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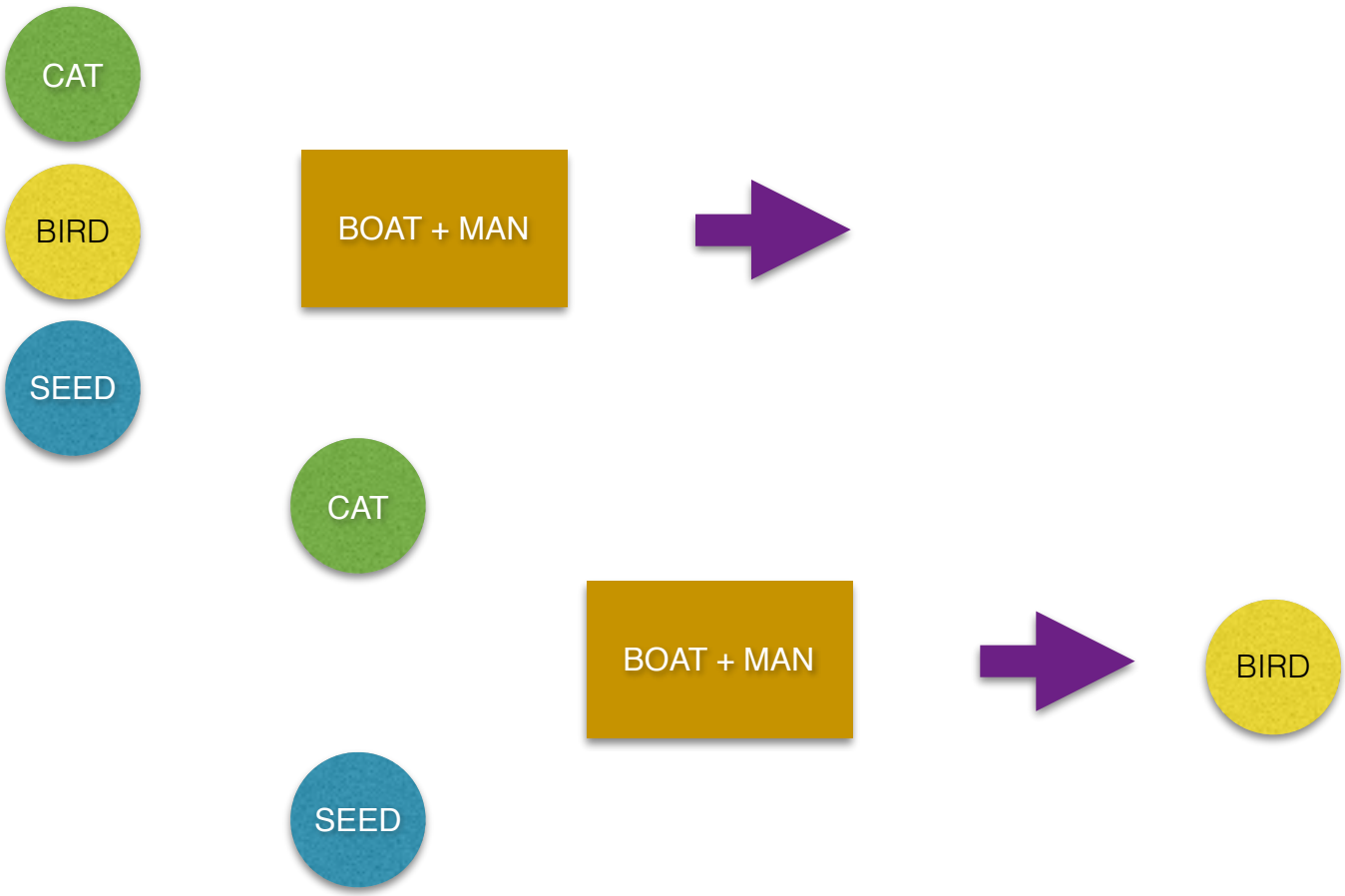
September 4, 2014
Web Programming Fundamentals - Online
With Eric Silvay
Activity: Problem Solving

1. Define the Problem, own words, insights not visible, overall goal
2. Break the problem apart, constraints?sub-goals?
3. Identify potential solutions, for each sub-problem as well
4. Evaluate each potential solution, does solution meet goals, will solution work for all cases?
5. choose a solution. explain in full. include drawings & diagramming to show show test cases.

A man is on an embankment, he has to get all three passengers to the other side. His passengers are a parrot, a bag of seeds and a cat. The cat will eat the bird if alone with it, the parrot will eat the seed if alone with it, so how do I get each passenger across, uneaten.

- 3 Passengers (Cat, Parrot, Seeds)
- Cat & Parrot (Parrot gets eaten)
- Cat & Seed (Success)
- Parrot & Seed (seed gets eaten)

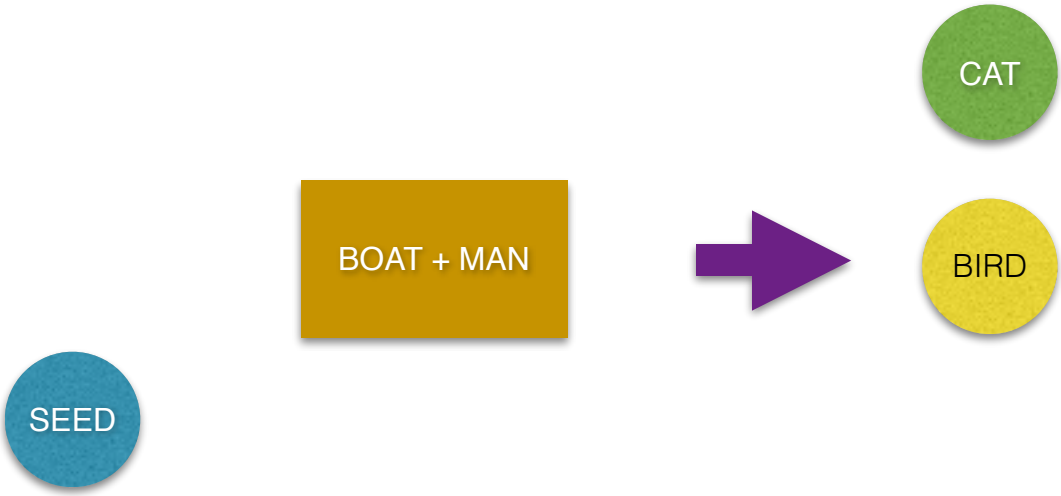
We have to leave the Cat & The Seed on the first bank, bringing over the parrot, it's the only option.



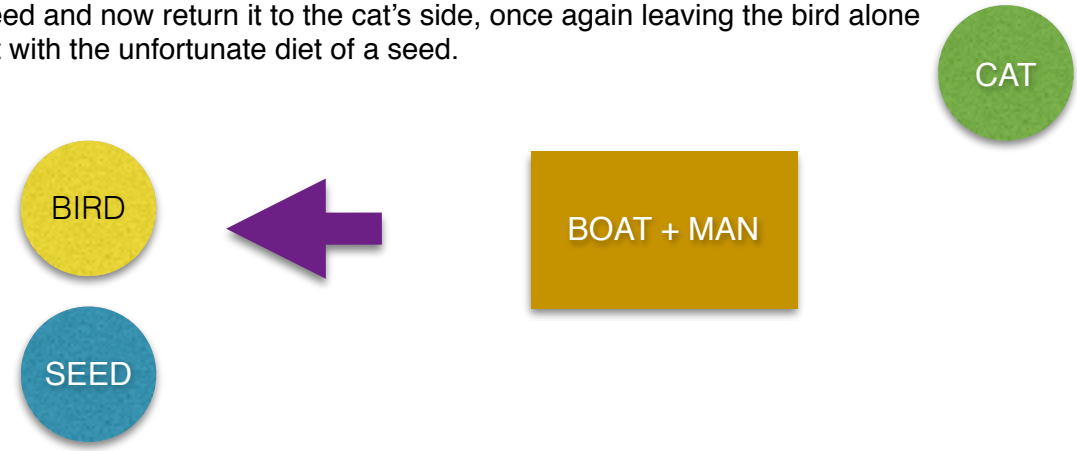
Now the man can return to the original embankment alone in the boat, leaving the bird to somehow not fly away… maybe its in a cage?

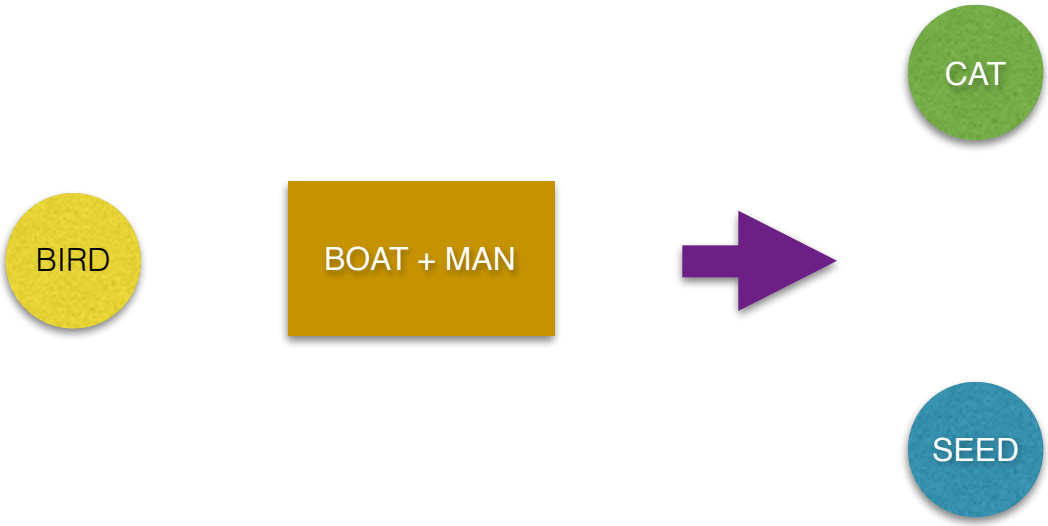
:) Nobody's eating anyone yet!!!

On his return trip, there comes an issue, you can't leave the bird alone with the seed or the cat, so we will need to bring the bird back.

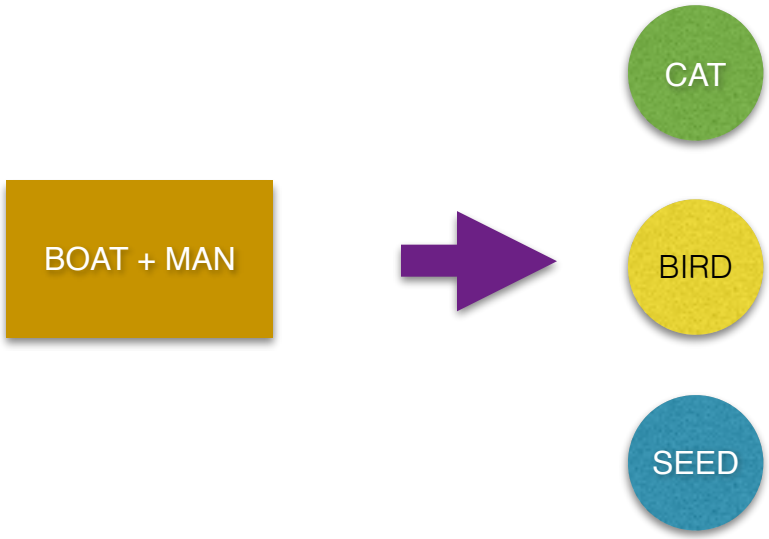


While supervising the bird and seed on the original embankment, he can grab the seed and now return it to the cat's side, once again leaving the bird alone and the cat with the unfortunate diet of a seed.





On the final trip, the man can return to the bird & retrieve it and bring it back to the other side of the embankment.



answer: see above

There are 20 socks, 5 of the pairs are black socks, 3 of the pairs are brown socks, and there are 2 white pairs of socks. Apparently I forgot to pay my electric bill and have to get dressed in the dark, but suddenly once I've made a selection, the lights came back on… (personally I would just grab a candle)

Question 1: What is the smallest number of socks you need to grab to guarantee at least 1 matching pair?

If you consider you grab a different one each time:

The 4th sock, no matter the color has to be a pair…

Question 2: What is the least number of socks you need to select to guarantee at least one matching pair of each color?

If you accidentally grabbed all of the black socks first:

And you accidentally grabbed all of the brown ones next:

Then you would only need to grab 2 white socks to make the third pair.

answer: 4 & 18

A girl counts on her left hand (see below) buy saying her thumb is 1, pointer finger is 2, her middle finger is 3 (oh my), her ring finger is 4, and her pinky is 5. Shen then counts the ring finger as 6, middle finger as 7, pointer as 8 and her thumb as 9, etc.

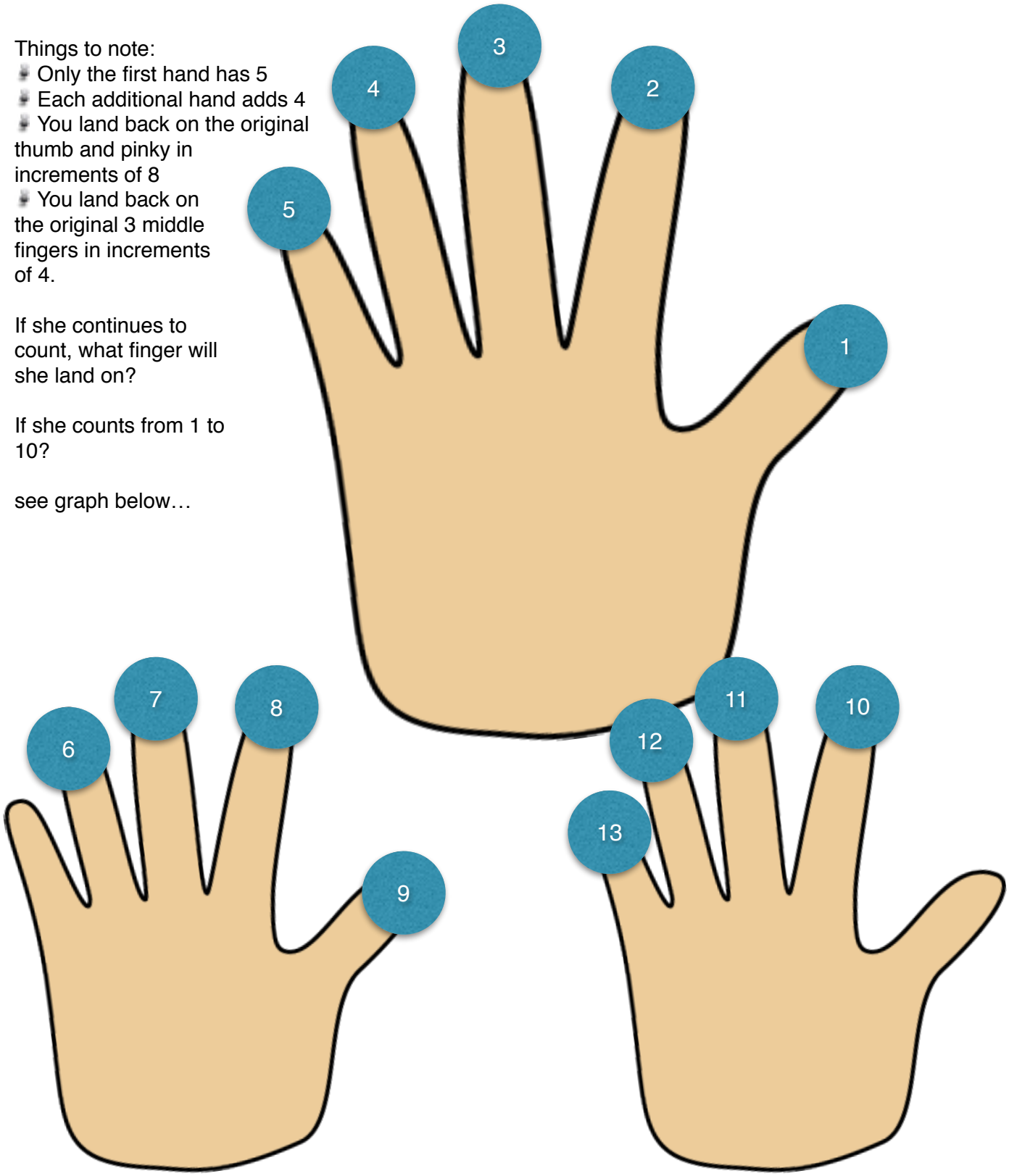
Things to note:

- Only the first hand has 5
- Each additional hand adds 4
- You land back on the original thumb and pinky in increments of 8
- You land back on the original 3 middle fingers in increments of 4.

If she continues to count, what finger will she land on?

If she counts from 1 to 10?

see graph below…



5 start
then pattern starts
6 starts pattern
8 finger pattern

6+8x=100
8x=94
94/8 (take off remainder)
when x=11 we restart the pattern from dot 6

ring finger is 100

6+8x=1000
8x=994
994/8 (take off the remainder)
when x=124 we will start the pattern at dot 6, but the number at that point is 6+8(124)=998

pointer finger is 1000