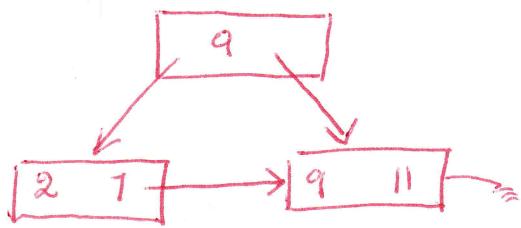
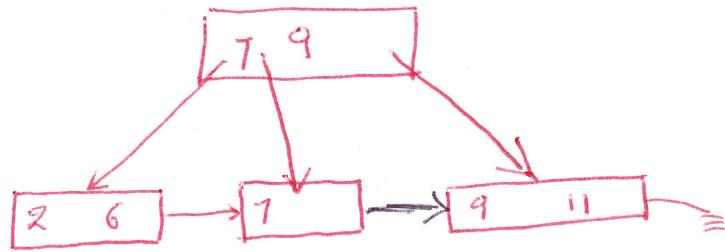


Problem 1.3. i

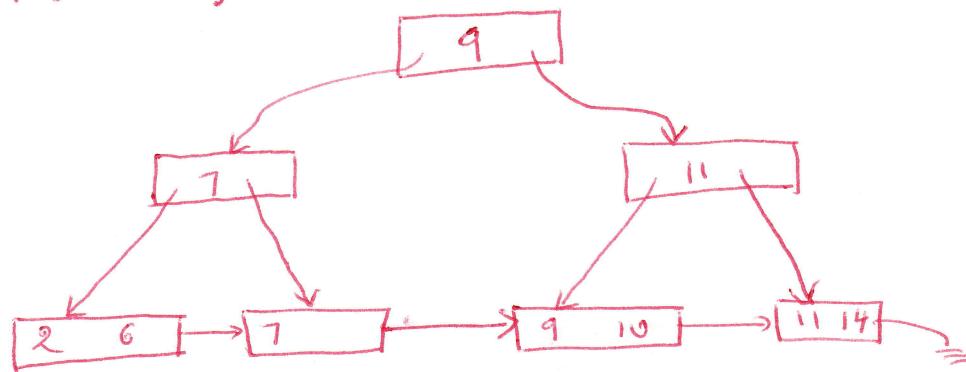
(1)



