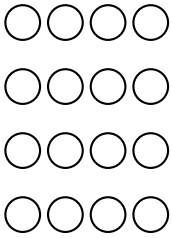
Answers to Exercises

Exercise Set 1

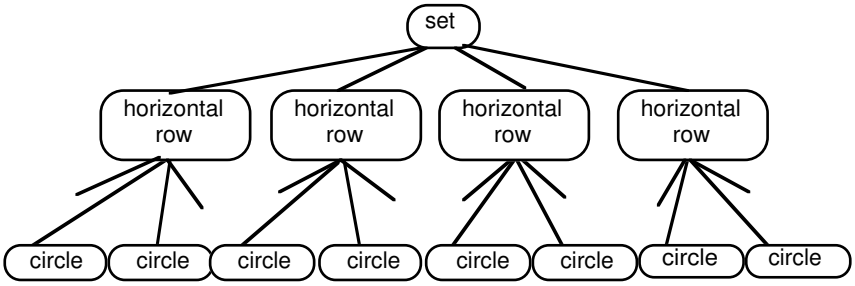
These figures are intended to show that although there may be several possible ways of structuring the groups, there is usually one 'perceptually obvious' way. Here we only include the structure of this obvious grouping. The less obvious structures are not 'wrong', but they require effort to impose upon the groups.

Note also that we have not always included every single circle and square in the figures - just enough to make it clear what ought to be represented.

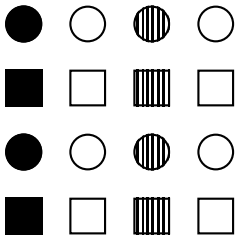
The precise terms that are shown in the diagrams are not important - we have shown each as starting with 'set', but the words themselves are not crucial. Group, Array, or Pattern would all serve just as well, and there are undoubtedly many other synonyms. These are just 'labels': what is being described is more important. In some cases we have drawn the objects themselves rather than use words.



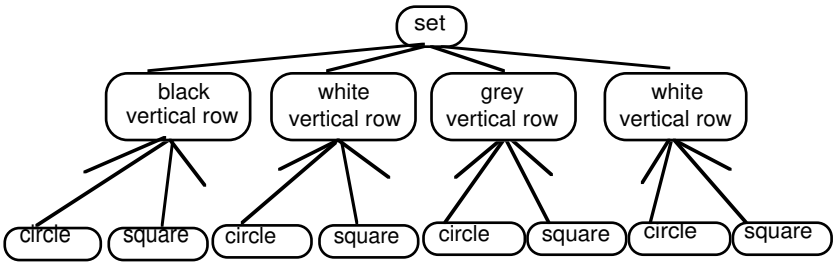
(1)



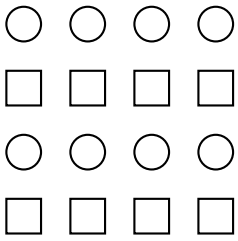
Here the attribute that is 'causing' the circles to be grouped into rows is **proximity.**



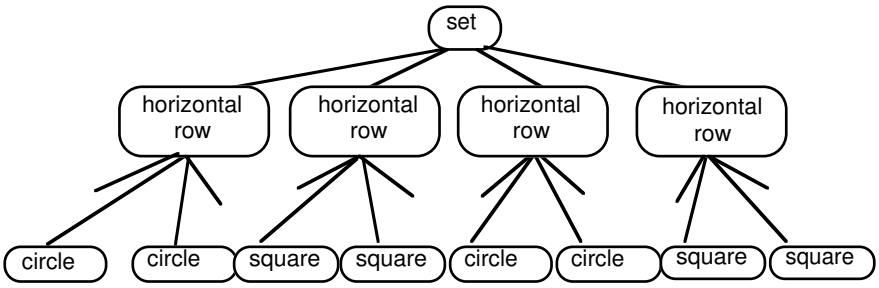
(2)



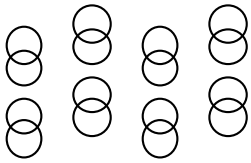
In this and the next figure, the similarity of the shapes in each row suggests that the second level of the structure could be rows – but in this figure the **colour** of the columns predominates.



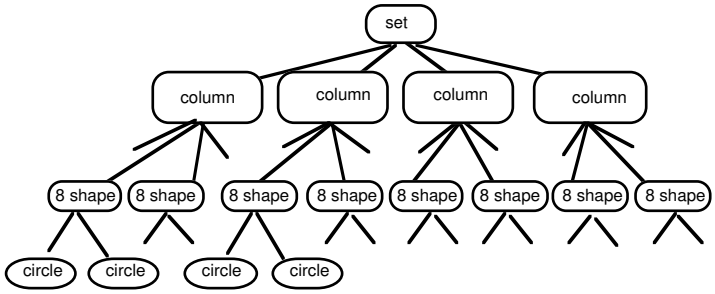
(3)



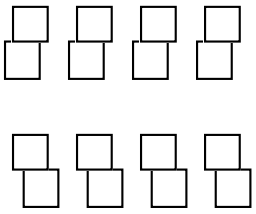
When the colour is removed from (2), the similarity of **shape** dominates the structure, and the rows become the second level of structure.



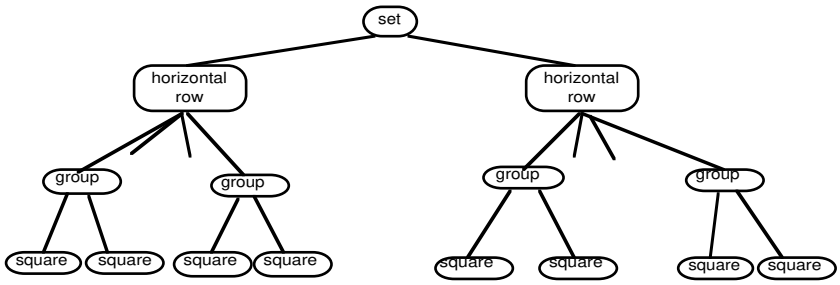
(4)



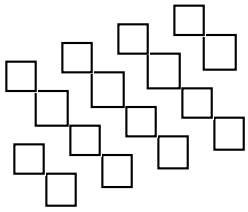
This figure has circles grouped by **collocation** into 'figures of eight' or '8 shapes', but the grouping of these shapes is ambiguous. You might represent them as columns, wavy horizontal rows, or even groups of four (in a rhombus). There is some structure there though, so the diagram should have four levels.



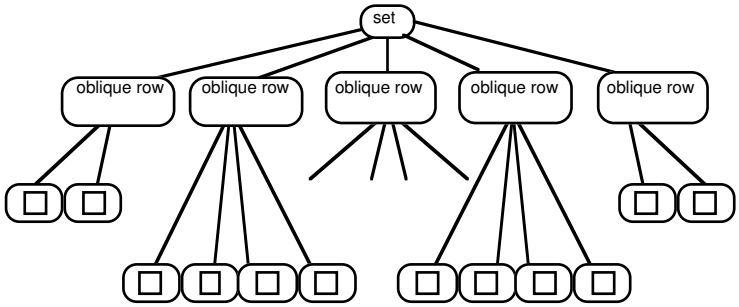
(5)



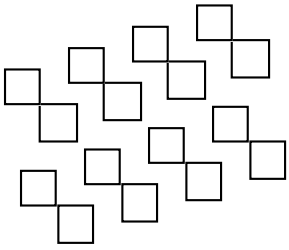
Here the squares are joined at their **boundary** into groups, and these groups then form rows due to their **proximity** to each other. Note that if the slight horizontal offset of each square were not present, the eight groups would look like rectangles with a line across the middle, not two squares.



