UC Berkeley's CS10 Fall 2016 Midterm 2 : 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: If 75% of a program's code is parallel, what is the maximum speedup with ∞ helpers? (select ONE)

○	○	○	○
25x	75x	1.33333x	4x

Question 2: What do researchers believe might happen after *the singularity*? (select ALL that apply)

□	□	□	□
AI systems may show general intelligence	AI systems will be written by other AI systems	AI systems may be beyond human control.	AI systems may conclude humans are threats

Question 3: How would Judah Schwartz classify the Snap*!* programming environment? (select ONE)

○	○	○	○
Tool	Microworld	Macroworld	Courseware

Question 4: Which of the following is a fallacy, with regard to internet privacy?… (select ONE)
- ○ Only you have an interest in maintaining your privacy.
- ○ You can avoid having an information footprint by staying offline.
- ○ The online world is inseparable from the real world.
- ○ Sharing information over a network means you give up control over that information — forever.

Question 5: What are some implications of Internet Sovereignty? (select ALL that apply)
- □ Governments could control cyberspace based on their physical borders.
- □ Governments could control the flow of money flowing into their country through cyberspace.
- □ Governments could dictate that only websites in their native language could be viewed in their country.
- □ Governments could force their countries' websites to be viewable globally.

Question 6: If the expression `A or A and B` is false, which can you say *for sure*? (select ONE)

○	○	○	○	○	○	○
A is false	A is true	B is false	B is true	Both A and B are false	Both A and B are true	Nothing

Question 7: What are the different possible values of NAME at the end? (select ALL that apply) (4 pts)
Note that the "set" blocks happen instantaneously and atomically (i.e., they aren't interrupted by the other script)

```
when I receive Go!▾
script variables (my copy) ▸
wait (pick random (.1) to (.9)) secs
set my copy▾ to (join (NAME) IFORNIA ◂▸)
wait (pick random (.1) to (.9)) secs
set NAME▾ to (my copy)
```

```
when 🚩 clicked
set NAME▾ to CAL
broadcast Go!▾
```

```
when I receive Go!▾
script variables (my copy) ▸
wait (pick random (.1) to (.9)) secs
set my copy▾ to (join (NAME) •BEARS ◂▸)
wait (pick random (.1) to (.9)) secs
set NAME▾ to (my copy)
```

□	□	□	□	□	□	□
CAL	CALIFORNIA	CALIFORNIAIFORNIA	CAL BEARS	CAL BEARS BEARS	CALIFORNIA BEARS	CAL BEARSIFORNIA

Question 8: Increasing? (16 pts = 2+3+3+3+5)   SID: _____

Consider the problem of wanting to determine if the numbers of a list (of at least two items) are all *increasing* (i.e., *every* element after the first one is larger than the one before). Note: the input will always have ≥ 2 items.
What's wrong (if anything) with each of the following three boxed attempts? (select ONE from the legend below)

Example calls to `increasing?`

increasing? (list 1 99 10 100) → false
increasing? (list 1 5 5 100) → false
increasing? (list 1 5 10 100) → true

A = it works fine.
B = It will cause an error.
C = It always returns *true*.
D = It always returns *false*.
E = It only returns the test of the *first* two elements.
F = It only returns the test of the *last* two elements.
G = It only returns whether the *first* element is smallest
H = Some other logical problem not described here.

○ ○ ○ ○ ○ ○ ○ ○
A B C D E F G H

increasing? (data)
for i = 2 to length of data
  if (item (i − 1) of data) < (item i of data)
    report true
  else
    report false

A min B
if A < B
  report A
else
  report B

increasing? (data)
report (item (1) of data) = (combine with (min) items of data)

○ ○ ○ ○ ○ ○ ○ ○
A B C D E F G H

increasing? (data)
report (combine with (<) items of data)

○ ○ ○ ○ ○ ○ ○ ○
A B C D E F G H

and or not
○ ○ ○

Complete the code so the expression would work as the reported value of `increasing?`, if `data` is our list of numbers. (select ONE from each)

combine with (( ) ( )) items of
map ([ ] [ ]) over (all but last of data) (all but first of data)

< = >
○ ○ ○

Finally, let's see if you can write the block yourself. There are four decisions you need to make to complete the working block. (select ONE from each of the four rows)

increasing? (data)
script variables (one before)
set one before to item 1 of data
for each item of ☐
  if ◄
    report ☐
  set one before to item
report ☐

○ all but first of data
○ all but last of data
- - - - - - - - - - - - - - - -
○ one before < item
○ not (one before < item)
○ one before > item
○ not (one before > item)
- - - - - - - - - - - - - - - -
○ true
○ false
- - - - - - - - - - - - - - - -
○ true
○ false