

NASP

21 2018

KNAPSACK

1. RASPOLAŽETE S 1900 KN I BIRATE MEĐU SVARIMA KOJE ĆETE SVARI ODABRATI S CIJENOM MAKSIMIZACIJE VAŠEG ZADOVOLJSTVA?

| STVAR | 1 KLOMPE | 2 POTKOVE LUFITIĆ | 3 UKRASNI BEDŽ | 4 MAKETA STADIONA | 5 KOČKA | 6 LEDA | |
|-------|--------------|----------------------|-------------------|----------------------|------------|-----------|-----|
| I | CIJENA | 400 | 300 | 100 | 900 | 1200 | 500 |
| N | ZADOVOLJSTVO | 11 | 6 | 2 | 18 | 30 | 8 |

TABLICA (CIJENA, STVARI) → ZADOVOLJSTVO

| S | 1 | 1,2 | 1,2,3 | 1,2,3,4 | 1,2,3,4,5 | 1,2,3,4,5,6 |
|--------|----|-----------------|---------------------|----------|-----------|--------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 | 0 | 0 | 0+2=2 | 2 | 2 | 2 |
| 200 | 0 | 0 | 0+2=2 | 2 | 2 | 2 |
| 300 | 0 | 0+6=6 | 6 | 6 | 6 | 6 |
| 400 | 11 | JER GCM M | M | 11 | 11 | 11 |
| 500 | 11 | JER GCM M | 11+2=13 | 13 | 13 | JER 2x13 13 |
| 600 | 11 | JER GCM M | 11+2=13 | 13 | 13 | JER 10x13 13 |
| ⇒ 700 | 11 | 11+6=17 | JER uzimam 17 | 17 | 17 | JER 10x17 17 |
| 800 | 11 | 17 | 17+2=19 | 19 | 19 | JER 11x19 19 |
| 900 | 11 | 17 | 19 | 19 | 19 | 19 |
| 1000 | 11 | 17 | 19 | 2+18=20 | 20 | 13+8=21 |
| 1100 | 11 | 17 | 19 | 2+18=20 | 20 | 13+8=21 |
| 1200 | 11 | 17 | 19 | 6+18=24 | 6+30=36 | JER 25x30 30 |
| 1300 | 11 | 17 | 19 | 11+18=29 | 2+30=32 | JER 27x32 32 |
| 1400 | 11 | 17 | 19 | 13+18=31 | 2+30=32 | JER 27x32 32 |
| 1500 | 11 | 17 | 19 | 13+18=31 | 6+30=36 | JER 28x36 36 |
| 1600 | 11 | 17 | 19 | 17+18=35 | 11+30=41 | JER 28x41 41 |
| 1700 | 11 | 17 | 19 | 19+18=37 | 13+30=43 | JER 29x43 43 |
| 1800 | 11 | 17 | 19 | 19+18=37 | 13+30=43 | JER 40x43 43 |
| ⇒ 1900 | 11 | 17 | 19 | 19+18=37 | 17+30=47 | 47 |

↔ UZIMAM ↔ NE UZIMAM

MOJA OPT VRJEDNOST

ZADOVOLJSTVO ZA BUDŽET 1900

KN

STVAR 5, CIJENA 1200, OSTANE 700

STVAR 2, CIJENA 300, OSTANE 400

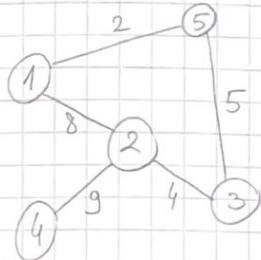
STVAR 1, CIJENA 400, OSTANE 0

ZADOVOLJSTVO = 11 + 6 + 30 = 47

UZ CIJENU 1900 KN

W

WFI ALGORITMOM PRONADITE NAJKRACE UDAYENOSTI MESU SVIM ĆVOROVIMA.



