Exercise 2.25.

Give combinations of `car`s and `cdr`s that will pick 7 from each of the following lists:

```
(1 3 (5 7) 9)

((7))

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

Answer.

Rather than writing code directly, we are going to draw the corresponding box-and-pointer diagrams of the lists above. Figure 1 through figure 3 show the representation of these expressions in terms of

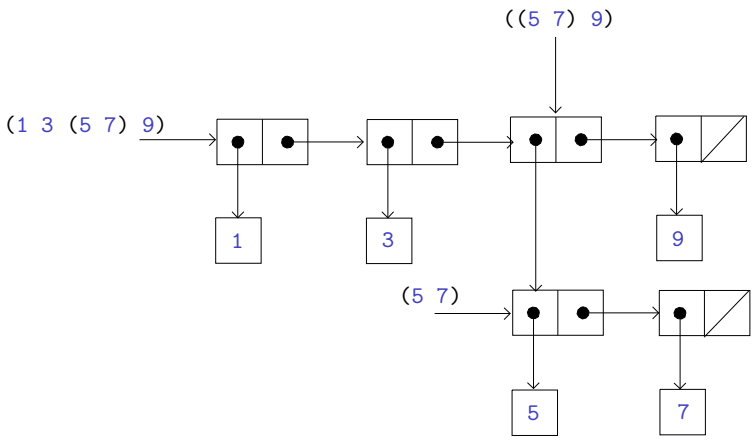

Figure 1. Structure formed by `(list 1 3 (list 5 7) 9)`

pairs. Using these diagrams, we can pick 7 from each of these lists with the following 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
         (cdr
          (car
```

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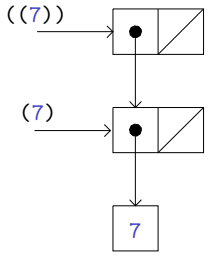

Figure 2. Representation of `((7))` in terms of pairs

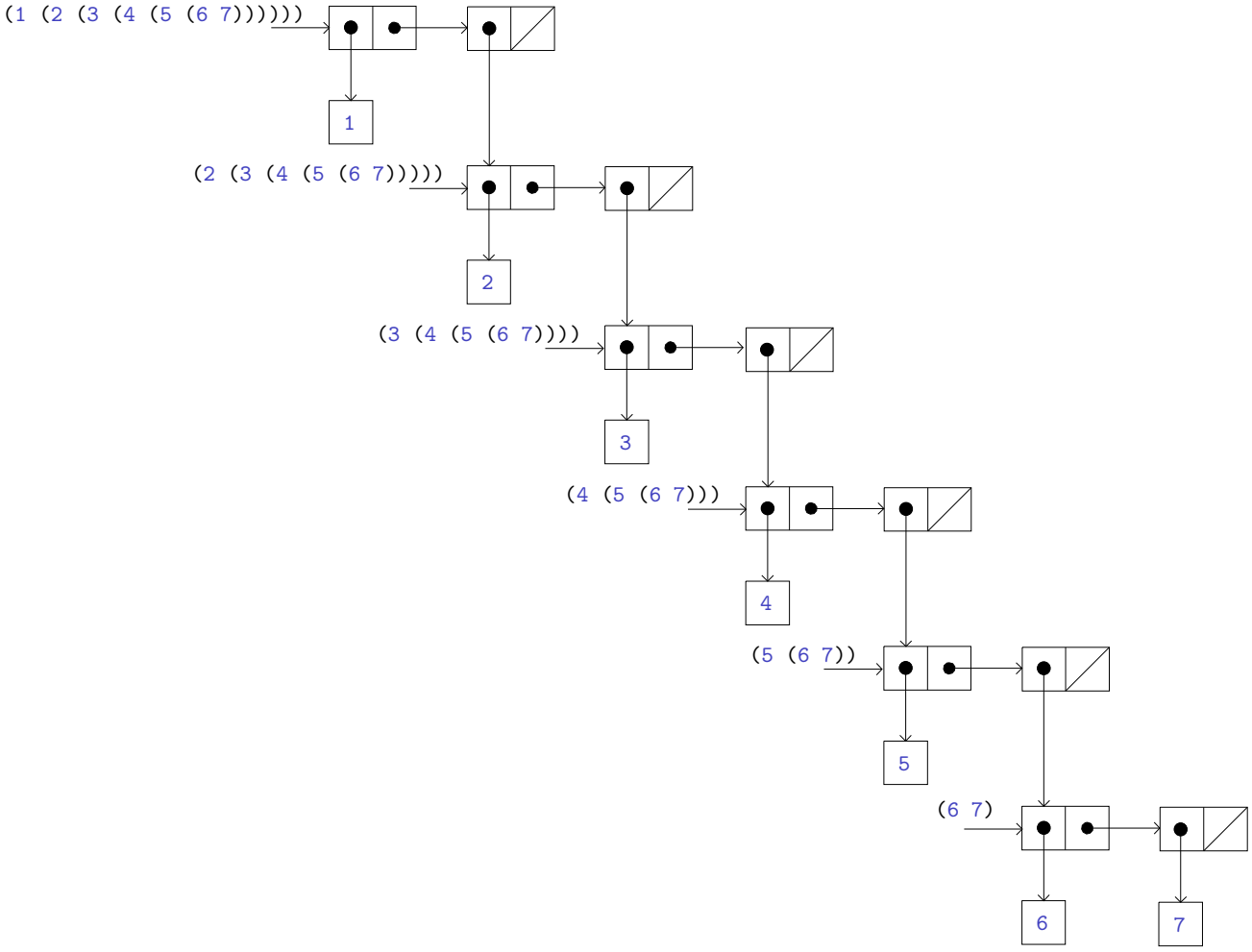

Figure 3. Representing `(1 (2 (3 (4 (5 (6 7))))))` in box-and-pointer notation

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