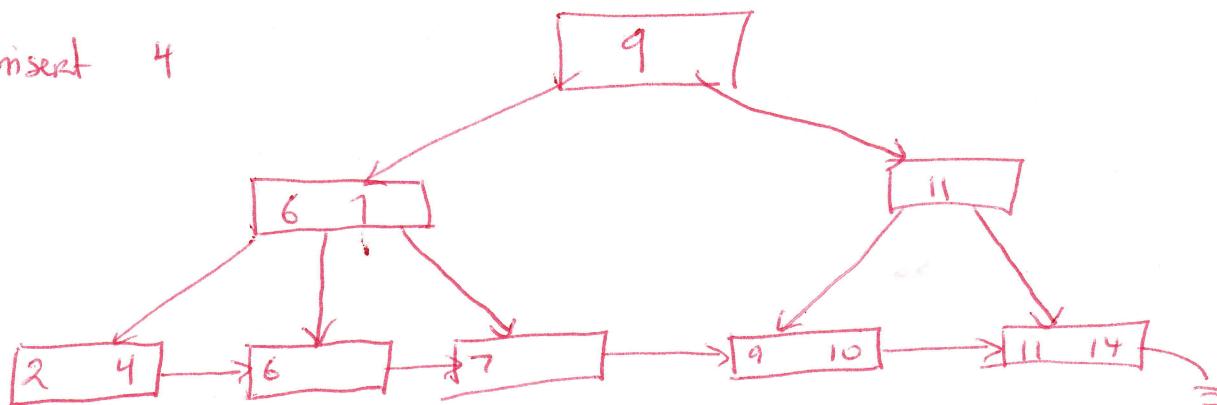
insert 6



insert 10, 14



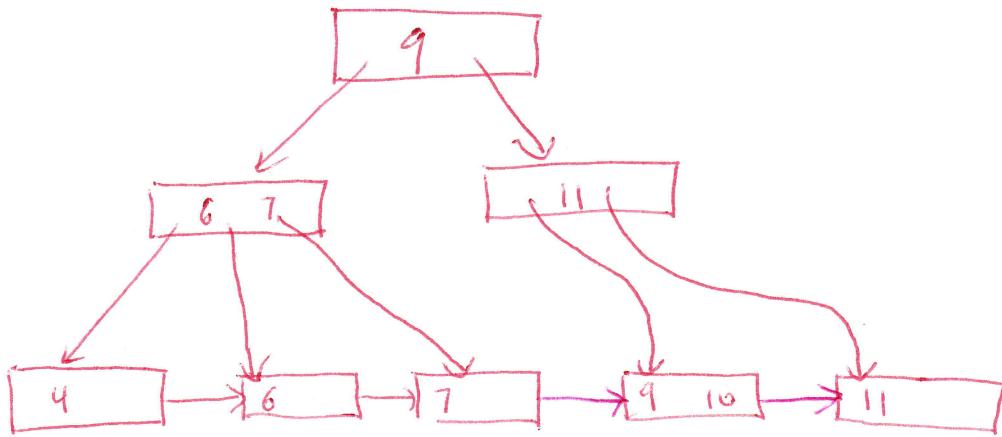
insert 4



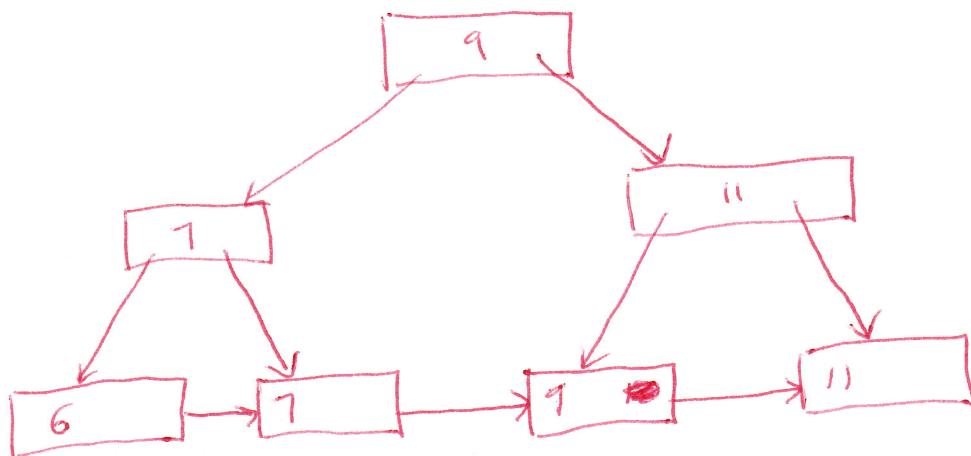
Problem 1.3.ii

②

Delete 2, 14

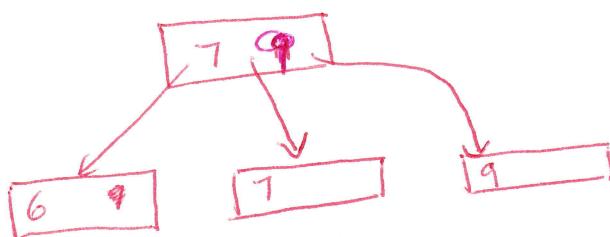


Delete 4, 10



~~Consider~~

Consider now deleting 11.



