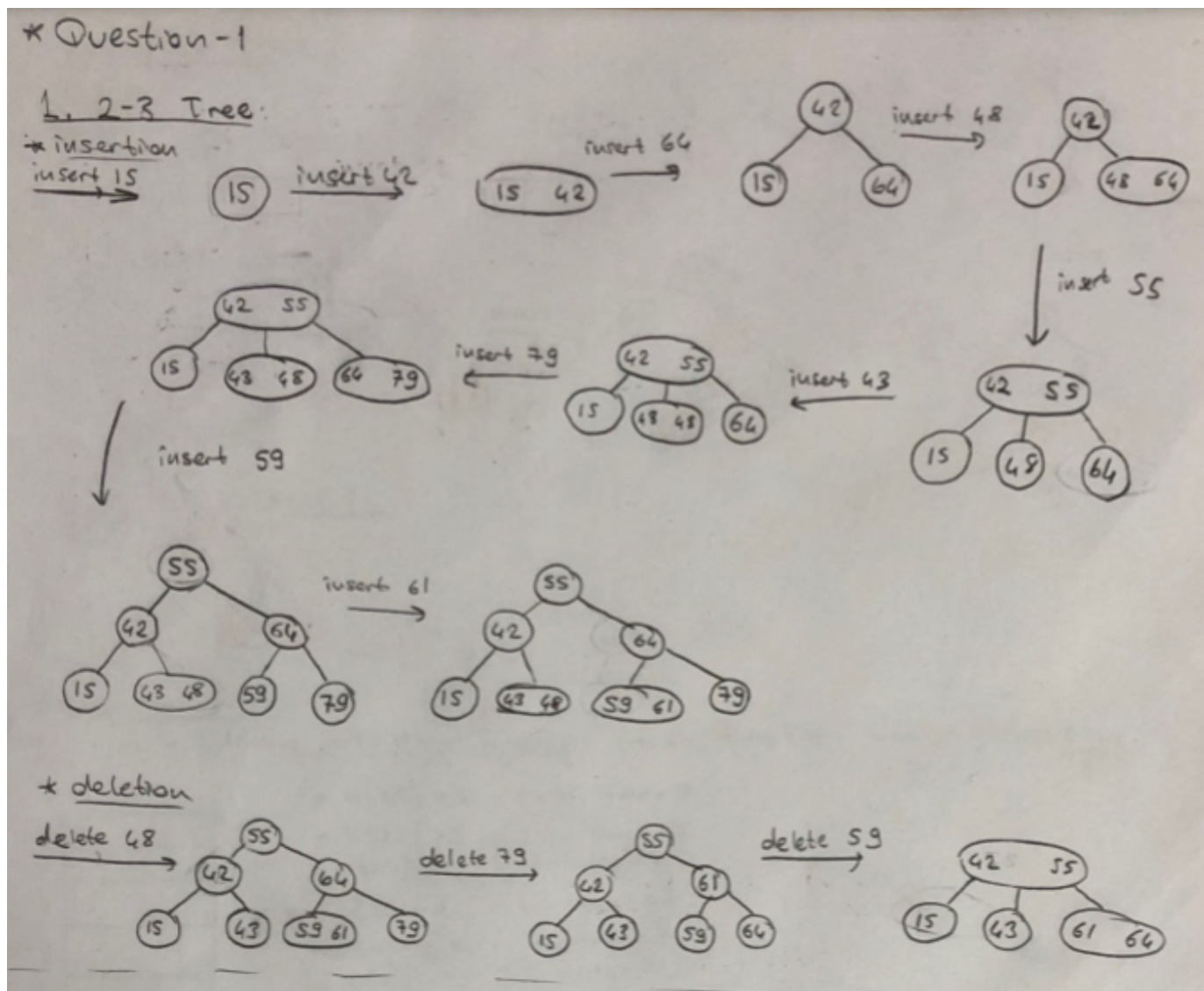


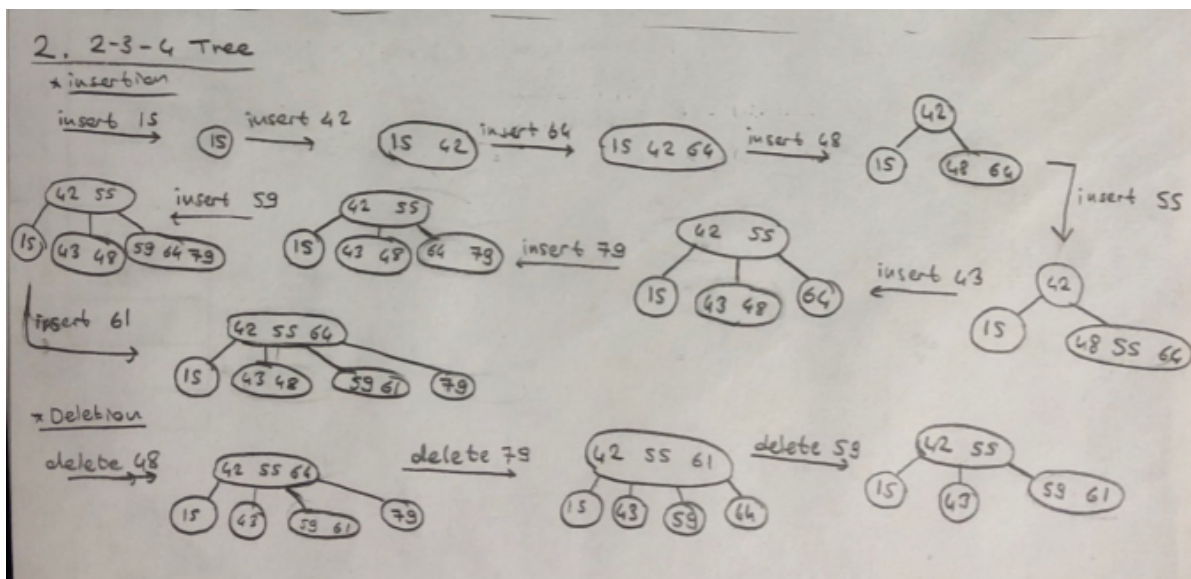
Homework 4: Balanced