Clarification of Card Problem on HW3

What Do They Want for HW3 Problem 1?

We want you to write out a sequence of well-defined steps to tell people how to put all of Prof. Hescott’s cards back in their original decks, each in order by suit.

You do not have to use the computer-like notation we used in the simpler problems like finding the smallest or sorting ten cards. For example, here is a sample of a procedure for emptying a dishwasher and putting its contents back in the drawers and cupboards:

1. Open dishwasher door
2. Remove silverware basket
3. Pick up one piece of silverware from basket
4. If the piece is a fork, put it in the fork part of the drawer
5. If the piece is a knife, put it in the knife part of the drawer
6. If the piece is a spoon, put it in the spoon part of the drawer
7. If the piece is none of the above, put it in the ‘other’ part
8. If the basket is not empty, go back to step 3
9. Take one item from the glasses/cups rack
10. If the item is a glass, put it in the glass shelf
11. If the item is a cup, hang it from a cup hook
12. If there are more items in the top rack, go back to step 9
13. Take the plates and bowls out, one by one
14. Put each plate in a stack of plates its size
15. Put each bowl in a stack of bowls its size
16. When the bottom rack is empty, put each stack of bowls in the cupboard
17. Put the stack of largest plates in the cupboard
18. Put the stack of next largest plates on top of the previous stack
19. Repeat 18 for each stack of plates left
20. Close the dishwasher

Using the Sorting Code from HW2

If you get to a part in your procedure where you need to tell the reader how to sort a stack of 52 cards, say. You are free to say something like:

1. Spread the 52 cards out into a line
2. Number the positions of the cards as places 1, 2, ..., 52
3. Follow this logic:
   repeat for place = 1..51
   repeat for n = place+1..52
   if c[n] < c[place] then swap place, n

But you do not need to write the rest of the procedure out in that sort of notation. In fact, expressing the more complex logic in limited terms is more complicated and harder for us to understand. We do not yet have a good language for expressing these other operations you need to do.

What Operations You Can Use

You can tell the reader to examine a card, put a card in a stack, count the number of cards in a stack, put stacks together, things like that.

Things to Watch For

Prof. Hescott’s cards may have more than one deck of the same type. For example, there might be two decks of identical size blue cards. Your algorithm must produce two separate decks of such cards, each in the correct order.

There are other things to watch for. Can you think of them and include them in your algorithm?