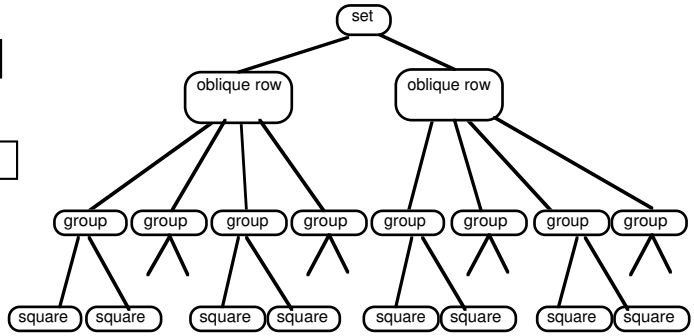
(6)



Now the **junction** of the squares links them into five oblique or diagonal rows, although some rows have two and some four elements. The presence of the 'pairs' at each end might lead you to see the centre three rows as also being composed of two pairs, adding another level of structure to the diagram.



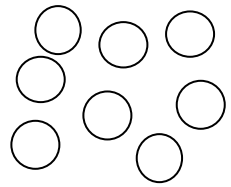
(7)

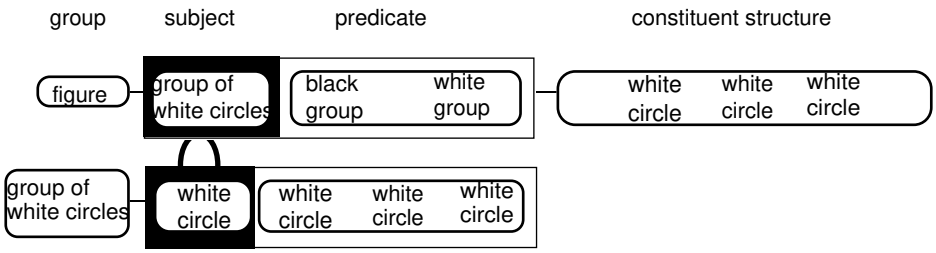


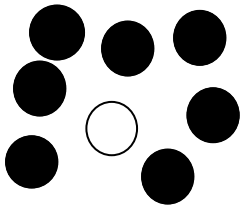
This figure is exactly the same as (6), except that a slight gap has been introduced into the middle of the three central rows. Instead of just breaking the structure up into eight pairs, two new diagonal rows emerge (**proximity**). This figure shows that there are often several different grouping principles competing to provide organisation, and that when one is weakened, another may take over.

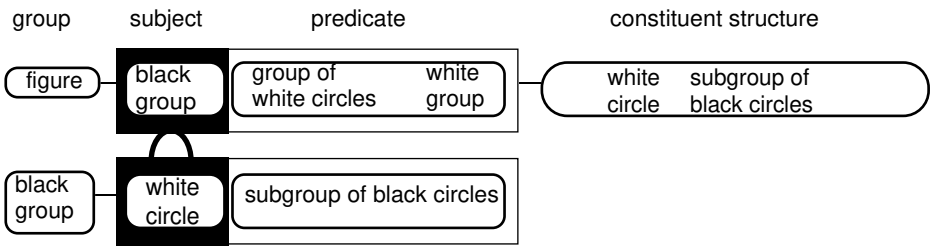
Exercise Set 2 Question 1

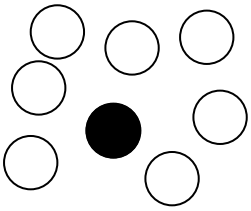
This exercise shows how the transition path diagrams represent the more complex search in the right hand group. The presence of the black circle makes it harder to 'zoom-in' to the substructure of the white group distractor.

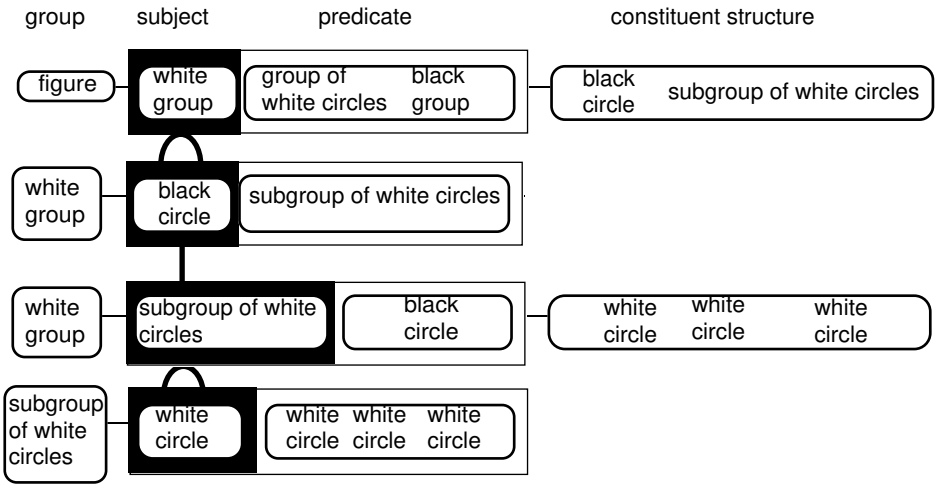




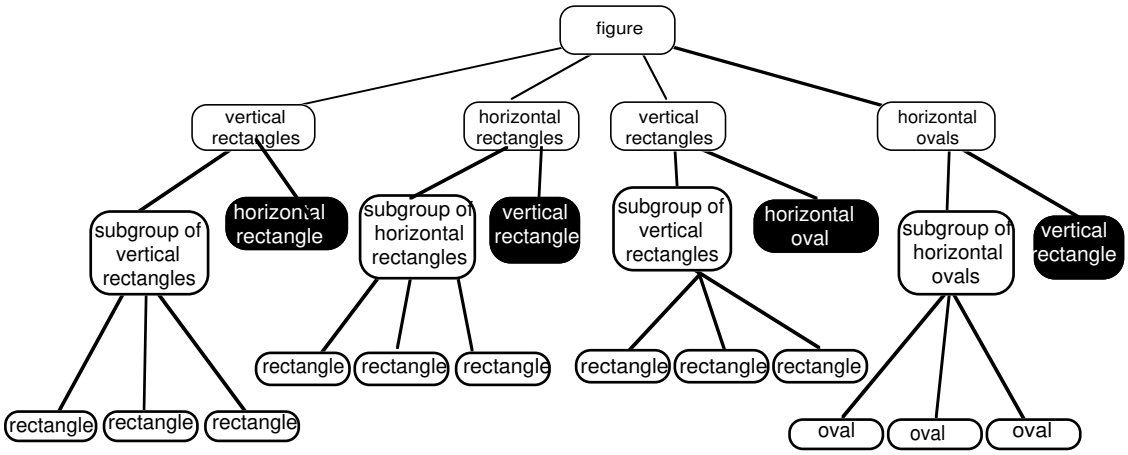




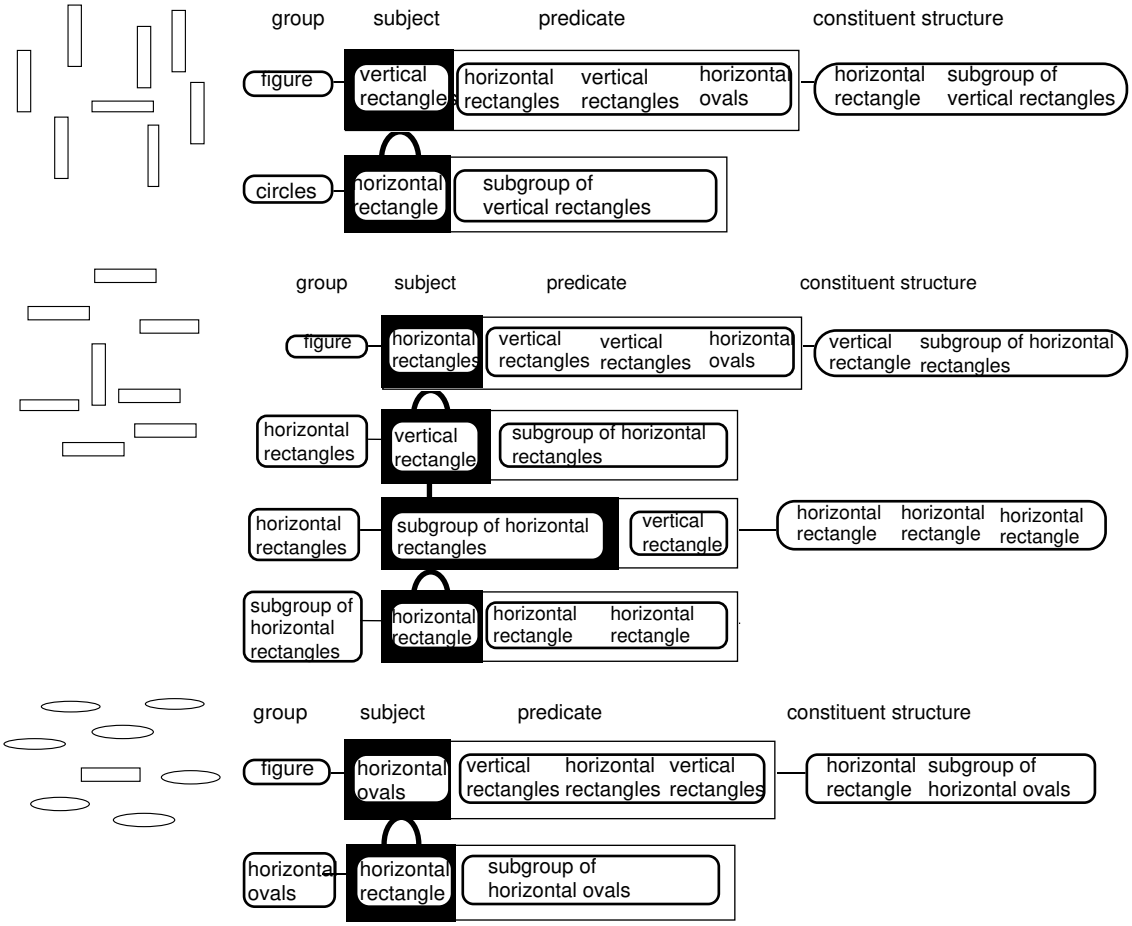




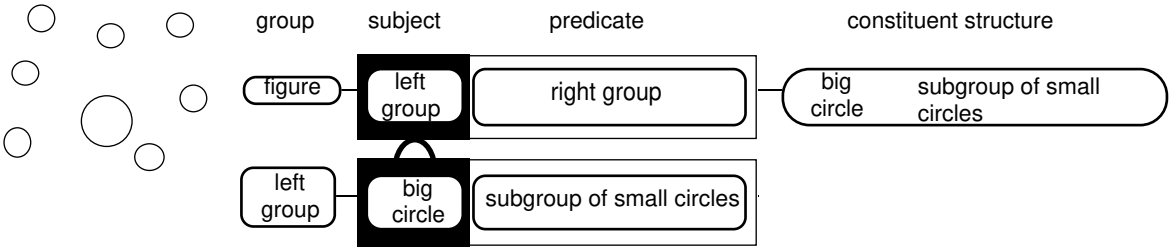
Exercise Set 2 Question 2

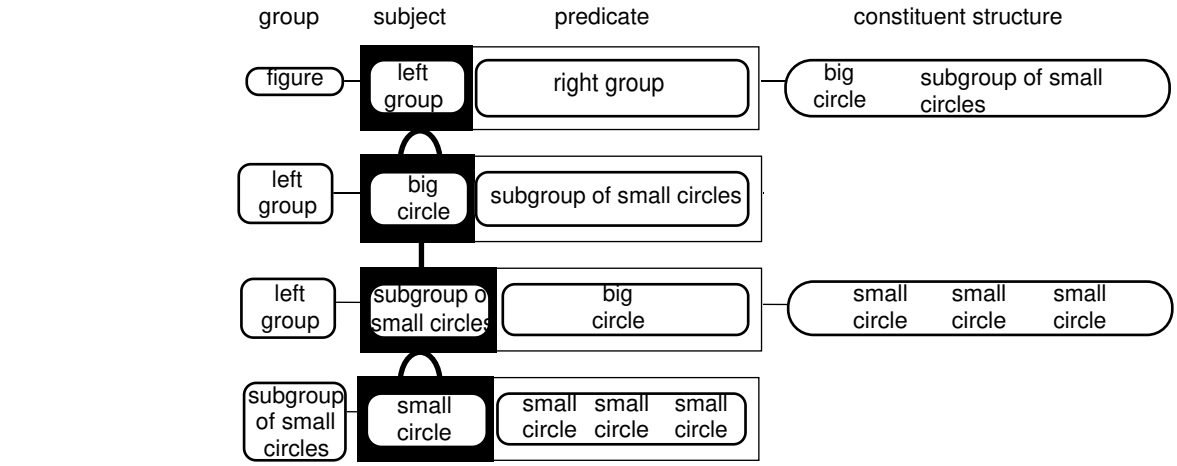


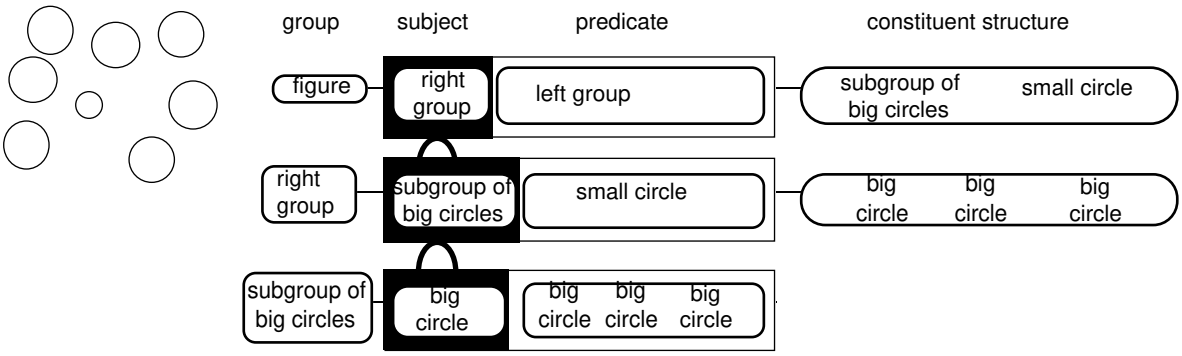
Exercise Set 2 Question 3

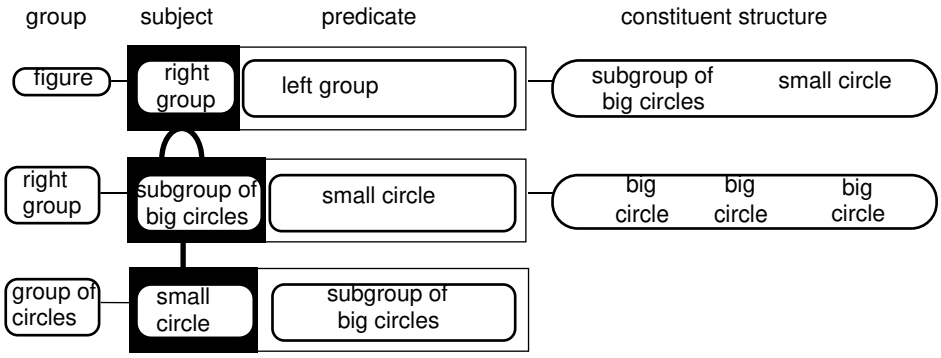


Exercise Set 3 Question 1

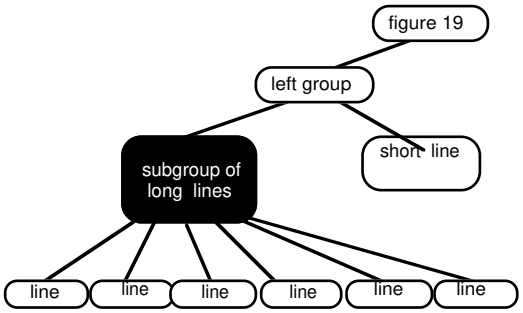


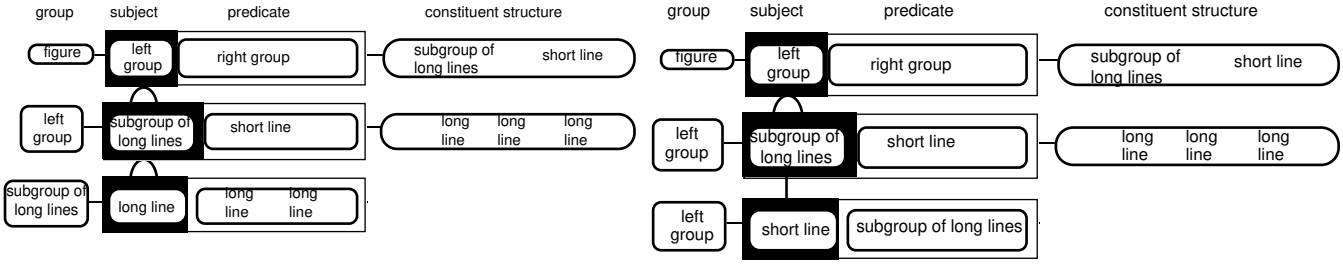


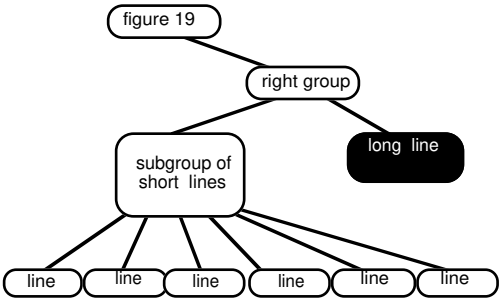


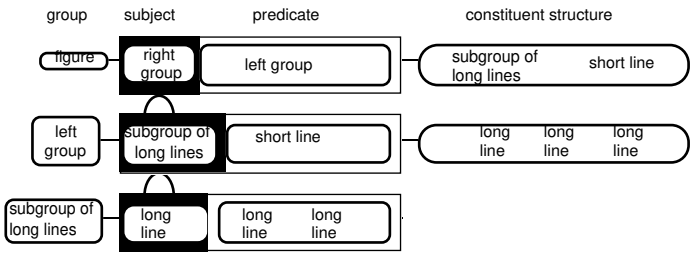


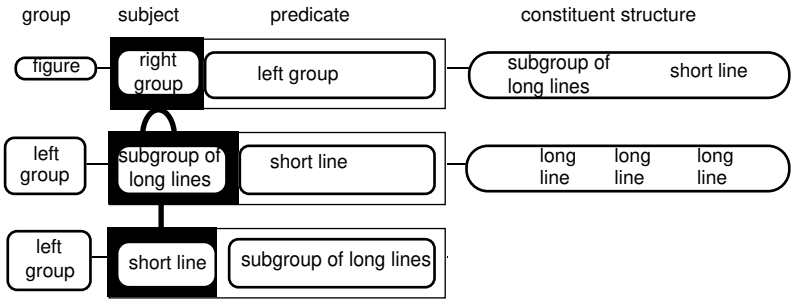
Exercise Set 3 Question 2



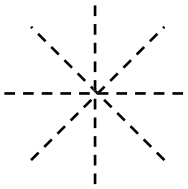


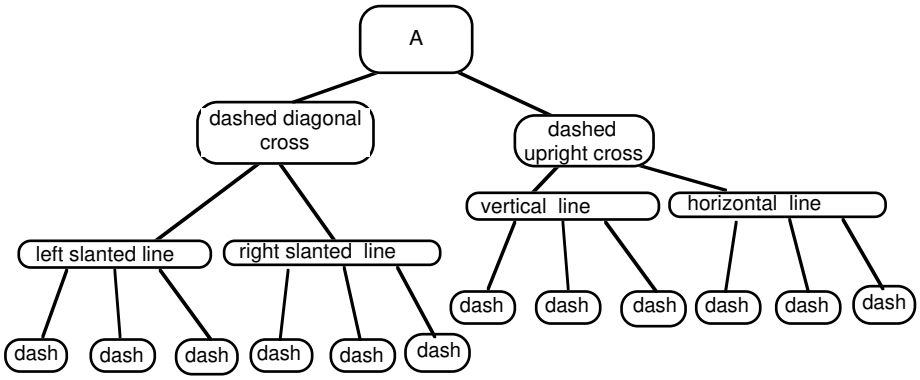


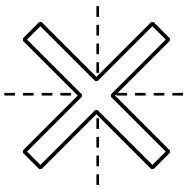


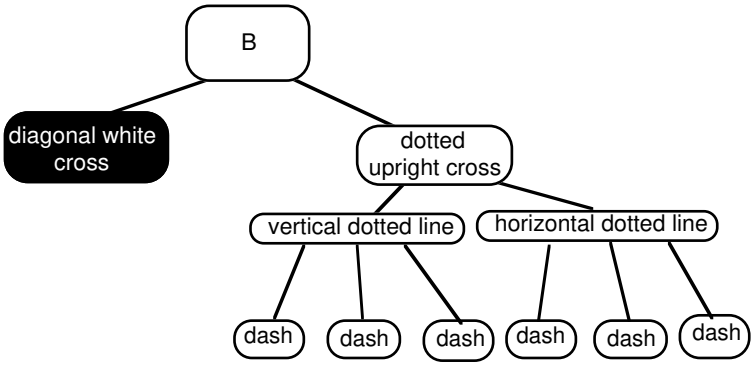


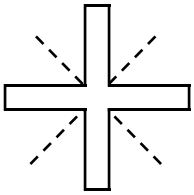
Exercise Set 3 Question 3

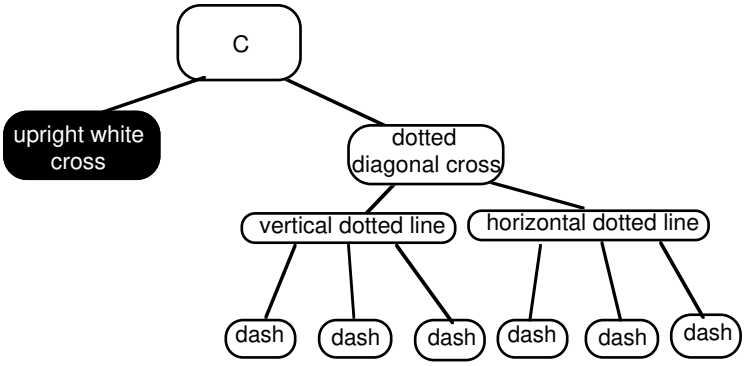