(3)

Problem 2. c.i

Observe that we need 4 bits to represent
0, 1, 2, 4, 6, 7, 8, 9

$$0 \rightsquigarrow 0000$$

$$1 \rightsquigarrow 0001$$

$$2 \rightsquigarrow 0010$$

$$4 \rightsquigarrow 0100$$

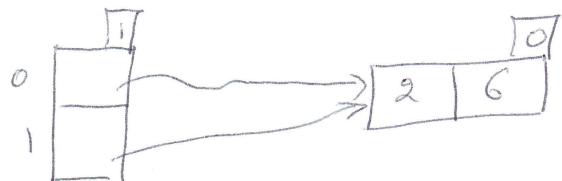
$$6 \rightsquigarrow 0110$$

$$7 \rightsquigarrow 0111$$

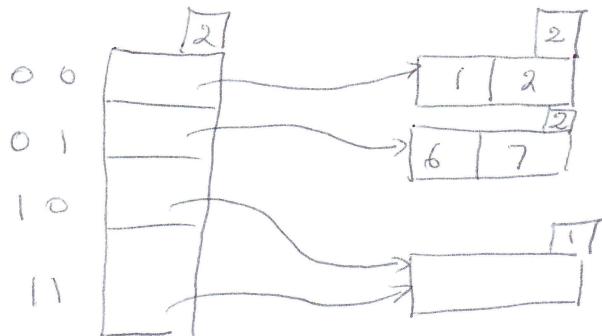
$$8 \rightsquigarrow 1000$$

$$9 \rightsquigarrow 1001$$

Insert 2, 6

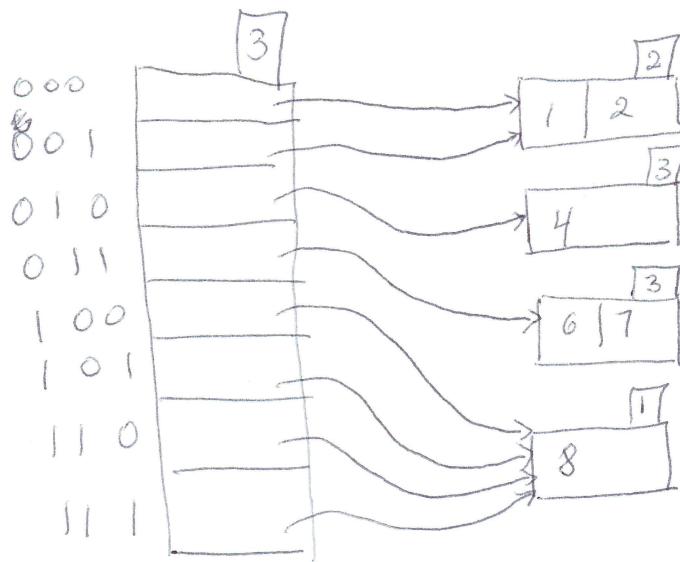


Insert 1, 7

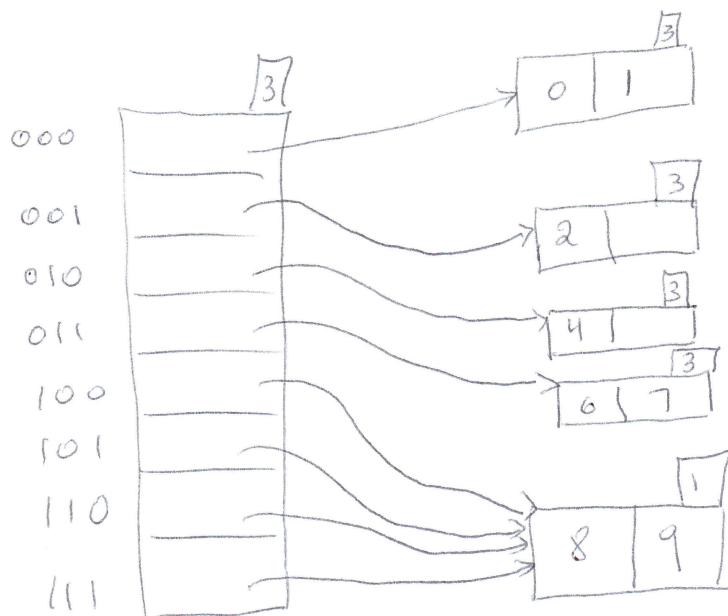


(4)

Insert 4, 8



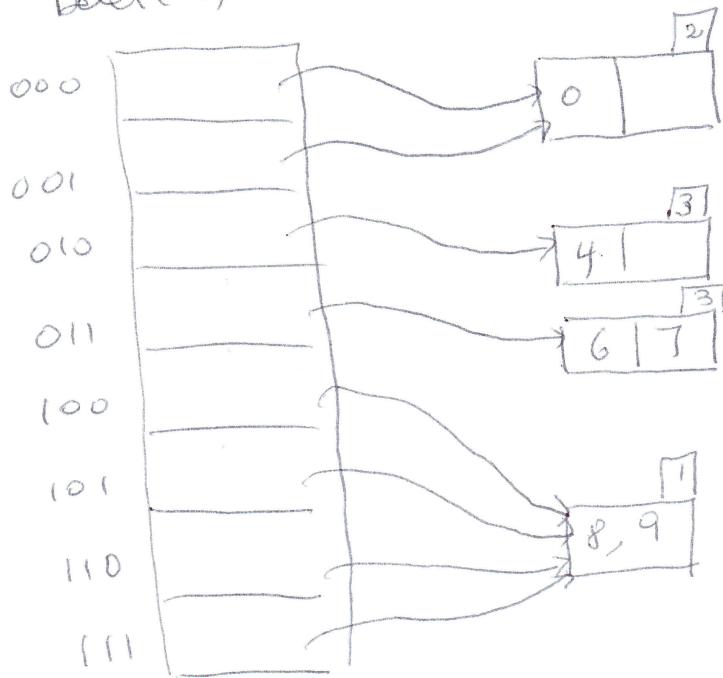
Insert 0, 9



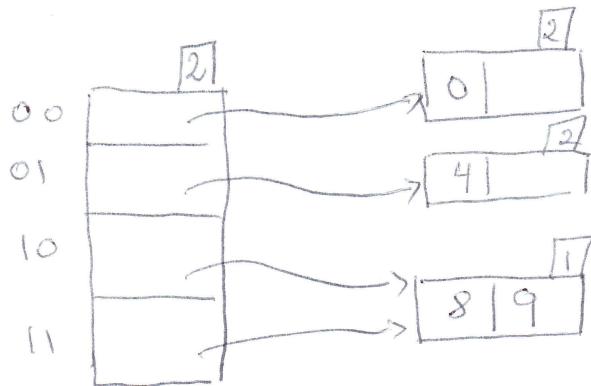
(5)

Problem 2.c.ii

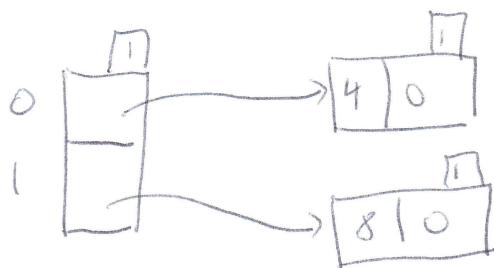
Delete 1, 2



Delete 6, 7



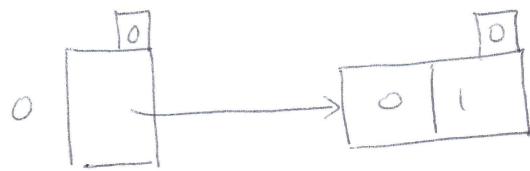
Delete 0, 9



6

Problem 2.3. ii

Assume the following



$$\begin{aligned} 0 &\sim 0000 \\ 1 &\sim 0001 \end{aligned}$$

Insert 2

$$2 \sim 0010$$

Notice that it requires 3 bits to separate 0, 1, 2

So we need the following data structure

