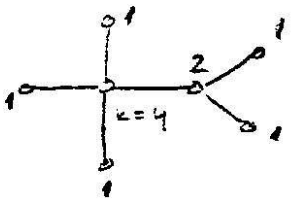
DMAT

2. CIKLUS

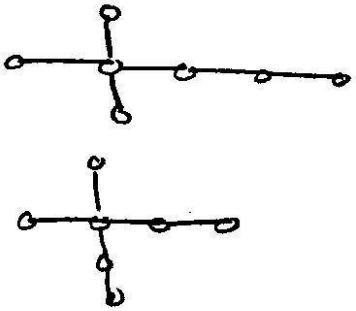
6. STABLA

6.12 Po definiciji, stablo nema ciklusa, dakle, ako postoji vrh stupnja k, stablo ima barem k grana, a time i k vrhova stupnja 1



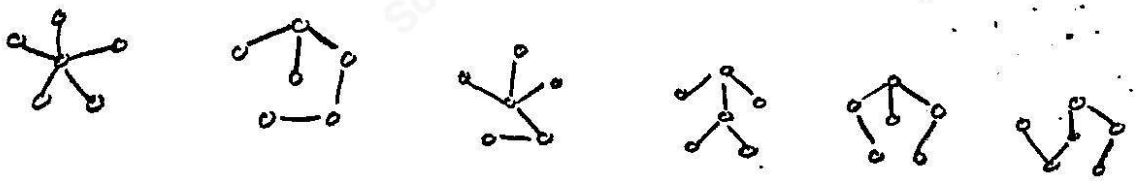
6.13 $\Rightarrow$ + u bridova = stablo

↳ 1 regularan graf

6.14 

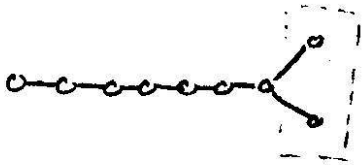
$(1,1,1,1,2,2,4)$

6.15 6 vrhova $\Rightarrow$ (6)



6.16 $n = 9$

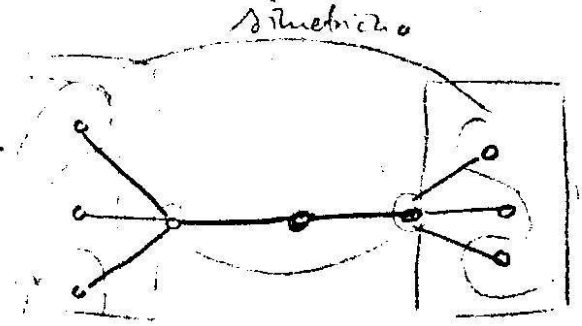
Br. komb. labela?



→ Svejedno koja labela ide gore, a koja dolje

1, 2, 3, 4, 5, 6, 7, 8, 9

$N = \frac{9!}{2} = 181440$

6.17 

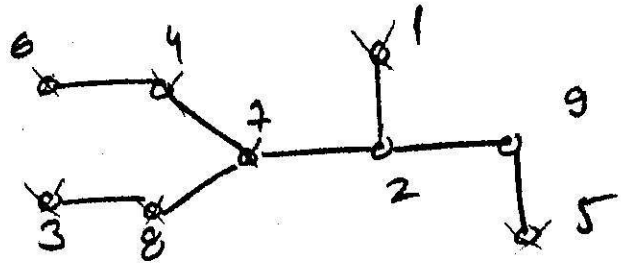
svejedno gore ili dolje

$n = 9$

labele?

$N = 9 \cdot \binom{8}{2} \cdot \binom{6}{3} = 5040$

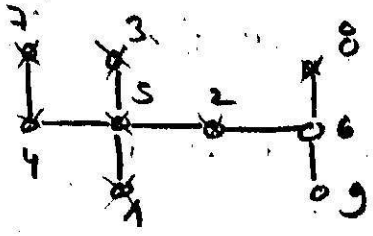
6.18 Prüfer



$P = \{2, 8, 9, 7, 7, 2\}$

(redom uklanjamo: 1, 3, 5, 6, 4, 8, 7)

6.19



$P = \{5, 5, 4, 5, 2, 6, 5\}$

(redom uklanjamo: 1, 3, 7, 4, 5, 2, 8)

6.20 $P = \{1, 2, 3, 4, 5, 6\} \Rightarrow u = 8$

Mat. susjedstva ?

