

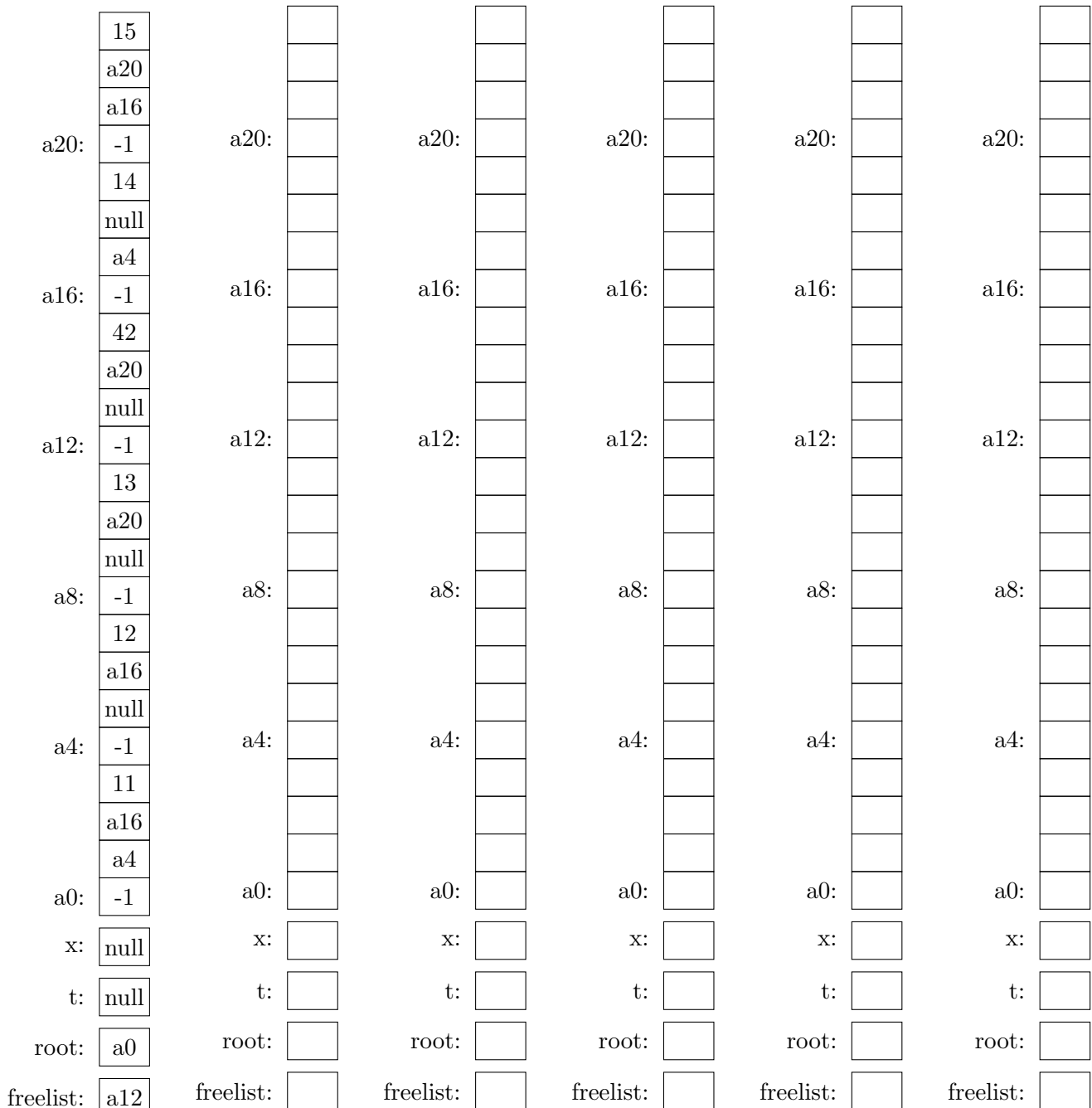
CLP: Garbage Collection (WS 2018)

This exercise sheet will be discussed in the exercise sessions on January 30.

Exercise 1 Mark-and-Sweep

Assumptions for simplicity: 1. Every allocated object has the same structure: First a metadata field of type int for marking an object and counting visited fields (-1 for unmarked objects). Then 2 pointer values (can be null) and a field storing some integer. 2. There is only one root variable. 3. There is only one free-list. 4. Address values start with a.

Execute the Mark-and-Sweep algorithm with pointer reversal on the following state. Draw the state after each loop iteration for the marking phase and the state after the sweeping phase.