Search Trees, Hashing and Graphs

Question-1

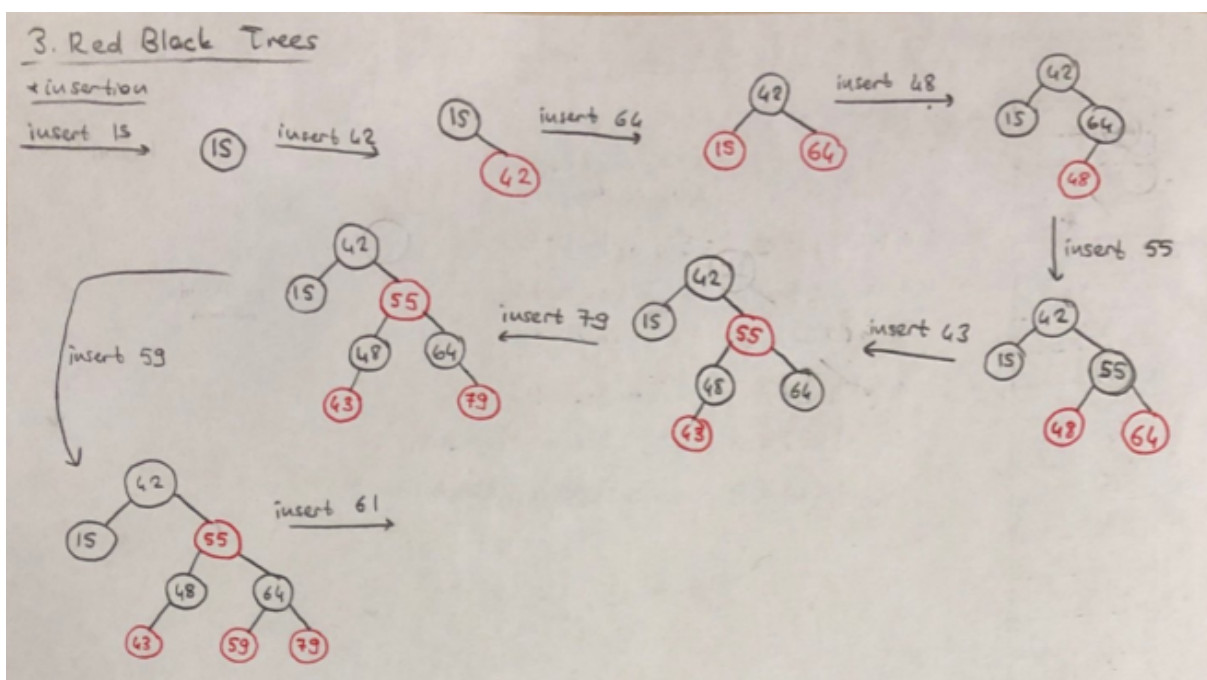
1. 2-3 Tree:



2. 2-3-4 Trees:



3. Red-Black Trees:



Question-2

1. Open Addressing with Linear Probing:

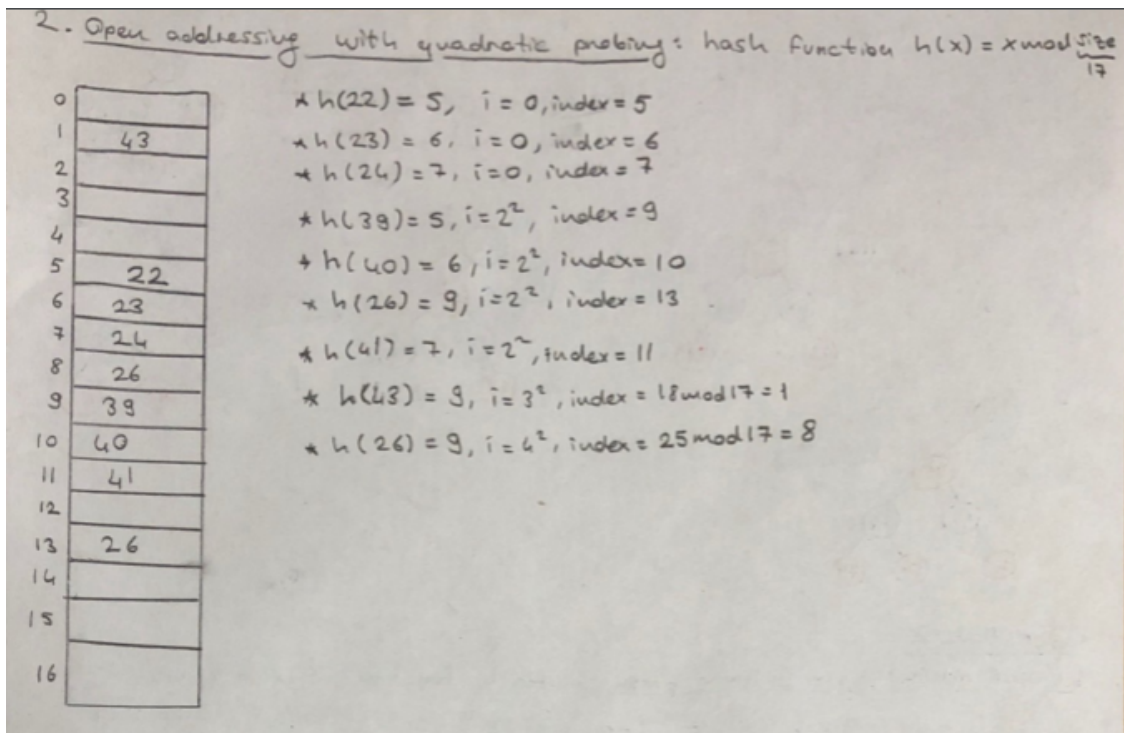
* Question 2

1. Open addressing with linear probing: Hash function $h(x) = x \bmod \text{Size}$
17

0	
1	
2	
3	
4	
5	22
6	23
7	24
8	39
9	40
10	26
11	41
12	43
13	26
14	
15	
16	

* $h(22) = 5, i = 0, \text{index} = 5$
* $h(23) = 6, i = 0, \text{index} = 6$
* $h(24) = 7, i = 0, \text{index} = 7$
* $h(39) = 5, i = 3, \text{index} = 8$
* $h(40) = 6, i = 3, \text{index} = 9$
* $h(26) = 9, i = 1, \text{index} = 10$
* $h(41) = 7, i = 4, \text{index} = 11$
* $h(43) = 9, i = 3, \text{index} = 12$
* $h(26) = 9, i = 4, \text{index} = 13$

2. Open Addressing with Quadratic Probing



3. Separate Chaining:

