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Homework 5

1)

Pseudo Code:

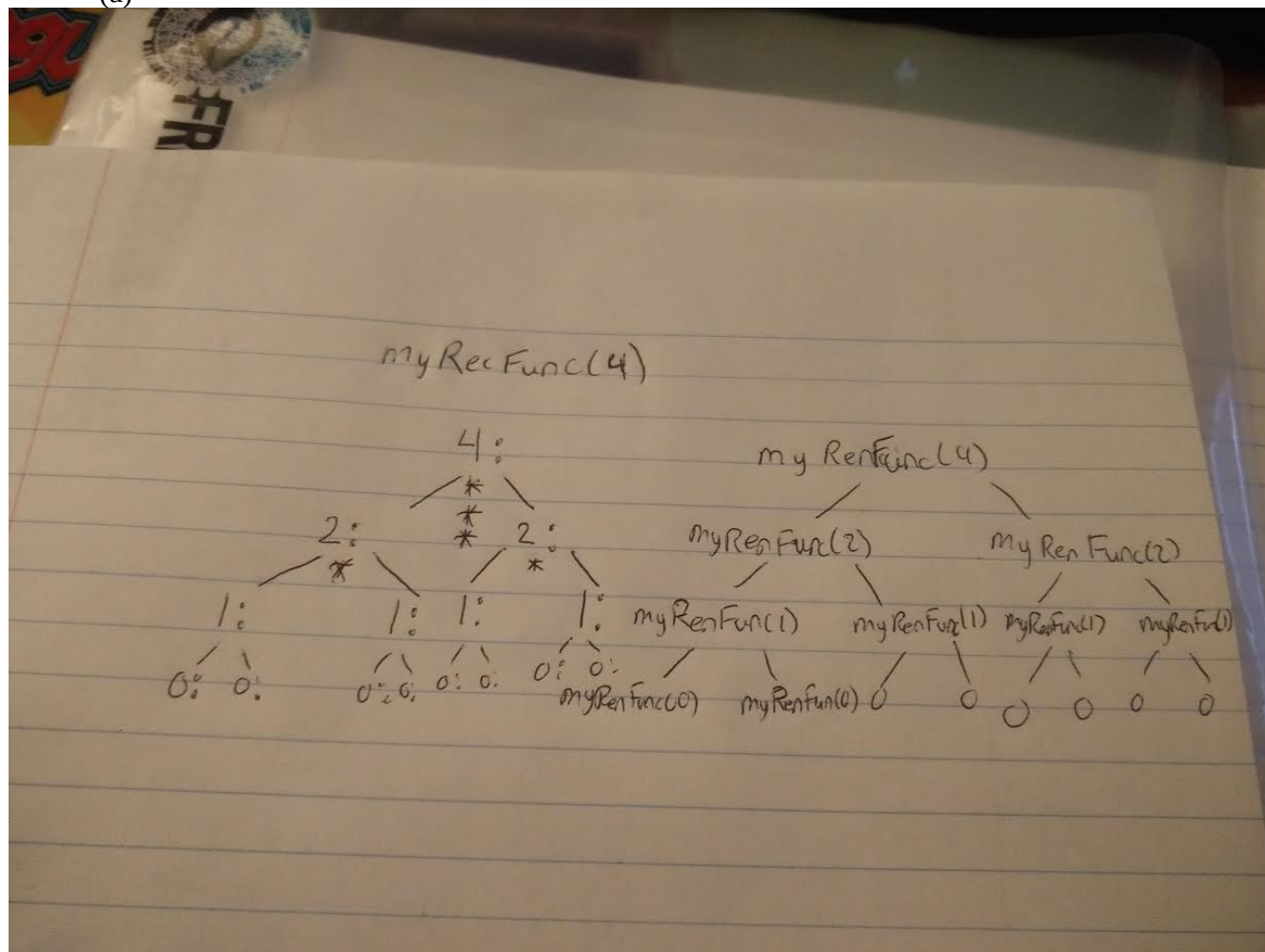
- 1) Give menu to the user
- 2) Take in input of user
- 3) Perform intended input of user, quit if he chooses
- 4) Create appropriate functor
- 5) Run perform_if with the functor, print functor
- 6) Repeat

Preconditions: The user gives a valid input, if not prompt for a valid input

Postconditions: Check if perform_if returns 0, if it does tell the user's input was not found

$O(n)$

(a)



(b)

4: 2: 1: 0: 0:

$$1: 0: 0:$$

*

2: 1: 0: 0:

$$1: 0: 0:$$

*

(c) $n \log(n)$

3)

(a)

myRecFunc(4)

4

|

2

|

1

|

0

myRecFunc(4)

|

myRecFunc(2)

|

myRecFunc(1)

|

myRecFunc(0)

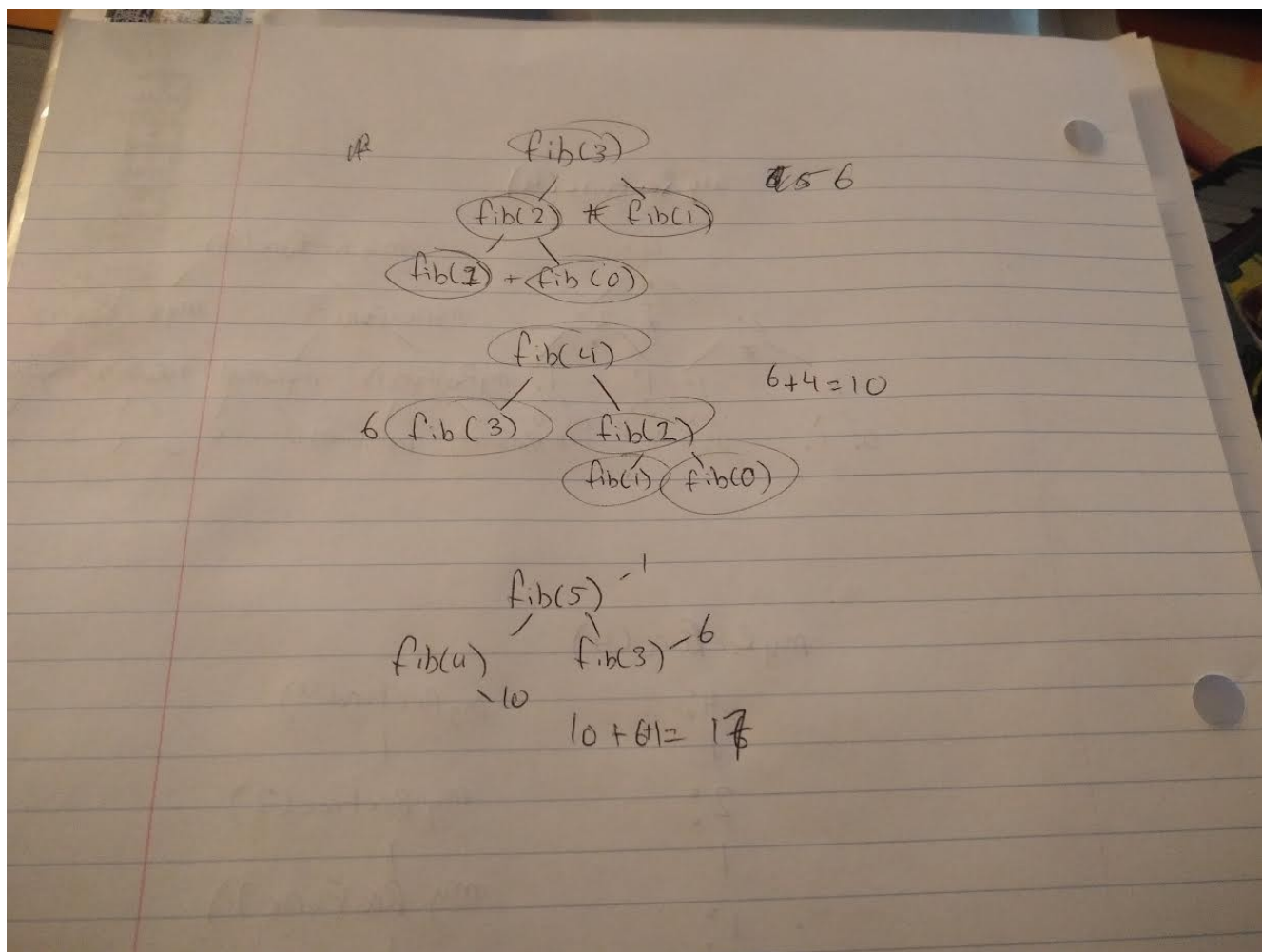
(b)

4: 2: 1: 0: 0

(c) $\log(n)$

4) 17

Work:



5)

0,8,9,-11,2,0,3
 -11,8,9,2,0,3
 -11,2,8,9,0,3
 -11,0,2,8,9,3
 -11,0,2,3,8,9

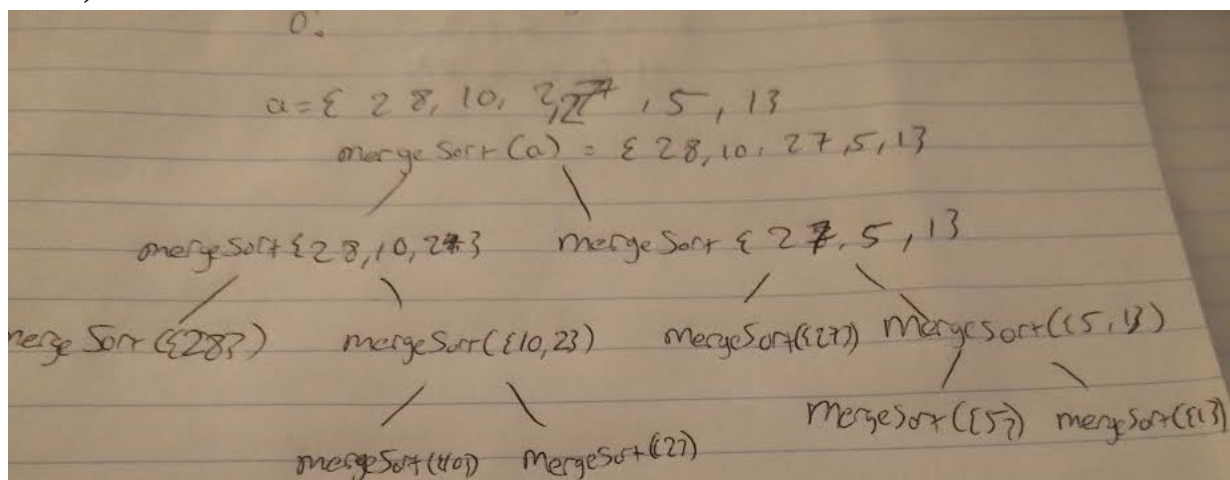
6)

8,-11,9,2,0,3
 8,-11,9,2,0,3
 -11,0,2,3,8,9

7)

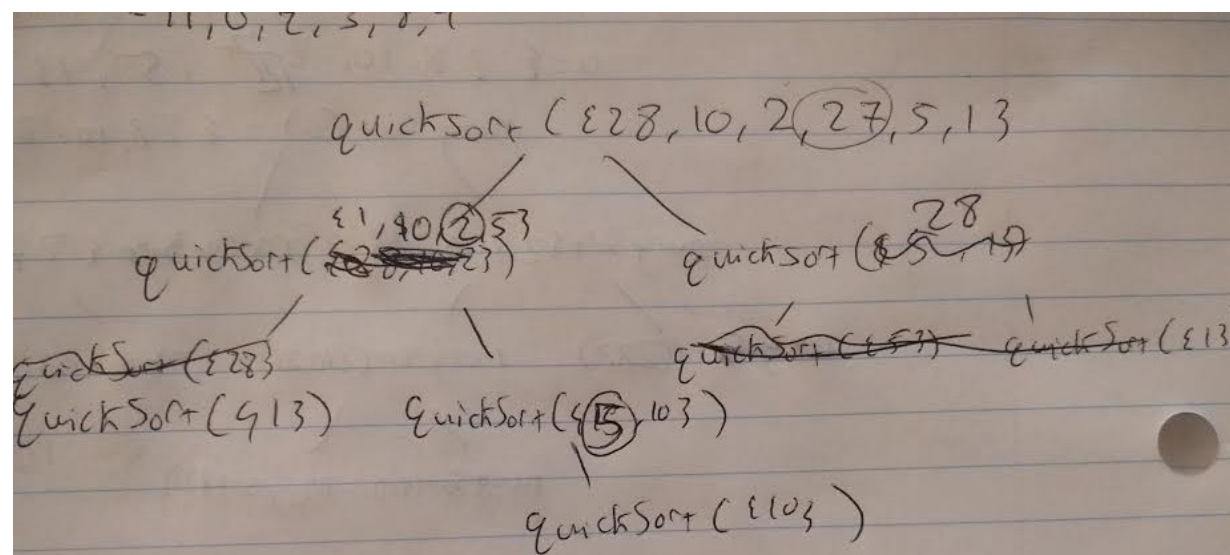
0-11,8,3,2,0,9,
 -11,0,2,9,8,3,
 -11,0,2,3,8,9,

8)



S be a set. If there are exactly n elements in S , $n \in \mathbb{Z}^+$ we say that S is finite & n is cardinality. $|S|$

Sets A & B have the same cardinality if A & B correspond



$\exists n \in \mathbb{P}(x)$

Cardinality - 2.3

Let S be a set. If there are exactly n distinct elements in S

9)

insertion sort: $O(n)$

merge sort: $O(n \log(n))$

quick sort: $O(n \log(n))$

10)

$\log(n)$

11)

The $I = k+1$ check is done, because when it is the $k+1$ item it is the n th item from the end of the list, which means that item is the item we're looking for in the sorted order.