

Exercise 2.25.

Give combinations of `cars` and `cdrs` that will pick 7 from each of the following lists:

`(1 3 (5 7) 9)`

`((7))`

`(1 (2 (3 (4 (5 (6 7)))))`

Answer.

Well, in order to pick particular elements from the lists above, we'd better interpret them in terms of box-and-pointer structure. Here we go!

Figure 1 to figure 3 show the corresponding representation of these expressions using pairs. Therefore,

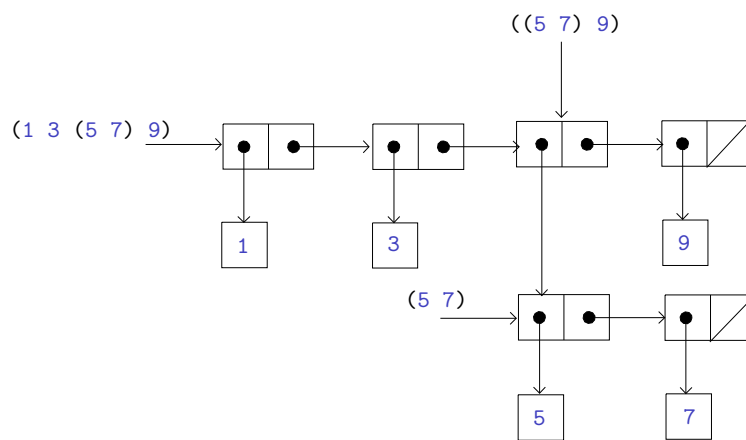


Figure 1. Structure formed by `(list 1 3 (list 5 7) 9)`

we can pick 7 from each of these lists using the corresponding expressions:

```
(car
  (cdr
    (car
      (cdr
        (cdr (list 1
                  3
                  (5 7)
                  9)))))
;Value: 7

(car (car (list (list 7))))
;Value: 7

(car
  (cdr
    (car
      (cdr
        (car
          (cdr
            (car
              (cdr
                (car
```

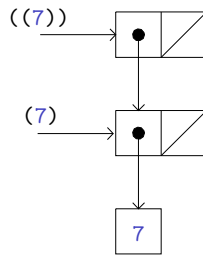


Figure 2. Representation of $((7))$ in terms of pairs

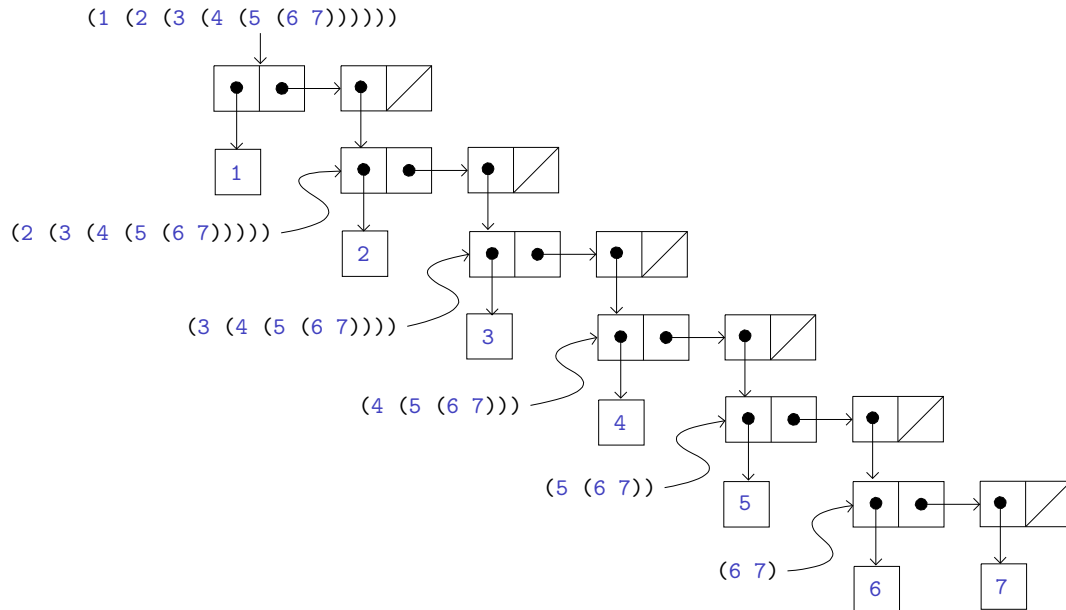


Figure 3. Representing $(1 (2 (3 (4 (5 (6 7)))))$ in box-and-pointer notation

```
(cdr
  (car
    (cdr (list 1
              (list 2
                    (list 3
                          (list 4
                                (list 5
                                      (list 6 7))))))))))
;Value: 7
```