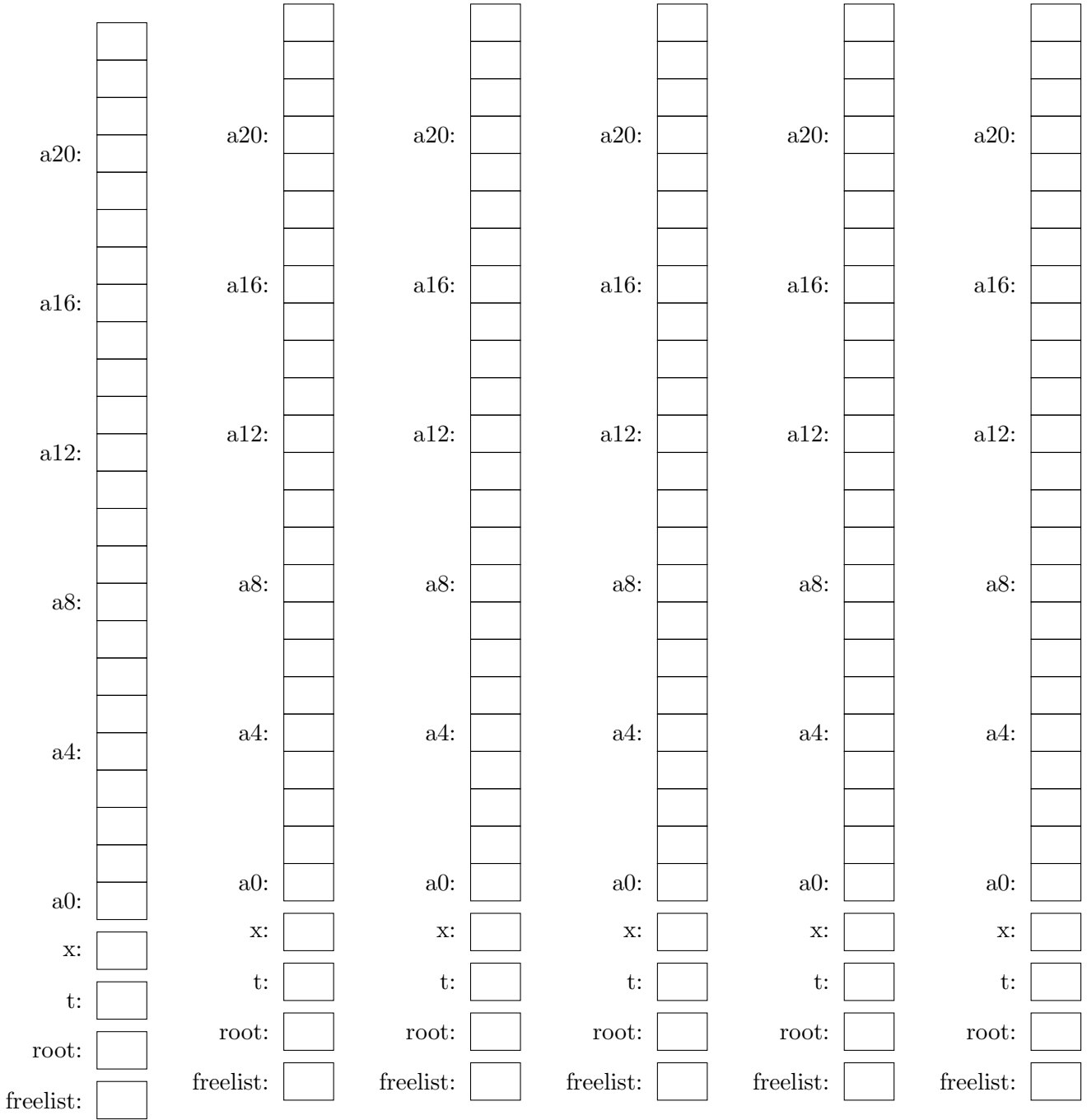


Exercise 2 Copying Collection

Execute the Copying Collection algorithm on the following state. The beginning of the from-space is at a0 and the beginning of the to-space at a18. The object structure is as above but without the metadata field for marking an object and counting.

a33:						
a30:						
a27:						
a24:						
a21:						
a18:						
	15					
a15:	a15					
	a12					
	14					
	null					
a12:	a3					
	42					
	a15					
a9:	null					
	13					
	a15					
a6:	null					
	12					
	a12					
a3:	null					
	11					
	a12					
a0:	a3					
root:	a0					
next:						
scan:						

More space for Mark-and-Sweep:



More space for Copying Collection:

