

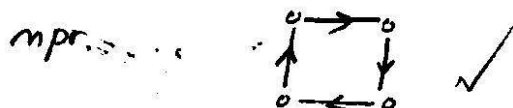
9. USMJERENI GRAFOVI

9.7 Po definiciji:

HAMILTONSKI GRAF ima HAMILTONSKI CIKLUS koji posjeti svaki vrh tačno jednom.

Graf je USMJERIV ako je JAKO POVEZAN, tj. za svaka 2 vrha postoji šetnja iz jednog u drugi.

Ako Hamiltonski ciklus posjećuje svaki vrh, usmjerenost je ispunjena.

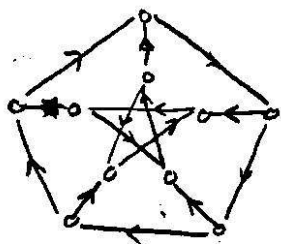


9.8



9.9

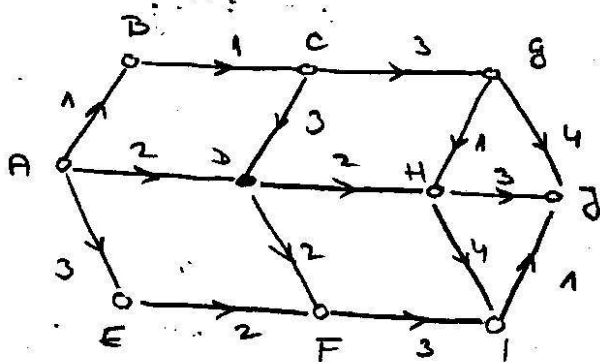
Je li Petersenov graf usmjeren?



Da, usmjeren je

9.10

Kritični put?



$$e(A) = 0$$

$$e(B) = 1$$

$$e(C) = 1 + 1 = 2$$

$$e(D) = 2 + 3 = 5$$

$$e(E) = 3$$

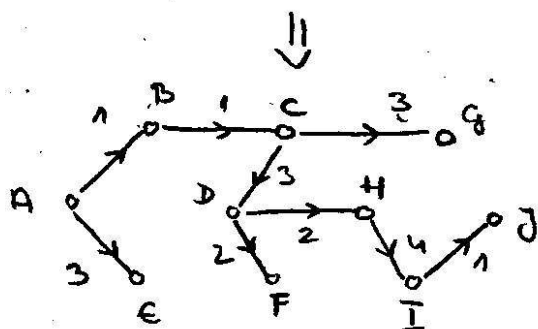
$$e(F) = \max\{(5+2), (3+2)\} = 7$$

$$e(G) = 2 + 3 = 5$$

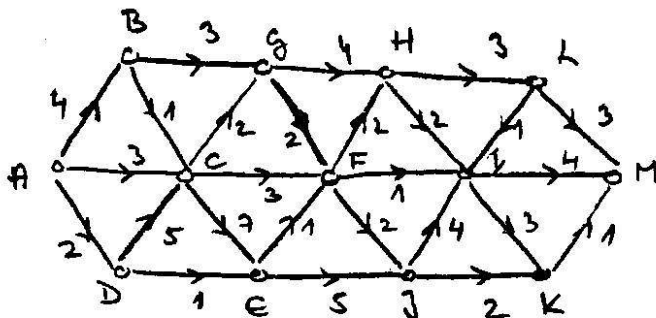
$$e(H) = \max\{(5+1), (5+2)\} = 7$$

$$e(I) = \max\{(7+4), (7+3)\} = 11$$

$$e(J) = \max\{(11+1), (7+3), (5+4)\} = 12$$



9.11/ Kritični put?



$$e(A) = 0$$

$$e(B) = 4$$

$$e(D) = 2$$

$$e(C) = 7$$

$$e(G) = 3$$

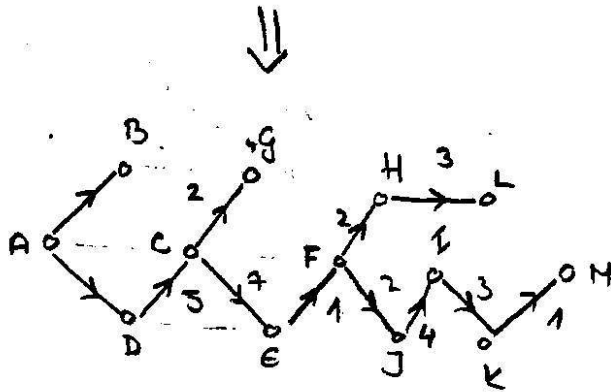
...

(isto kao prije)

...

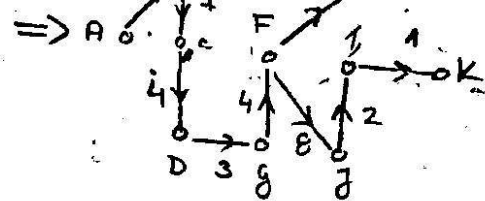
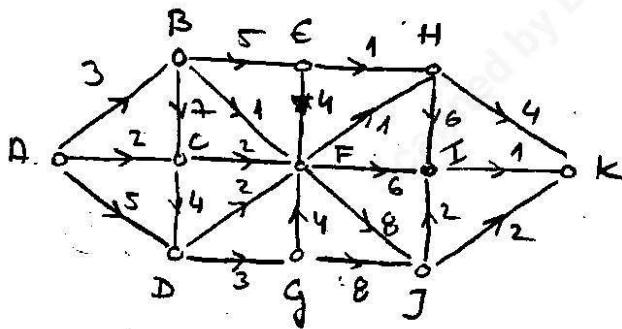
$$e(M) = 27$$

(ovo se tako može i uopće)



9.12/ Kritični put?

+ MAX. kašnjenje u GJ?



$$e(A) = 0$$

$$e(B) = 3$$

$$e(C) = 2 \parallel 3 + 7 \text{ (max.)} = 10$$

$$e(D) = 5 \parallel 10 + 4 = 14$$

$$e(E) = 3 + 5 = 8$$

$$e(G) = 14 + 3 = 17$$

$$e(F) = 3 + 1 \parallel 10 + 2 \parallel 14 + 2 \parallel 8 + 4 \parallel 17 + 4 = 21$$

$$e(H) = 21 + 1 = 22$$

$$e(J) = 21 + 8 = 29$$

$$e(I) = 21 + 6 \parallel 22 + 6 \parallel 29 + 2 = 31$$

$$e(K) = 31 + 1 = 32$$

(GJ) etapa

↓

max. dozvoljeno
kašnjenje

↓

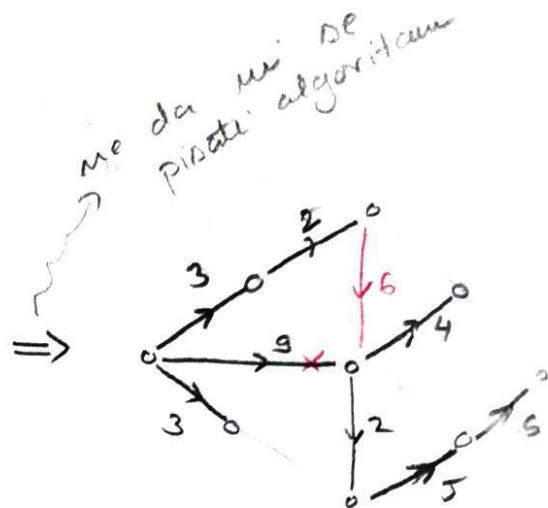
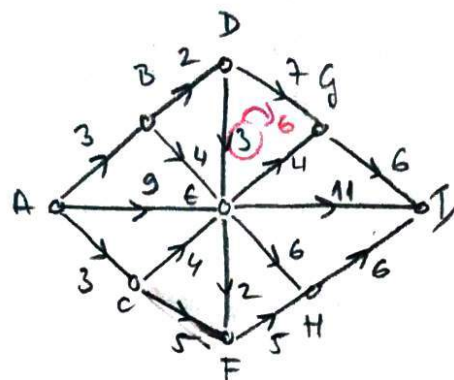
$$e(J) - e(G) - w(GJ) =$$

$$29 - 17 - 8 = 4$$

9.13 Kritični put?

DE + 3 \rightarrow Kritični put?

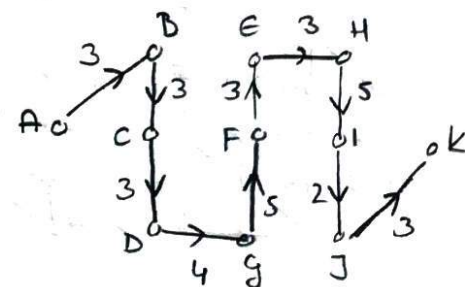
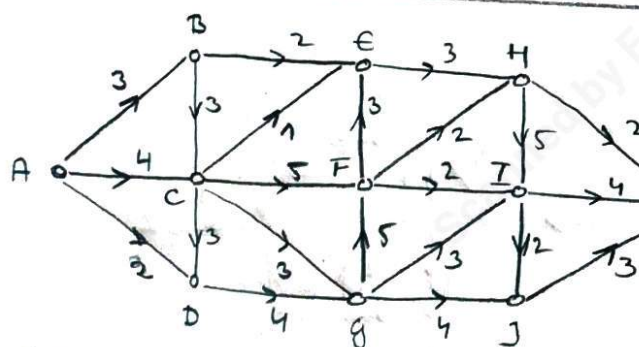
$\Delta(\text{kritični put})$?



Provera DE + 3 \rightarrow 6 + 5 > 9 \rightarrow Provera krit. puta
 $6 + 5 = 11 - 9 = \underline{2} \rightarrow$ Put duži za 2

9.14 Kritični put?

CE max. dozvoljeno kašnjenje?



$$l(A) = 0$$

$$l(B) = 3$$

$$l(C) = 4 \parallel (3 + 3) = 6$$

$$l(D) = 2 \parallel (3 + 6) = 9$$

$$l(G) = 6 + 3 \parallel 9 + 4 = 13$$

$$l(F) = 13 + 5 \parallel 6 + 5 = 18$$

$$l(E) = 3 + 2 \parallel 18 + 3 = 21$$

$$l(H) = 18 + 3 \parallel 18 + 2 \parallel 24 + 5 = 29$$

$$l(J) = 13 + 4 \parallel 29 + 2 = 31$$

$$l(K) = 24 + 2 \parallel 29 + 4 \parallel 31 + 3 = 34$$

kod \parallel uvijek MAX!

$$\text{maxd. ce} = l(E) - l(C) - w(CE) = 21 - 6 - 1 = 14 //$$

9.15 po definiciji $\Rightarrow \frac{n(n-1)}{2}$