UC Berkeley's CS10 Spring 2018 Quest – 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 for 1-6, we drop lowest one)

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

Question 1: Which of the following is the *worst example of Abstraction*? (select ONE)

- ○ Making all the roads on the BART map horizontal, vertical, or 45º (*even though they aren't in real life*).
- ○ A screwdriver with *removable tips* that allows you to buy only *one* single, comfortable, high-end handle.
- ○ Designing a traffic simulation and including *everything* about all cars in your model: color, year, make, etc.
- ○ Giving a *five minute elevator pitch* about a screenplay you were working on to a movie producer.

Question 2: What is the order of these numbers, smallest to largest: **A**=11000_2; **B**=29_{10}; **C**=$1E_{16}$? (select ONE)

○	○	○	○	○	○
A < B < C	**A < C < B**	**B < A < C**	**B < C < A**	**C < A < B**	**C < B < A**

Question 3: If the sprite starts in the middle of the stage facing up and runs the script to the right with line width set to 1 (the default), *what is drawn*? (select ONE)

○ Dot	○ Square	○ Rectangle	○ Spiral	○ Flower	○ Triangle

Question 4: Given the expression 

that runs without error, what is your best guess as to the *Domain* and *Range* of `Foo`? (select ALL that apply for each side)

The Domain of `Foo` is…				The Range of `Foo` is…			
☐ numbers	☐ sentences	☐ Booleans	☐ lists	☐ numbers	☐ sentences	☐ Booleans	☐ lists

(The block on the right is used for Questions 5 & 6)

Question 5: If the output from **`Mystery`** is false, which can you say *for sure*? (select ALL that apply)

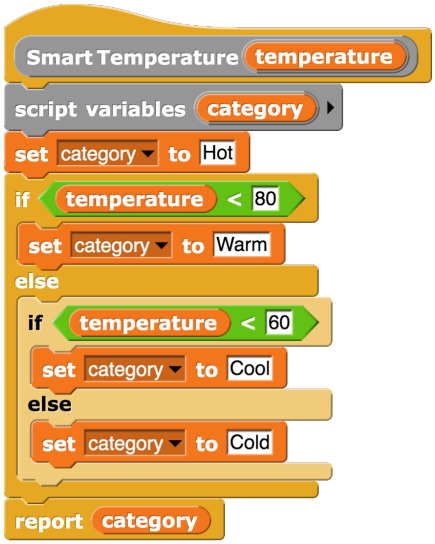
☐ A must be true	☐ B must be true	☐ A must be false	☐ B must be false	☐ None of these

Question 6: You realize you could replace the *entire* body of **`Mystery`** with a single **`report`** (as shown below). "What could go in there so that it it will function exactly the same as the original **`Mystery`** block? (select ONE)

Question 7: Match each programming paradigm with properties that describe it. (select ONE per row) 2 pts

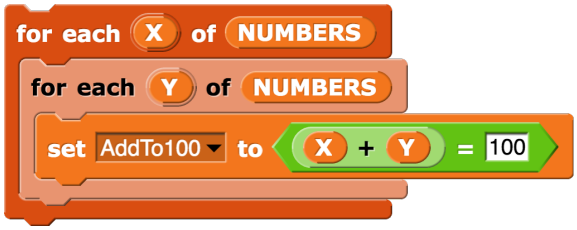
	Functional	Imperative	Object-Oriented	Declarative
Seems like "magic"; great for logic puzzles	○	○	○	○
Doesn't allow for any side-effect procedures	○	○	○	○
It's all about message passing and inheritance	○	○	○	○
Do this, then that, then that. Aka sequential.	○	○	○	○

Question 8: The makers of the Nozama smart speakers learn that users who ask for the weather don't want the *exact* temperature, they want a temperature *category*: **Cold**, **Cool**, **Warm** or **Hot**, based on the table below. E.g., Cool is between 40 and 60. They write code for it, shown to the right. However, when given the following temperatures, what is actually returned?" (select ONE per row) 2 pts



	40	60	80	
`temperature`	**Cold**	**Cool**	**Warm**	**Hot**
30	○	○	○	○
50	○	○	○	○
70	○	○	○	○
90	○	○	○	○

Question 9: You have a list of `NUMBERS`; if *any two different numbers add to 100*, `AddTo100` should be set to `true`. Here is our (possibly buggy) algorithm. When will it return `true` on a list of 10 numbers? 4 pts.

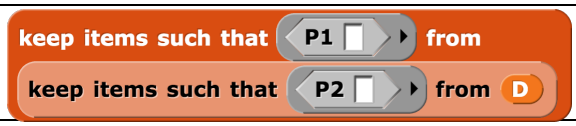


If the *first two* are 40,60 and the rest are 0.	**yes** ○ ○ **no**
If the *last two* are 40,60 and the rest are 0.	**yes** ○ ○ **no**
If the *last one* is 50 and the rest are 0.	**yes** ○ ○ **no**
all ten numbers are 10.	**yes** ○ ○ **no**

Question 10: What is the running time of the algorithm in Question 9? (select ONE for each side) 2 pts

○ Constant	○ Logarithmic	○ Linear	○ Quadratic	○ Cubic	○ Exponential	○ Reasonable Time	○ Not Reasonable Time

Question 11: Are the left and right expressions below *always the same*? If stuck, put your own reporters and predicates in there, try it on an easy list, and see if they are the same… (select **yes** or **no** for each row) 5 pts

yes ○ ○ **no**		
yes ○ ○ **no**		
yes ○ ○ **no**		
yes ○ ○ **no**		
yes ○ ○ **no**		

You did it!! Congratulations!! Here's a fun comic…