1 Assignment-3 Ceng-302

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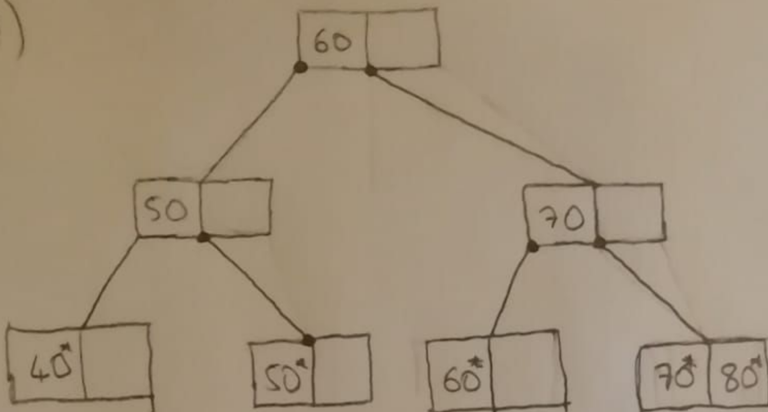
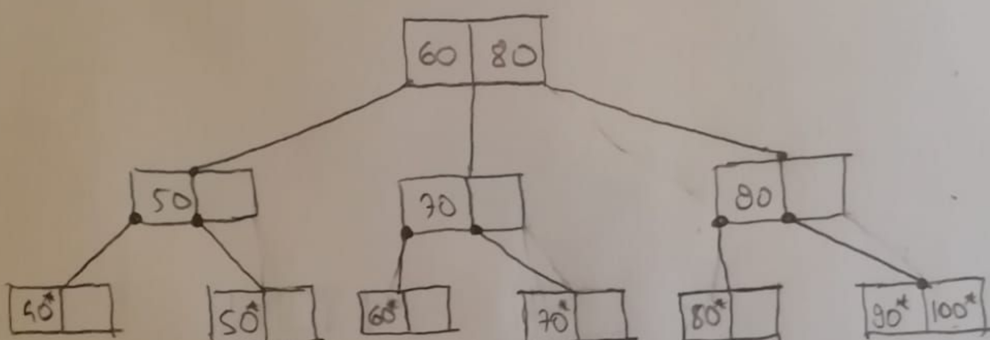
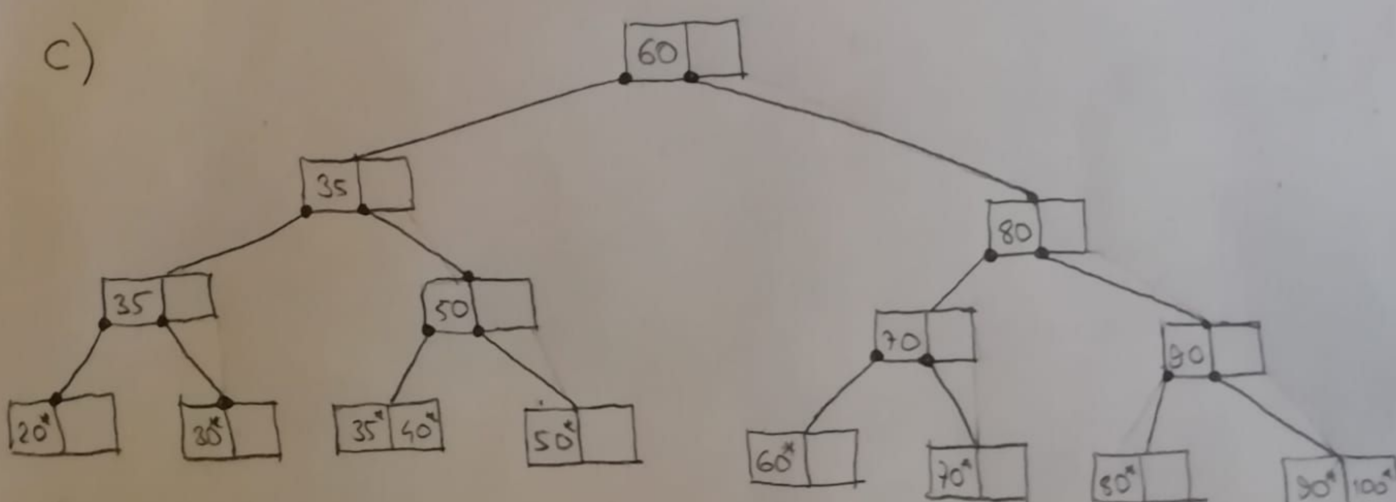
a)




