Discussion 5: Concurrency

Concurrency

1. CS10 has decided to open a pizzeria! To make a pizza, the following tasks must be completed:

Task	Time
Make the dough	25 minutes
Make the sauce	25 minutes
Prepare the toppings	10 minutes
Assemble the pizza	10 minutes
Bake the pizza	50 minutes

a. Which of these tasks must be completed in serial?

_____

b. Which of these tasks can be completed in parallel?

_____

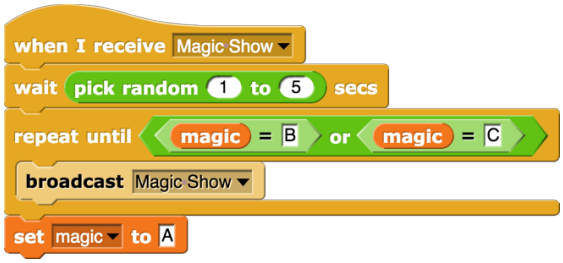
c. Based on Amdahl's Law, how fast can we make a single pizza? _____

d. How many employees would the pizzeria need to make a pizza this fast? _____

e. Would adding an employee to your answer from part (d) change the time it takes to make a pizza?

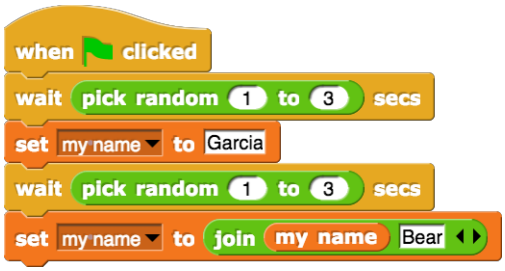
_____

2. Assume we click the green flag to run the code below, then wait 60 seconds. What are all the possible values of `magic` after 60 seconds have elapsed?



Possible values of `magic`: _____

3. Which of the following could be the value of `my_name` after the green flag is clicked?



Dan ☐ Garcia ☐ Dan Bear ☐ Garcia Oski ☐ Dan BearOski ☐ Garcia Dan ☐ Oski ☐ Dan OskiBear ☐

Testing

The following questions are based off this block:

1. We try to test our code, but we get an error. What does it mean and how can we fix it?

_____

_____

2. Now, we try to run the following test, but it doesn't work as expected:

Why does it output this, and how could we fix it?

_____

_____

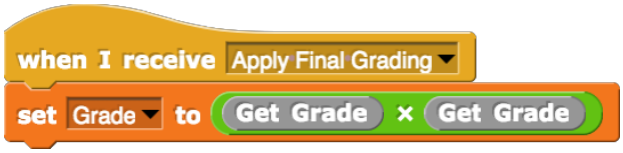
3. Assuming we haven't changed the code for `square numbers`, what should we expect this block to output? Is it any different from the output from part 2?

_____

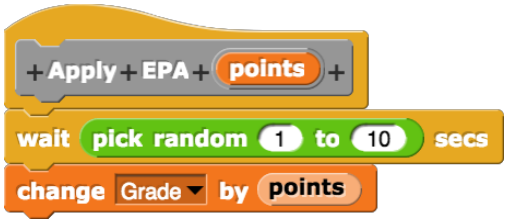
_____

Challenge

1. List all possible values of `grade` after the green flag is clicked.



Here are the definitions of the blocks used in the above scripts:



Possible values of `grade`: