CS 100: Algorithms and Socks

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Week 7-1
In-class: Sock Sorting: In-class Exercise

Problem

- Here’s a bunch of socks
- Someone "sort" them
- **Restriction**: Cannot dump all socks on the table (though can put a few on the table)

Everyone Else

- Write down the algorithm the sorter uses
- Work in **pairs** or threes
- Include your Names and NetIDs
In-class: Here’s a Second Way

- Chris will sort the socks
- On the same sheet
  - Write down the algorithm you observe Chris Use
  - How is it different from the first algorithm?
- Discuss in 5 minutes
In-class: Which Sock Algorithm is Better?

"Better"?

▸ What’s the notion of better for this sock sorting?
▸ Which algorithm would you choose for each of the following situations?

Algorithms:

1. Search the Basket
2. Put on the Table

Scenario 1: Replicates

▸ Basket has 100 total socks
▸ 25 pairs of blue (50 socks)
▸ 25 pairs of red (50 socks)

Scenario 2: All Orphans

▸ Basket has 100 total socks
▸ 5 pairs of blue (10 socks)
▸ 5 pairs of red (10 socks)
▸ 80 dissimilar socks (80 socks)

Scenario 3: All Unique

▸ Basket has 100 total socks
▸ There are 50 different colors of socks (including Chartreuse)
▸ There is one pair of each color (100 socks)
Python Lists are good to model this

- "Pattern" initial example of algorithms: sorting socks
- File socks.py encodes two versions of sorting socks
- Uses functions that change lists
  
  ```python
  lst1.append(thing)  # add thing to the end of list l
  thing = lst2.pop(3)  # remove 3rd item, assign to thing
  ```
- Compare to "Pattern" pg 77-78 to see if you follow the logic
- Somewhat complex problem, too hard for a HW

Make sure to turn in your participation sheets

- Names and NetIDs of all group members
- Worth credit for grade