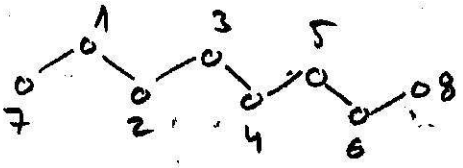
$deg(1) \Rightarrow 1+1 = 2$

$deg(2) \Rightarrow 1+1 = 2$

...

$deg(6) \Rightarrow 1+1 = 2$

$deg(7) = deg(8) = 0+1 = 1$



$$A = \begin{bmatrix} 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \end{bmatrix}$$

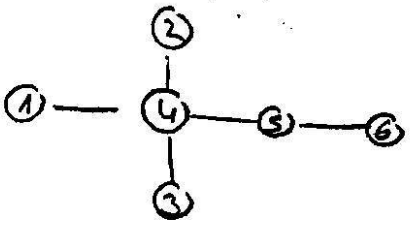
6.21 $P = \{4,4,4,5\} \longrightarrow n = 6$

Mat. susjedstva ?

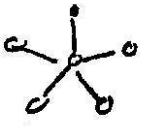
$\deg(4) = 3 + 1 = 4$

$\deg(5) = 1 + 1 = 2$

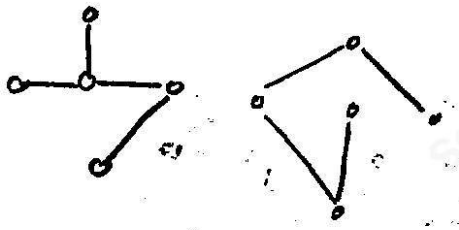
$\deg(1) = \deg(2) = \deg(3) = \deg(6) = 0 + 1 = 1$



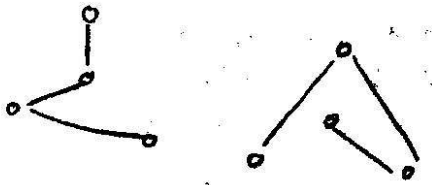
$$A = \begin{bmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \end{bmatrix}$$

6.22  $\Rightarrow$ Zvjezdasti grafovi imaju kons. niz kao prijerov kod

6.23 $n - 1$

6.24 

5 vrhova ✓

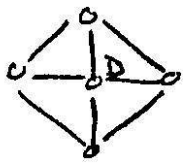


4 vrha ✓

$\Rightarrow$ 3 vrha nije moguće. ()

6.25 Da, moguće je (vidi 6.24)

6.26 W_5 (5 vrhova)



Broj razapinjajućih stabala?

$\deg(D) \rightarrow$ ① $\deg(D) = 1 \Rightarrow 4 \cdot 4 = 16$ grafova

② $\deg(D) = 2 \Rightarrow 2 \cdot 2 \cdot 2 = 8$ grafova (... su međusobno ...)

$\Rightarrow 4 \cdot 3 = 12$ grafova (... su susjedi)

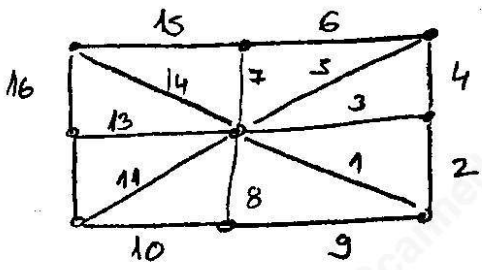
③ $\deg(D) = 3 \Rightarrow 4 \cdot 2 = 8$ grafova

④ $\deg(D) = 4 \Rightarrow 1$ graf

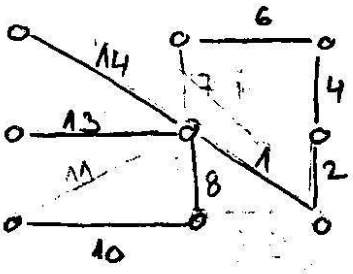
$\Sigma = 16 + 8 + 12 + 8 + 1 = 45$ grafova ✓

6.27 $C_n \rightarrow M$ različitih stabala strukture P_n

6.28



Min. razapinjajuće stablo?



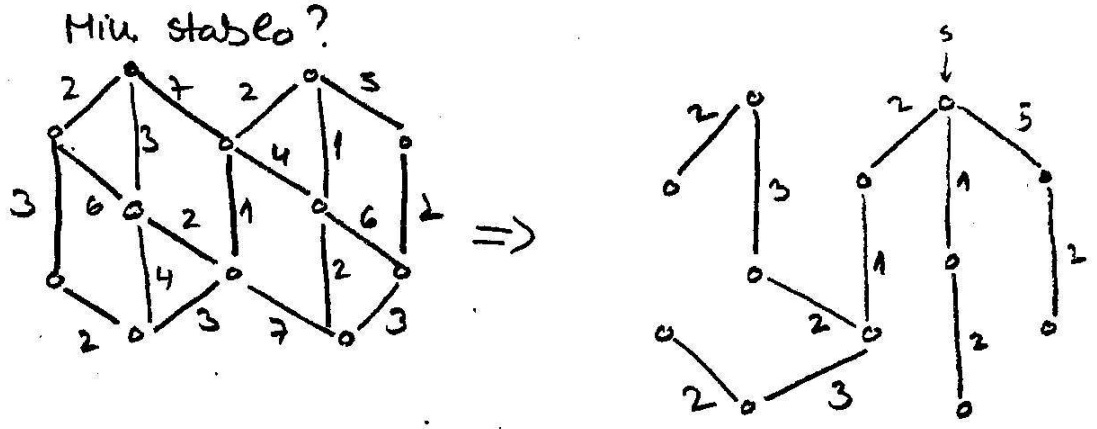
ALGORITAM:

- ① Nađi najmanju težinu u grafu, uzmi ju.
- ② Od tud, uzmi najmanje težine do pojedinih vrhova i pazi da nema ciklusa
- ③ Ponavljaj dok ne spojiš sve točkice

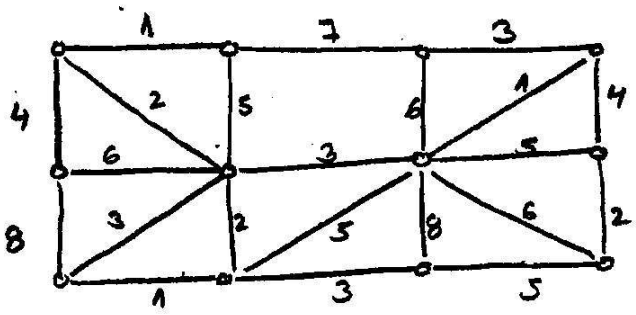
(vidi: KRUSKALOV ALGORITAM)

(poanta je imati što manju Σ težina bridova)

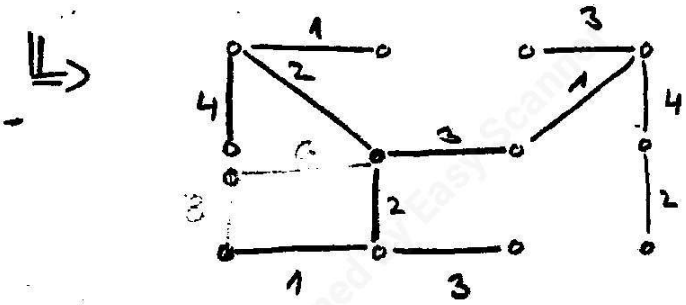
6.29 Min. stablo?



6.30



Min. stablo?



6.31 $K_5 = (V, E)$

$V = \{v_1, \dots, v_5\}$

$\omega(v_i, v_j) = i + j$

Min. stablo?