Hw 1 sol

1 (20 points)

a. 83 < x <= 88

b. B 11 25, C 50, D 80, A 40 71

c. 57 is inserted to node I

* *Node I is spitted. New values for IA (50, 55), KB (57, 58, 60)*
* Node C is affected. New values for keys of C is (50 57 ) [fill it in yourself]

4 is inserted to node E

99 is inserted to nodeK

* Node k is splitted, new values of KA (80, 83), KB (88 92 99)
* Node D is affected, new values of key of D(80 88)

12 is inserted into node F

* Node f is splitted new valus of FA (11 12), FB (13 18 20)
* Node B is splitted BA(11), BB (25)
* Node A is splitted AA(13) AB (71)
* New RootA (40)

53 is insert to IA IA (50, 53, 55)

5 is inserted to E

* Node E is split, EA (1 4), EB (5 6 7)
* Node BA is affected BA(5 11)

2.

a) 1600/200 = 8

(b) 250000/8 = 31250

(c) (i) best case: 1 page find the key: 50 + 0.5 = 50.5

worst case : not found, 31250 pages = 50 \* 2 + 0.5 \* 31250 =15725

(ii) best and worst case: 0 (ssn not found)

(d) (i) 2 tuples : 50 \* 2 + 0.5 \* 2 = 101

(ii) 10000 \* (50 + 0.5) = 505,000

-1 if c.ii = 50.5

3. Embedding means you need to duplicate certain entities (if all entities participate in many relationships). Restricting cardinality of participation will help (especially uniques)