be *anonymous when you're online*.
☐ none of these

Question 4: Which of the following is a true statement based on the AI lecture? (select ALL that apply)
☐ Investment in Artificial Intelligence startups has grown *exponentially* the last few years.
☐ A candy grab AI that keeps track of the % of wins, and changes its behavior is said to be *learning*.
☐ AI has moved from *knowledge-based* systems toward *statistical* approaches more recently.
☐ The singularity is an *inflection point*, where AI systems author new AI systems, beyond human control.
☐ none of these

Question 5: You're comfy in bed. You get up if you're thirsty. You *also* get up if you're hungry.
Which expression(s) captures when you *stay* in bed? (select ALL that apply)

☐ not (thirsty? or hungry?)

☐ not (thirsty? and hungry?)

☐ not thirsty? or not hungry?

☐ not thirsty? and not hungry?

☐ none of these

Question 6: Which numbers are equal to the *Ternary* (base 3) number 120_3? (select ALL that apply)

☐	☐	☐	☐	☐	☐	☐	☐
120_{10}	E_{16}	F_{16}	G_{16}	1010_2	1110_2	1111_2	None of these

Question 7: *Map, Keep and Combine, not necessarily in that order* (9 pts = 3+3+3)   SID: _____

For each of the following questions, indicate which of **(M)ap**, **(K)eep**, and **(C)ombine** would be used to solve it, and if more than one are used, in what order they are evaluated (count any helpers too). For example, given:

you'd select M←K because the result of the Keep is sent to the Map. Note that you might have to call converters (like , , etc.) on the input and output to make the expression work, but *don't count* any Maps, Keeps, and Combines in these converters. Also, if more than one solution works, pick the simpler one (e.g., K vs C←K or C←K←M).

a) Reverse the letters of a word. (select ONE)

M	K	C	K←M	C←M	M←K	C←K	M←C	K←C	C←K←M	C←M←K	None of these
○	○	○	○	○	○	○	○	○	○	○	○

b) Given a list of salaries, return the salary of the lowest-paid millionaire. (select ONE)

M	K	C	K←M	C←M	M←K	C←K	M←C	K←C	C←K←M	C←M←K	None of these
○	○	○	○	○	○	○	○	○	○	○	○

c) Given a list of salaries, return the salaries after everyone below a million is doubled (and all those at a million or above remain the same). (select ONE)

M	K	C	K←M	C←M	M←K	C←K	M←C	K←C	C←K←M	C←M←K	None of these
○	○	○	○	○	○	○	○	○	○	○	○

Question 8: *All you need is love* (11 pts = 2+2+4+3)

You decide to write , a reporter to chart how affectionate you are (i.e., what you do) with your sweetie over the course of a given day (day 1 is your first day together, day 2 is your second, etc.). It returns a (possibly long) word whose letters are only: hugs (**o**), kisses (**x**), and just hanging out (**-**). The reporter is provided; it is described in question 7a above. For your answers to questions 8a, 8b and 8c, fill in one box per column for every letter you want. Example: "**ox-o**" is…

a) What is ?
(fill left to right)

b) What is ?
(fill left to right)

c) Now let's do some analysis of your long-term relationship. What are the *first three and last three things you do on day 9999? That is,* what are the first three and last three letters of ?

d) can return a seemingly random sequence of **x**s, **o**s & **-**s. For each of the following, choose either **Possible** or **Impossible** if it's *ever possible* to do these things someday. We did the first one for you.

Select ONE per column.	Hang out *three* times in a row (i.e., "**---**")	Hang out *four* times in a row (i.e., "**----**")	Hug immediately followed by a kiss (i.e., "**ox**")	Hug twice in a row (i.e., "**oo**")
Possible	●	○	○	○
Impossible	○	○	○	○