b)



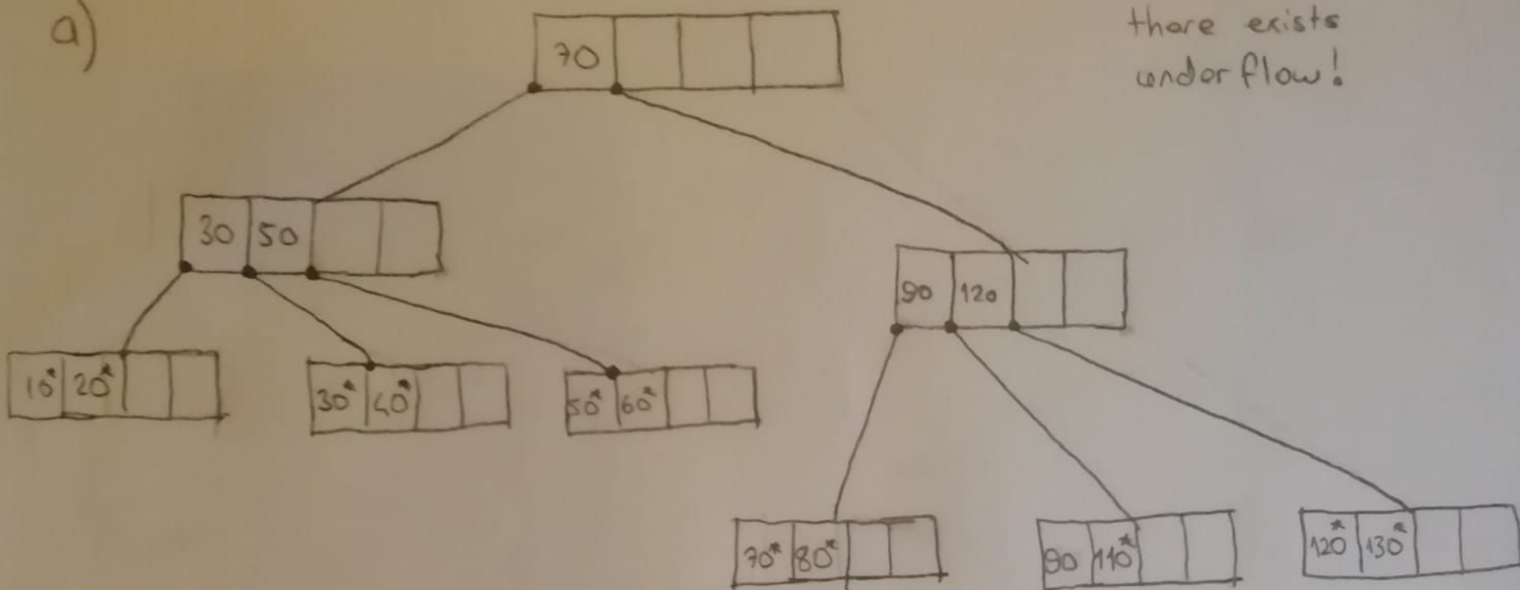

c)



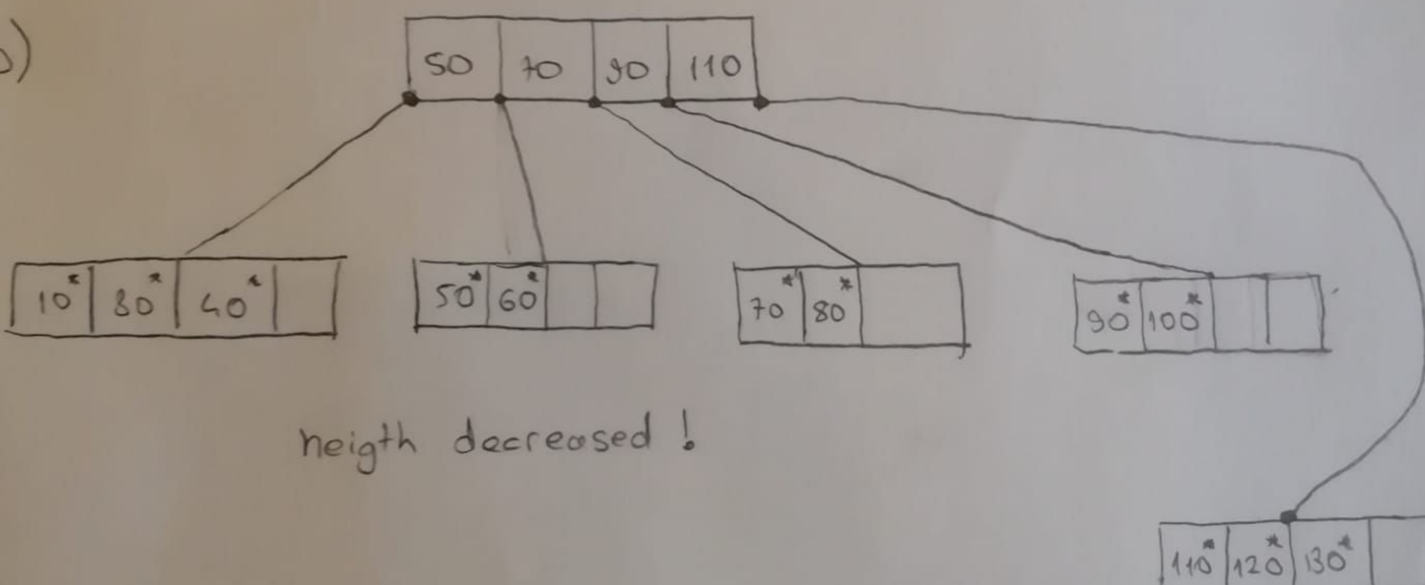
②

a)

there exists underflow!




b)




heigth decreased !

③ $R = (A, B, C, D, E, F)$

$F \to C$ $\quad$ $BC \to DF$ $\quad$ $AB \to F$

$ADE \to F$ $\quad$ $E \to BC$

$BD \to F$ $\quad$ $D \to A$

a) Consider $(E)^+$

1. result $= E$

2. result $= BCE$ since $E \to BC \Rightarrow E^+ = (B, C, E)$

3. result $= BCDEF$ since $BC \to DF \Rightarrow (BC)^+ = (B, C, D, E, F)$

4. result $= ABCDEF$ since $D \to A \Rightarrow (D)^+ = (A, D)$

$\Rightarrow (BCDEF)^+ \supset (D)^+ = (A, D)$

$(E)^+ \to R \Rightarrow$ E is a candidate key for R,

and E is minimal cover of FDs in R.

Any combination including E can be a candiate cay for R.

b) Firstly, R should be in 3NF so that it can be in BCNF

Decompese R so that non-transitivity is satisfied

| $R_1$ | $R_2$ |
|---|---|
| $F \to C$ | $ADE \to F$ |
| $BC \to DF$ | $BD \to F$ |
| $D \to A$ | $AB \to F$ |
| | $E \to BC$ |

Since E is detemnant (other attributes are fully functionally dependent),

R is now in BCNF.