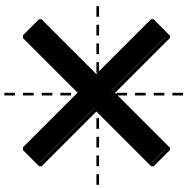


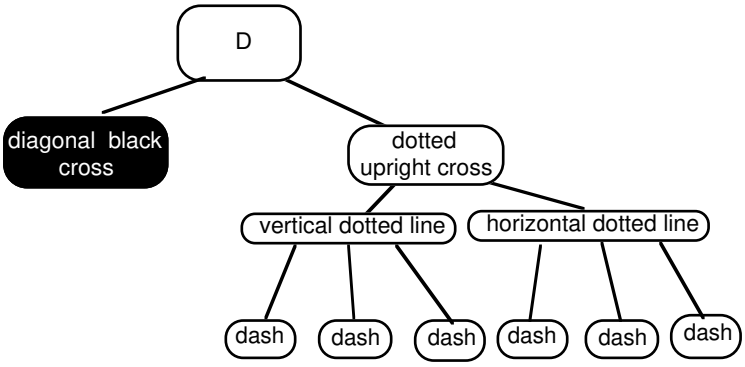






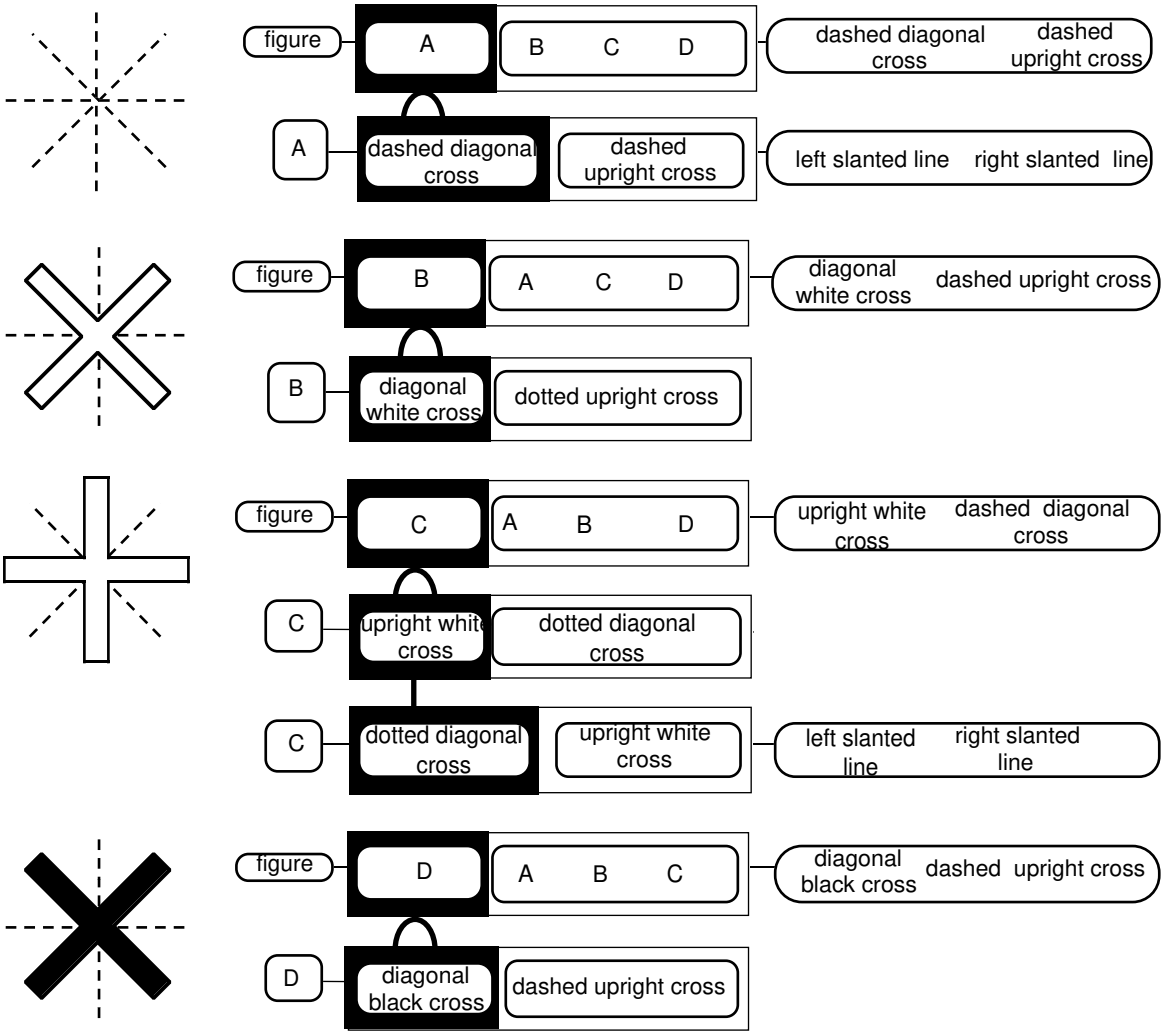






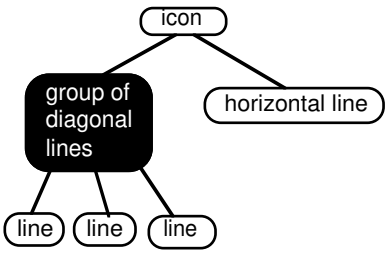
Exercise Set 3 Question 4

Of these icons, A, B and D all have only one transition represented to make the diagonal cross the subject, while in C the upright cross is the pragmatic subject, and so an additional transition is required. This means that the diagonal cross in C is the hardest to attend to.

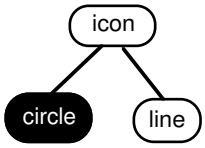


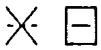
Exercise Set 4 Question 1

delete line

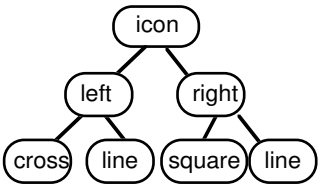


word search

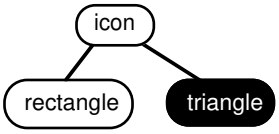




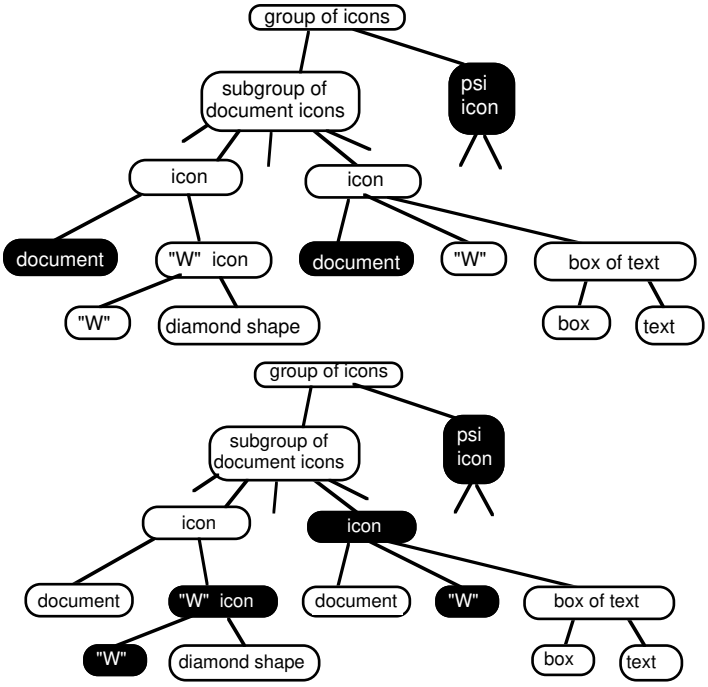
replace word



scroll righ



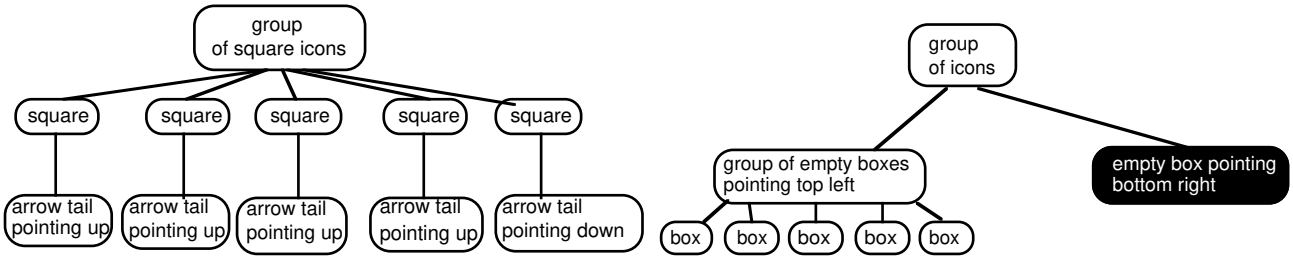
Exercise Set 4 Question 2 & 3



Exercise Set 4 Question 4

The document shape is common to all of the document icons, and so having it as the pragmatic subject does not help distinguish between them. Additional transitions are required to examine the distinguishing features of each icon (or the textual label, although we are not including these in the structure here). The 'blending text' icon differs in the location of the W and the 'box of text', and so if either of these were the pragmatic subject then the icon could be found easily, since the discriminating feature could be found without a transition. Since it has a different pragmatic subject to the rest of the subgroup, it may actually 'pop-out' from the others. We have shown this in the answer to 4.3 by highlighting the 'icon' that it belongs to – you could also add in another subgroup for all of the other document icons, to make this pop-out effect obvious.

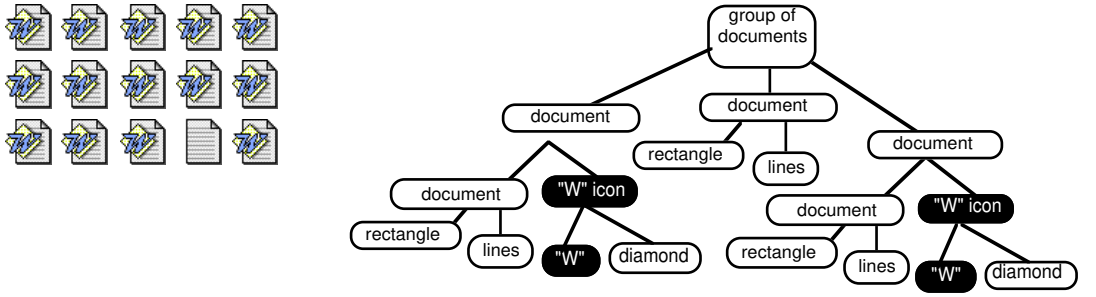
Exercise Set 5 Question 1 & 2

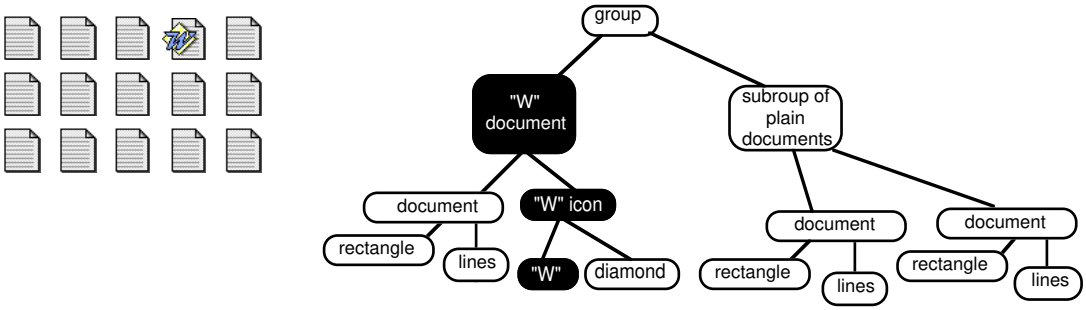


Exercise Set 5 Question 3

The 'blending text' icon is the most complex, and so even when the document shape is the pragmatic subject it still 'pops-out' to a certain extent, although we have not shown this happening in the answer for Exercise 4.

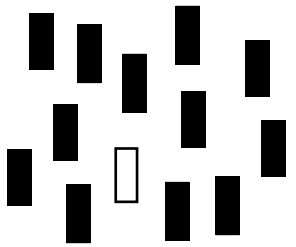
Exercise Set 5 Question 4

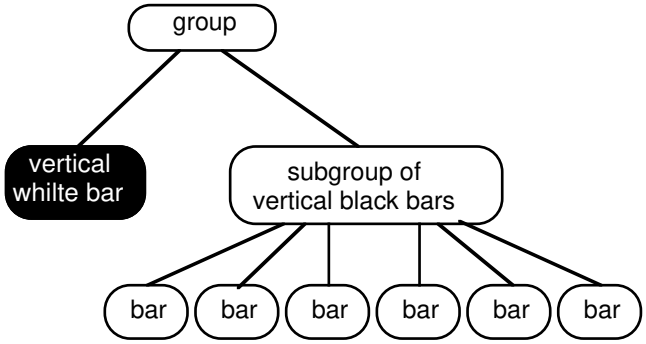


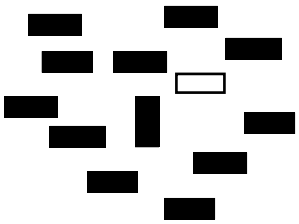


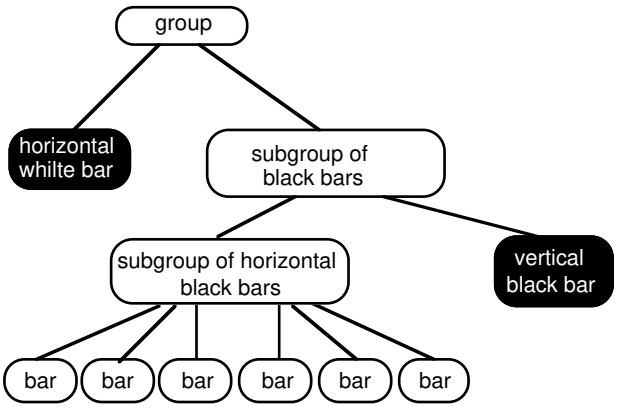
Exercise Set 6 Questions 1-4

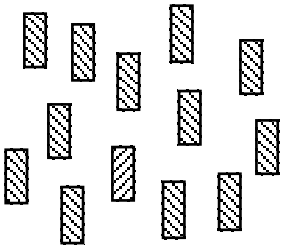
As the figures below show, only the subgroup in part d has a pragmatic subject, which stands out from the rest of the black group on account of its different shape. It is therefore easier to find this oblong than the differently textured oblong in part f, which does not form a pragmatic subject (texture here not being a grouping cue).

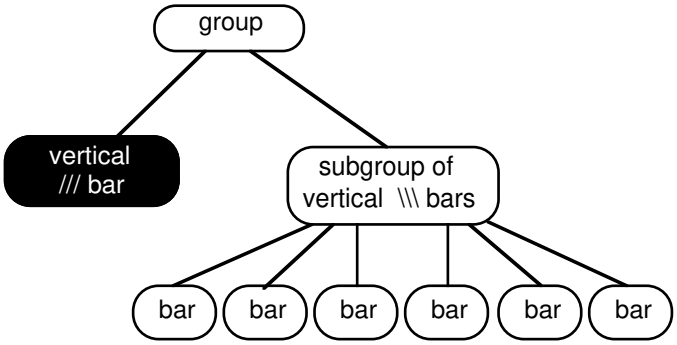


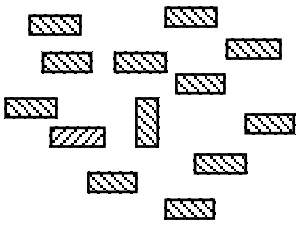


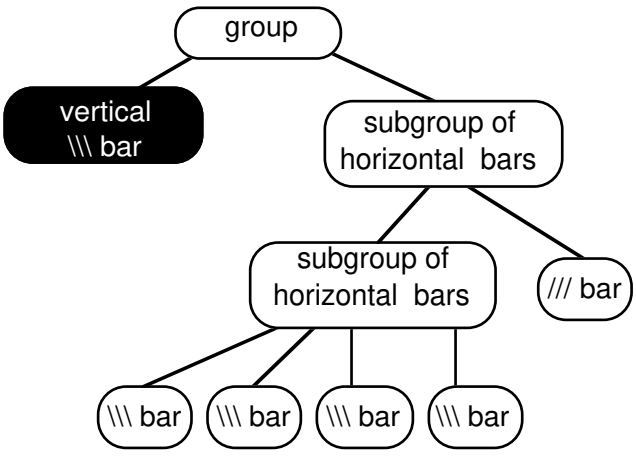




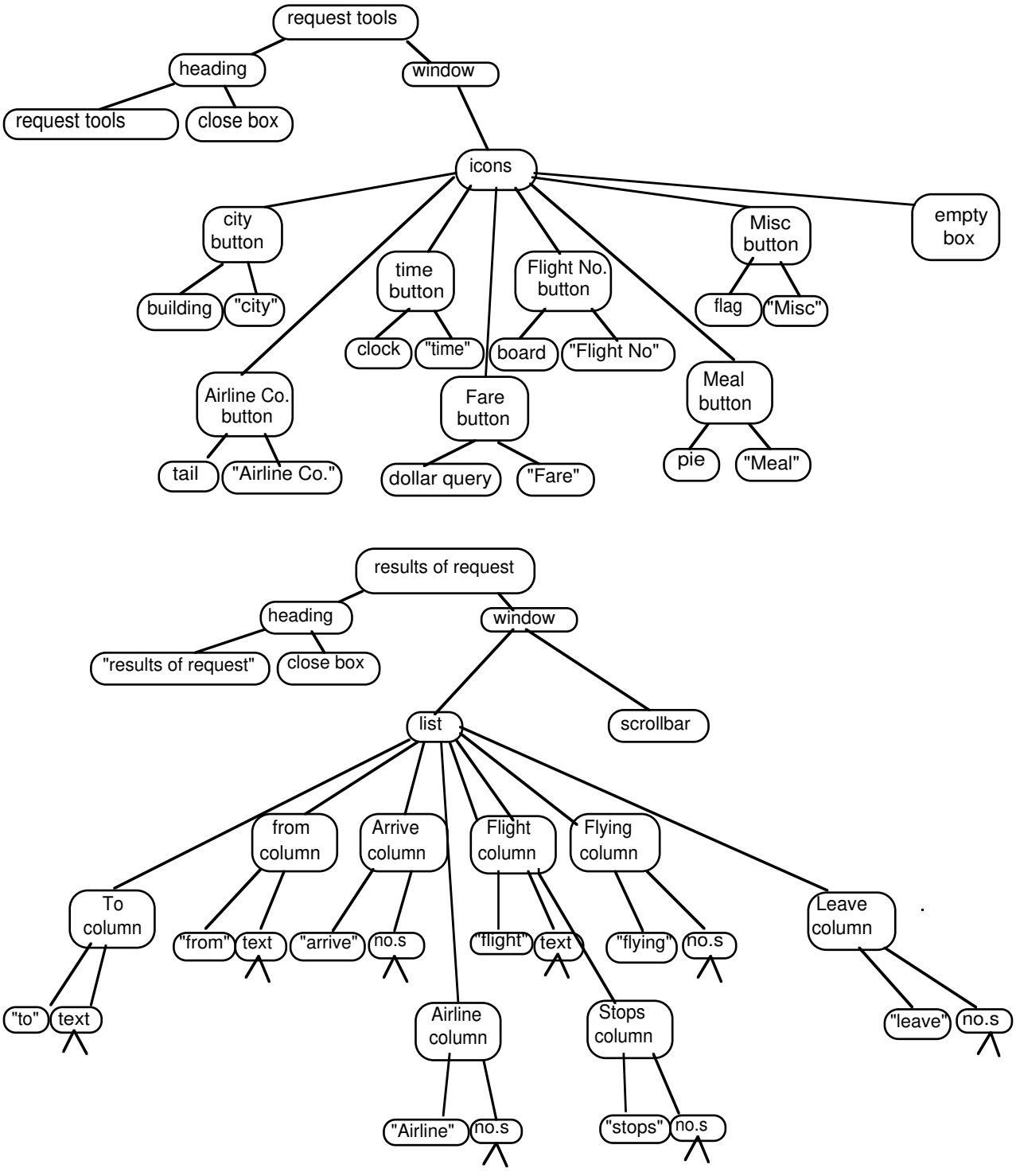




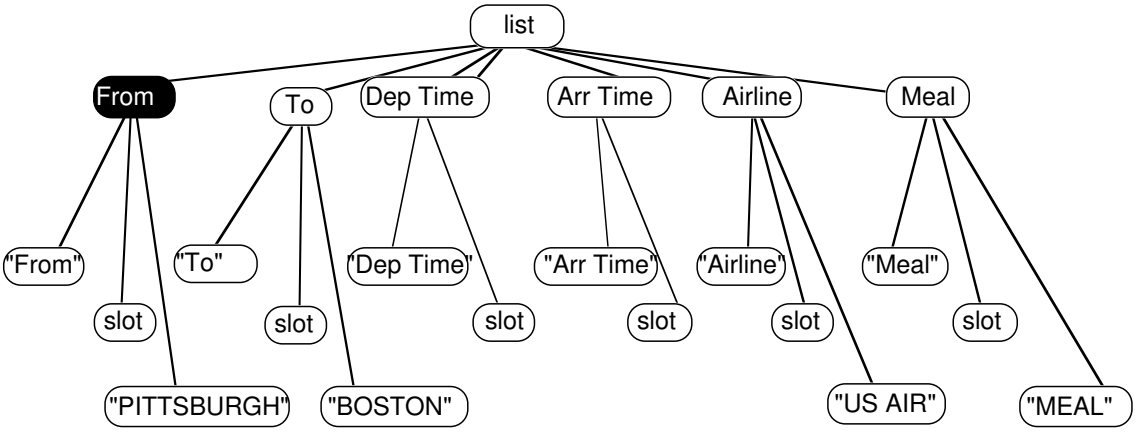




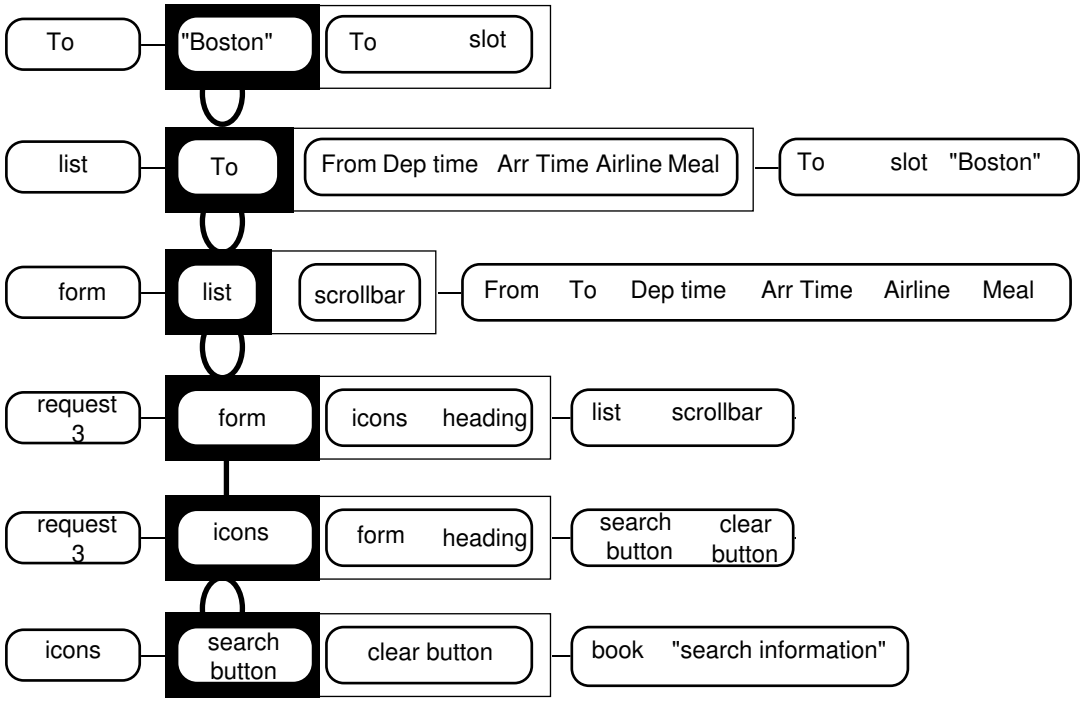
Exercise Set 7 Question 1



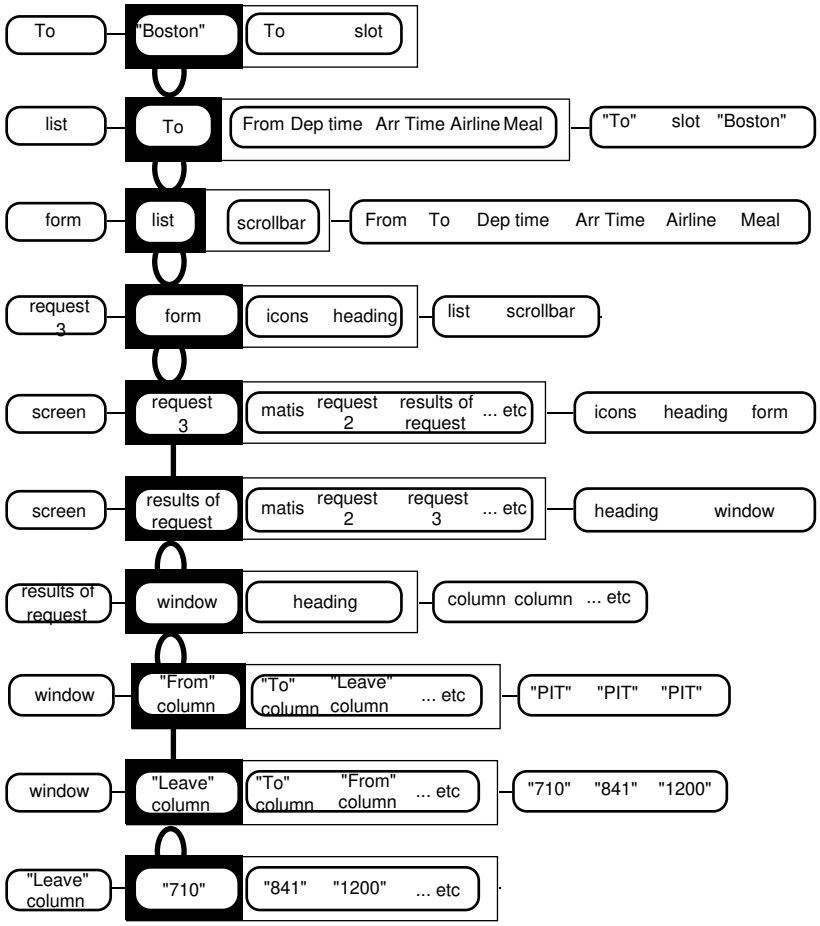
Exercise Set 7 Question 2



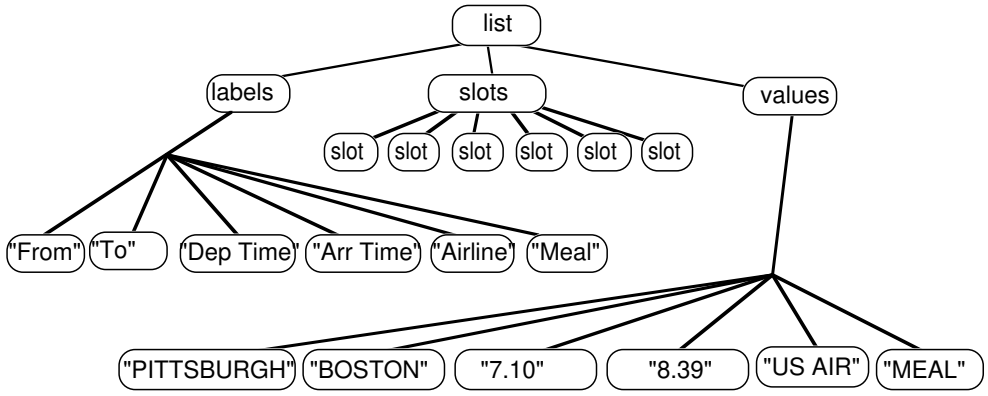
Exercise Set 7 Question 3a



Exercise Set 7 Question 3b



Exercise Set 7 Question 4

Having just filled in the 'Dep Time' slot, the user will still have a mental image of this phrase. The corresponding column in the results window is headed 'Leave', and so they may not realise that it is the one they want. Making the label for the slot in the Request and Results column correspond to each other would be best, whether they both say 'Dep Time' or 'Leave'.

Exercise Set 7 Question 5