5 VRHOVA \Rightarrow MATRICA 5×5

$k=0$

$$D^0 = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 1 & 8 & 0 & 0 & 0 \\ 2 & 0 & 4 & 9 & \infty \\ 3 & \infty & 4 & 0 & 0 & 5 \\ 4 & 0 & 0 & 9 & \infty & 0 & 0 \\ 5 & 2 & \infty & 5 & 0 & 0 \end{bmatrix}$$

$$\Pi^0 = \begin{bmatrix} \times & 1 & \times & \times & 1 \\ 2 & \times & 2 & 2 & \times \\ \times & 3 & \times & \times & 3 \\ \times & 4 & \times & \times & \times \\ 5 & \times & 5 & \times & \times \end{bmatrix}$$

$k=1$

$$D^1 = \begin{bmatrix} 0 & 8 & \infty & \infty & 2 \\ 8 & 0 & 4 & 9 & 10 \\ \infty & 4 & 0 & \infty & 5 \\ \infty & 9 & \infty & 0 & 0 \\ 2 & 10 & 5 & 0 & 0 \end{bmatrix}$$

$$\Pi^1 = \begin{bmatrix} \times & 1 & \times & \times & 1 \\ 2 & \times & 2 & 2 & 1 \\ \times & 3 & \times & \times & 3 \\ \times & 4 & \times & \times & \times \\ 5 & 1 & 1 & 5 & \times \end{bmatrix}$$

$k=2$

$$D^2 = \begin{bmatrix} 0 & 8 & 12 & 17 & 2 \\ 8 & 0 & 4 & 9 & 10 \\ 12 & 4 & 0 & 13 & 5 \\ 17 & 9 & 13 & 0 & 19 \\ 2 & 10 & 5 & 19 & 0 \end{bmatrix}$$

$$\Pi^2 = \begin{bmatrix} \times & 1 & (2) & 2 & 1 \\ 2 & \times & 2 & 2 & 1 \\ (2) & 3 & \times & 2 & 3 \\ (2) & 4 & (2) & \times & 1 \\ 5 & 1 & 5 & (2) & \times \end{bmatrix}$$

$$D^3 = \begin{bmatrix} 0 & 8 & 12 & 17 & 2 \\ 8 & 0 & 4 & 9 & 9 \\ 12 & 4 & 0 & 13 & 5 \\ 17 & 9 & 13 & 0 & 10 \\ 2 & 9 & 5 & 18 & 0 \end{bmatrix}$$

$$\Pi^3 = \begin{bmatrix} \times & 1 & 2 & 2 & 1 \\ 2 & \times & 2 & 2 & 3 \\ 2 & 3 & \times & 2 & 3 \\ 2 & 4 & 2 & \times & (3) \\ 5 & 3 & 5 & (2) & \times \end{bmatrix}$$

$k=4$

$$D^4 = \begin{bmatrix} 0 & 8 & 12 & 17 & 2 \\ 8 & 0 & 4 & 9 & 9 \\ 12 & 4 & 0 & 13 & 5 \\ 17 & 9 & 13 & 0 & 18 \\ 2 & 9 & 5 & 18 & 0 \end{bmatrix}$$

$$\Pi^4 = \begin{bmatrix} \times & 1 & 2 & 2 & 1 \\ 2 & \times & 2 & 2 & 3 \\ 2 & 3 & \times & 2 & 3 \\ 2 & 4 & 2 & \times & 3 \\ 5 & 3 & 5 & 2 & \times \end{bmatrix}$$

$k=5$

$$D^5 = \begin{bmatrix} 0 & 8 & 17 & 17 & 2 \\ 8 & 0 & 4 & 9 & 9 \\ 17 & 4 & 0 & 13 & 5 \\ 17 & 9 & 13 & 0 & 18 \\ 2 & 9 & 5 & 18 & 0 \end{bmatrix}$$

$$\Pi^5 = \begin{bmatrix} \times & 1 & (5) & 2 & 1 \\ 2 & \times & 2 & 2 & 3 \\ (5) & 3 & \times & 2 & 3 \\ 2 & 4 & 2 & \times & 3 \\ 5 & 3 & 5 & 2 & \times \end{bmatrix}$$

$$12 \Rightarrow 8$$

$$13 \Rightarrow 7$$

$$14 \Rightarrow 17$$

$$15 \Rightarrow 2$$

$$23 \Rightarrow 4$$

$$24 \Rightarrow 3$$

$$25 \Rightarrow 9$$

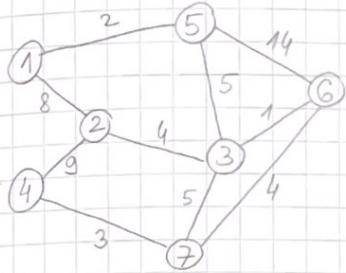
$$34 \Rightarrow 13$$

$$35 \Rightarrow 5$$

$$45 \Rightarrow 18$$

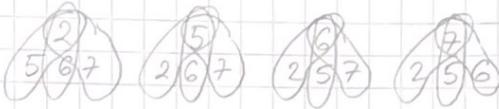
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RIJESI PROBLEM KINESKOG POŠTARA KOJI KREĆE U OGIBAZAK iz čvora 3.



(1^o) IMA LI NEPARNIH STUPNJEVA?
IMA → EULERIZACIJA!

(2^o) POMOĆNA TABLICA:



| | | | |
|---------------------------|--------|-------------------------------|--------|
| $2 \ 5 \Rightarrow 2+3-5$ | $d=9$ | $1 \ 6 \ 2 \Rightarrow 6+3-2$ | $d=5$ |
| $2 \ 6 \Rightarrow 2+3-6$ | $d=5$ | $1 \ 6 \ 5 \Rightarrow 6+3-5$ | $d=6$ |
| $2 \ 7 \Rightarrow 2+3-7$ | $d=9$ | $1 \ 6 \ 7 \Rightarrow 6+7$ | $d=4$ |
| $5 \ 2 \Rightarrow 5+3-2$ | $d=9$ | $1 \ 7 \ 2 \Rightarrow 7+3-2$ | $d=9$ |
| $5 \ 6 \Rightarrow 5+3-7$ | $d=6$ | $1 \ 7 \ 5 \Rightarrow 7+3-5$ | $d=10$ |
| $5 \ 7 \Rightarrow 5+3-7$ | $d=10$ | $1 \ 7 \ 6 \Rightarrow 7+6$ | $d=4$ |

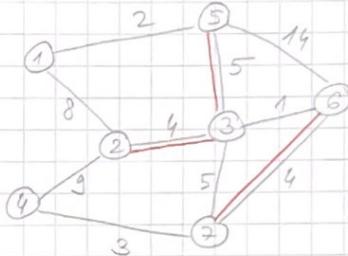
(3^o) TEST PAROVA:

$$25 + 67 = 9 + 4 = 13 \quad \text{✓}$$

$$26 + 57 = 5 + 10 = 15$$

$$27 + 56 = 9 + 6 = 15$$

(4^o) SPAĐANJE VRHOVA iz DOBITNE KOMBINE:



(5^o) DOBIVANJE EULEROVOG KRUGA:

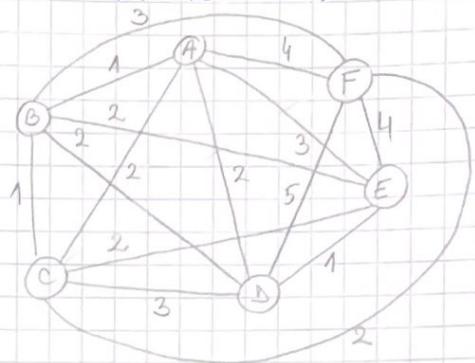
$$3-2-4-7-6-3-7-6-5-3-2-1-5-3$$

$$(6^o) \text{ TRÖŠAK} = 4+9+3+4+1+5+4+14+5+4+8+2+5 = 68 \quad \text{✓}$$

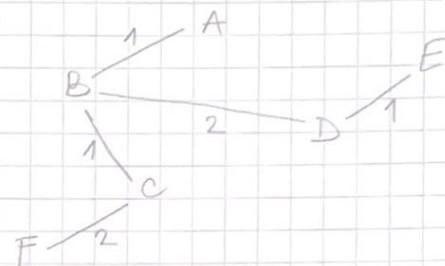
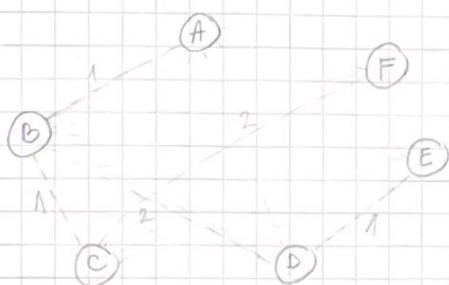
✓

U GRAFU ZADANOM SIMETRIČNOM TABULCOM UDAYENOST PRONADITE OBILAZAK ZA RGONAČKOG PUTNIKA KOJI NIJE DUGI OD DVOSTRUKE DUGINE NAJKRACÉS RAZAPINJUĆE SABLJA. UDAYENOST ZADOVOLJAVAJU NEJEDNAKOST TROKUTA. POLAZNI VRH JE a

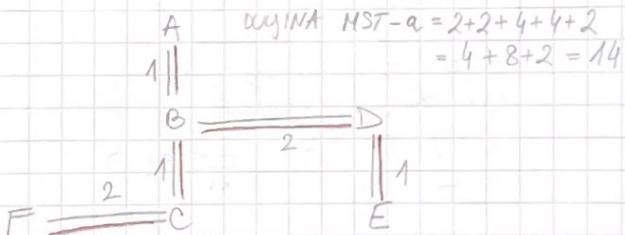
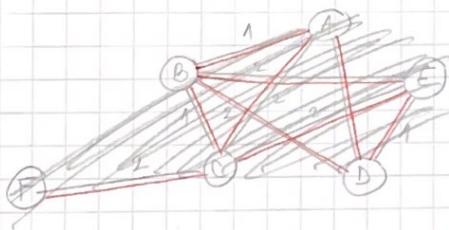
| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| a | 0 | 1 | 2 | 2 | 3 | 4 |
| b | 0 | 1 | 2 | 2 | 3 | |
| c | 0 | 3 | 2 | 2 | | |
| d | 0 | 1 | 5 | | | |
| e | 0 | 4 | | | | |
| f | 0 | | | | | |



1º MIN. RAZAPINJUĆE SABLJO:



2º EULERIZACIJA MST-a:



EULEROV KRUG: A - B - D - E - D - B - C - F - C - B - A

HAMILTONOV CIKLUS: A - ₁B - ₂D - ₁E - ₂C - ₂F - ₄A \Rightarrow PROŠAK = 12

21 2019

- (1) IMATE 25 MIN PRIJE NEGO VAS IZBACE IZ SUSTAVA ZA PRODAJU KARATA.
ODABERITE KARTE KOJE ĆETE UZETI AKO SU VAM DOSTUPNE ONE NAVEDENE
U SJEDEĆOJ TABLICI:

| | 1 POST MALONE | 2 A. GRANDE | 3 M&M | 4 S. P. | 5 CINKUŠI | 6 KINEZI | *KNAPSACK* |
|-----------------------|------------------|----------------|----------|------------|--------------|-------------|------------|
| 1) TRAJANJE [min] | 12 | 10 | 8 | 6 | 2 | 4 | |
| 2) VRJEDNOST [HRK] | 1200 | 1100 | 900 | 1000 | 400 | 800 | |

- (1) TABLICA (trajanje, stvari) → vrijednost

| | 1 | 2 | 3 | 4 | 5 | 6 | |
|------|------|----------------|---------------|------|------|------|--------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | 400 | 400 | |
| 3 | 0 | 0 | 0 | 0 | 400 | 400 | |
| 4 | 0 | 0 | 0 | 0 | 400 | 800 | |
| 5 | 0 | 0 | 0 | 0 | 400 | 800 | |
| 6 | 0 | 0 | 0 | 1000 | 1000 | 1200 | |
| 7 | 0 | 0 | 0 | 1000 | 1000 | 1200 | |
| 8 | 0 | 0 | 900 | 1000 | 1400 | 1400 | |
| 9 | 0 | 0 | 900 | 1000 | 1400 | 1400 | |
| 10 | 0 | 0+1100=1100 | 1100 | 1100 | 1400 | 1800 | |
| 11 | 0 | 0+1100=1100 | 1100 | 1100 | 1400 | 1800 | |
| 12 | 1200 | 1200 | 1200 | 1200 | 1500 | 2200 | |
| ⇒ 13 | 1200 | NE 1200 | NE 1200 | 1200 | 1500 | 2200 | |
| 14 | 1200 | 1200 | 1200 | 1900 | 1900 | 2200 | |
| 15 | 1200 | 1200 | 1200 | 1900 | 1900 | 2200 | |
| 16 | 1200 | 1200 | 1200 | 2100 | 2300 | 2300 | |
| 17 | 1200 | 1200 | 1200 | 2100 | 2300 | 2300 | |
| 18 | 1200 | 1200 | 1100+900=2000 | 2200 | 2500 | 2700 | |
| ⇒ 19 | 1200 | 1200 | 2000 | 2200 | 2500 | 2700 | |
| 20 | 1200 | 1200 | 2100 | 2200 | 2600 | 3100 | |
| ⇒ 21 | 1200 | 1200 | 2100 | 2200 | 2600 | 3100 | |
| 22 | 1200 | 1200+1100=2300 | 2300 | 2300 | 2600 | 3300 | |
| 23 | 1200 | 2300 | 2300 | 2300 | 2600 | 3300 | |
| 24 | 1200 | 2300 | 2300 | 3000 | 3000 | 3400 | |
| ⇒ 25 | 1200 | 2300 | 2300 | 3000 | 3000 | 3400 | uzimam |

STVAR 6 → TRAJANJE 4 → OSTAJE $25 - 4 = 21$

STVAR 5 → TRAJANJE 2 → OSTAJE $21 - 2 = 19$

STVAR 4 → TRAJANJE 6 → OSTAJE $19 - 6 = 13$

STVAR 1 → TRAJANJE 12 → OSTAJE $13 - 12 = 1$

$$\text{VRJEDNOST } 800 + 400 + 1000 +$$

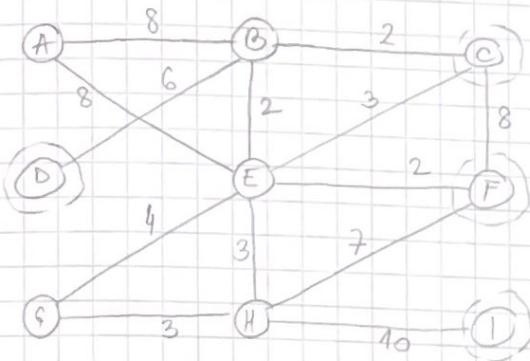
1200

$$= 3400 //$$

U TRAJANJU 24 MIN

//
X

PONOSITE MARIJI PRONALAŽENJEM NAJKRACÉG OBILASKA NASELJA POGODNOS ZA OSTVARENJE MARIJINOG NAUMA, KAO I DUVINU TOG OBILASKA. MODEL JE DAN, A MARIJA KREĆE OD ČVORA F.



KINESKI

(1) NEPARNI SLOVNIČEVNI: C, D, F, I

$$\begin{array}{ll} C & D \\ DF1 & CFI \end{array}$$

$$\begin{array}{ll} F & I \\ CDI & CDF \end{array}$$

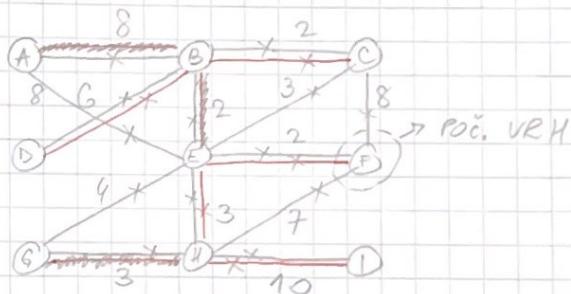
NAJKRACÉ PUTEVI: CD: C-B-D, d=8
CF: C-E-F, d=5
CI: C-E-H-I, d=16
DF: D-B-E-F, d=10
DI: D-B-E-H-I, d=21
FI: F-E-H-I, d=15

(2) ISPITIVANJE:

$$CD + FI = 8 + 15 = 23 \quad \text{W}$$

$$CF + DI = 5 + 21 = 26$$

$$CI + FD = 16 + 10 = 26$$



EULEROV KRUG:

F-C-B-A-E-C-B-D-B-E-F-H-I-H-E-G-H-E-F

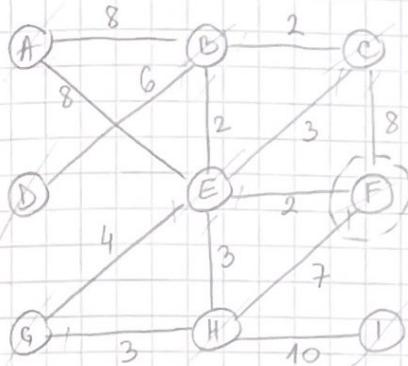
//

W

NAJUČINKOVITIJIM ALGORITMOM ZA OVAKAV GRAF PRONADITE UDALJENOSTI OD

ČLORA F DO SVIH OSTALIH.

* * * DIJKSTRA LI ali BF?



1º SORTIRANA LISTA SVIH BRIDova:

AB, AE, BC, BD, BE, CE, CF, EF, EG,
EH, FH, GH, HI

2º TABLICA

| | F | E | B |
|----|----|-----------|----|
| U: | 0. | 1. | 2. |
| A | ∞ | 2+8/E | |
| B | ∞ | (2+2/E) | |
| C | ∞ | 8/F 2+3/E | |
| D | ∞ | 2+2+6/E | |
| E | ∞ | (2/F) | |
| F | 0 | | |
| G | ∞ | 2+4/E | |
| H | ∞ | 7/F 2+3/E | |
| I | ∞ | 2+3+10/E | |

$$\begin{aligned}
 FA &: 10 \Rightarrow F - E - A \\
 FB &: 4 \Rightarrow F - E - B \\
 FC &: 5 \Rightarrow F - E - C \\
 FD &: 10 \Rightarrow F - E - D \\
 FE &: 2 \Rightarrow F - E \\
 FG &: 6 \Rightarrow F - E - G \\
 FH &: 5 \Rightarrow F - E - H \\
 FI &: 15 \Rightarrow F - E - H - I
 \end{aligned}$$

DIJKSTRA:

| | F | E | B | C | H | G | A | D/I |
|----|----|-----|-------|-------|------|--------|------|------|
| U: | 12 | 0. | 1. | 2. | 3. | 4. | 5. | 7. |
| A | ∞ | ∞ | 2+8/E | 10/E | 10/E | 10/E | 10/E | 10/E |
| B | ∞ | 0 | 2+2/E | | | | | |
| C | ∞ | 8/F | 2+3/E | 5/E | | | | |
| D | ∞ | ∞ | ∞ | 4+6/B | 10/B | 10/B | 10/B | 10/B |
| E | ∞ | 2/F | | | | | | |
| F | 0 | | | | | | | |
| G | ∞ | ∞ | 2+4/E | 6/E | 6/E | 6/E | | |
| H | ∞ | 7/F | 2+3/E | 5/E | 5/E | | | |
| I | ∞ | ∞ | ∞ | ∞ | ∞ | 5+10/H | 15/H | 15/H |

FA: 10 \rightarrow F \rightarrow E \rightarrow A

FB: 4
 FC: 5
 FD: 10
 FE: 2
 FG: 6
 FH: 5
 FI: 15

W/

21 2020

* KNAPSACK *

- ① IMATE NA RASPOLAGANJU RUKSAK OD 27 LITARA I RAZMATRATE SVEDEĆI SKUP STVARI.
KOJE ĆETE SVARI ODABRATI S CIJEM MAKSIMIZACIJE UKUPNE KORIST?

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------|-------------------|----------|-------|-----------|--------------------|-----------------|-------------------|---|
| VREĆA ZA SPAVANJE | KREMA ZA SUNOE | TEMISICE | KARTE | LJEKOVITI | TEMATSKA KNJIGA | TOPLA ODJEĆA | DODATNO RUČNIK | |
| 1) VOLUMEN | 16 | 4 | 12 | 8 | 4 | 4 | 20 | 4 |
| 2) KORISNOST | 38 | 10 | 27 | 19 | 3 | 2 | 40 | 5 |

| | {1} | {1,2} | {1,2,3} | {1,2,3,4} | {1,2,3,4,5} | {1,2,3,4,5,6} | {1,2,3,4,5,6,7} | {1,2,3,4,5,6,7,8} | {1,2,3,4,5,6,7,8,9} |
|------|----------|-------|----------|-----------|-------------|---------------|-----------------|-------------------|---------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0+10=10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 8 | 0+10=10 | 10 | 0+19=19 | 19 | 19 | 19 | 19 | 19 | 19 |
| 12 | 0+10=10 | 10 | 0+27=27 | 10+19=29 | 29 | 29 | 29 | 29 | 29 |
| ⇒ 16 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| 20 | 38+10=48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| ⇒ 24 | 38+10=48 | 48 | 48 | 38+19=57 | 57 | 57 | 57 | 57 | 57 |
| 28 | 38+27=65 | 65 | 48+19=67 | 67 | 67 | 67 | 67 | 67 | 67 |

STVAR 4 ⇒ VOLUMEN 8 ⇒ $27 - 8 = 19 \Rightarrow$ NAOBUŽI TOME JE 16

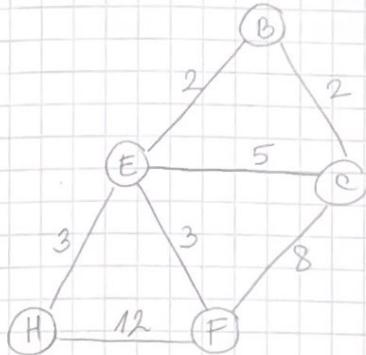
STVAR 1 ⇒ VOLUMEN 16 ⇒ $19 - 16 = 3 \Rightarrow$ OSTANE 3 LITRE PROSTORA

UZETI ČU SVARI 1 1 4 S UKUPNOH KORISNOSTI 57 !

VOLUMENOM 24 L. //

✓

WFI ALGORITMOM PRONADITE UDALJENOSTI MEDIJU SVIM ŠKROVIMA U GRAFU ZADANOM
U 6. ZADATKU S UKLONJENIM VRHOVIMA A, D i G.



$k=0$

| | B | C | E | F | H |
|---|--------------------------|---|---|---|---|
| B | 0 2 2 ∞ ∞ | | | | |
| C | 2 0 5 8 ∞ | | | | |
| E | 2 5 0 3 3 | | | | |
| F | ∞ 8 3 0 12 | | | | |
| H | ∞ ∞ 3 12 0 | | | | |

$$\Pi^0 = \begin{pmatrix} x & 1 & 1 & x & x \\ 2 & x & 2 & 2 & x \\ 3 & 3 & x & 3 & 3 \\ x & 4 & 4 & x & 4 \\ x & x & 5 & 5 & x \end{pmatrix}$$

$$\Pi^1 = \begin{pmatrix} 0 & 2 & 2 & x & \infty \\ 2 & 0 & 4 & 8 & \infty \\ 2 & 4 & 0 & 3 & 3 \\ 2 & 4 & 0 & 3 & 3 \\ \infty & 8 & 3 & 0 & 12 \\ \infty & \infty & 3 & 12 & 0 \end{pmatrix}$$

$$\Pi^2 = \begin{pmatrix} x & 1 & 1 & x & x \\ 2 & x & (1) & 2 & x \\ 3 & 1 & x & 3 & 3 \\ 3 & 1 & 4 & x & 4 \\ x & x & 5 & 5 & x \end{pmatrix}$$

$k=2$

| | B | C | E | F | H |
|---|-----------|---|---|---|---|
| B | 0 2 2 5 5 | | | | |
| C | 2 0 4 7 7 | | | | |
| E | 2 4 0 3 3 | | | | |
| F | 5 7 3 0 6 | | | | |
| H | 5 7 3 6 0 | | | | |

$$\Pi^3 = \begin{pmatrix} x & 1 & 1 & 2 & x \\ 2 & x & 1 & 2 & x \\ 3 & 1 & x & 3 & 3 \\ 2 & 4 & 0 & 3 & 3 \\ 5 & 7 & 3 & 0 & 6 \\ 5 & 7 & 3 & 6 & 0 \end{pmatrix}$$

$$\Pi^4 = \begin{pmatrix} 0 & 2 & 2 & 5 & 5 \\ 2 & 0 & 4 & 7 & 7 \\ 2 & 4 & 0 & 3 & 3 \\ 3 & 1 & x & 3 & 3 \\ 3 & 1 & 4 & x & 3 \\ 3 & 1 & 5 & 3 & x \end{pmatrix}$$

$$\Pi^5 = \begin{pmatrix} x & 1 & 1 & 3 & 3 \\ 2 & x & 1 & 3 & 3 \\ 3 & 1 & x & 3 & 3 \\ 3 & 1 & 4 & x & 3 \\ 3 & 1 & 5 & 3 & x \end{pmatrix}$$

$k=4$

| | B | C | E | F | H |
|---|-----------|---|---|---|---|
| B | 0 2 2 5 5 | | | | |
| C | 2 0 4 7 7 | | | | |
| E | 2 4 0 3 3 | | | | |
| F | 5 7 3 0 6 | | | | |
| H | 5 7 3 6 0 | | | | |

$$\Pi^6 = \begin{pmatrix} x & 1 & 1 & 3 & 3 \\ 2 & x & 1 & 3 & 3 \\ 3 & 1 & x & 3 & 3 \\ 3 & 1 & 4 & x & 3 \\ 3 & 1 & 5 & 3 & x \end{pmatrix}$$

$$\Pi^7 = \begin{pmatrix} 0 & 2 & 2 & 5 & 5 \\ 2 & 0 & 4 & 7 & 7 \\ 2 & 4 & 0 & 3 & 3 \\ 3 & 1 & x & 3 & 3 \\ 3 & 1 & 4 & x & 3 \\ 3 & 1 & 5 & 3 & x \end{pmatrix}$$

$$\Pi^8 = \begin{pmatrix} x & 1 & 1 & 3 & 3 \\ 2 & x & 1 & 3 & 3 \\ 3 & 1 & x & 3 & 3 \\ 3 & 1 & 4 & x & 3 \\ 3 & 1 & 5 & 3 & x \end{pmatrix}$$

$BC: 2$

$BE: 2$

$BF: 5$

$BH: 5$

$CE: 4$

$CF: 7$

$CH: 7$

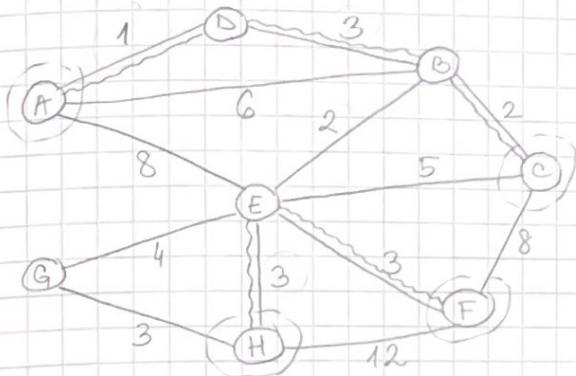
$EF: 3$

$EH: 3$

$FH: 6$

//

MILE MORA PROĆI GRADSKOM ČETVRTI I ISCRTATI LINIJE PROMETNIH TRAKA NA SVIM ULICAMA. PRONAĐITE MU OBILAZAK (I NJEGOVU DULJINU) KOJU BI MU OSIGURAO NAJMANJI NAPOR. MILE KREĆE OD RASKRIŽJA U ČVORU F.



| | | | |
|-----|-----|-----|-----|
| A | C | F | H |
| CFH | AFH | ACH | ACF |

$$AC = 6 \quad (A - D - B - C)$$

$$AF = 9 \quad (A - D - B - E - F)$$

$$AH = 9 \quad (A - D - B - E - H)$$

$$CF = 7 \quad (C - B - E - F)$$

$$CH = 7 \quad (C - B - E - H)$$

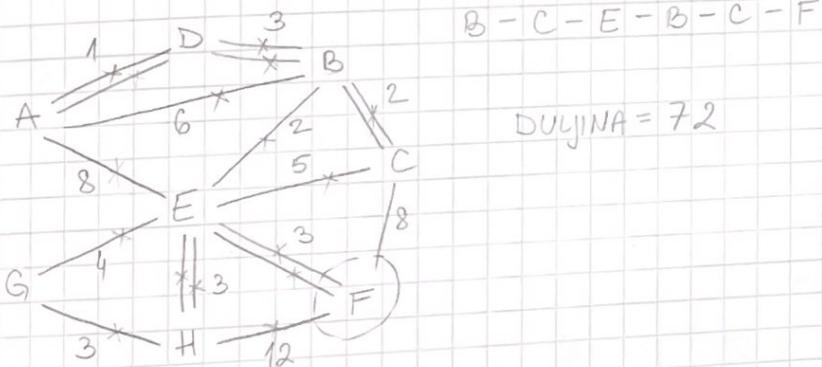
$$FH = 6 \quad (F - E - H)$$

$$AC + FH = 6 + 6 = 12$$

$$AH + CF = 9 + 7 = 16$$

$$AF + CH = 9 + 7 = 16$$

EULEROV KRUG : F-E-H-F-E-G-H-E-A-D-B-A-D-B-C-E-B-C-F



21. 2021

KNAPSACK

DOSTAVYAOČ IMA TORBU KAPACITETA 32 L. TREBATE NARUČITI NAJNUŽNIJE STVARI UZ OGRANIČENJE DA MORAJU STATI U DOSTAVYAOČEVU TORBU. KOJE ĆE TE STVARI ODABRATI S CIJEM MAKSIMIZACIJE UKUPNE KORISNOSTI I KOLIKA JE MIHOVA

VRIJEDNOST?

| | WC PAPIR | 2 KњИГА | 3 ASPIRIN | 4 POURČЕ | 5 VOĆЕ | 6 ODJEЋА | 7 DEKA | 8 DODATNO RUBLJE |
|-----------|-------------|------------|--------------|-------------|-----------|-------------|-----------|---------------------|
| VOLUMEN | 16 | 4 | 4 | 12 | 4 | 8 | 8 | 4 |
| KORISNOST | 80 | 45 | 6 | 19 | 13 | 18 | 10 | 8 |

| | {1} | {1,2} | {1,2,3} | {1,2,3,4} | {1,2,3,4,5} | {1,2,3,4,5,6} | {1,2,3,4,5,6,7} | {1,2,3,4,5,6,7,8} |
|----|-----|-------|---------|-----------|-------------|---------------|-----------------|-------------------|
| 16 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0+45 | 45 | 45 | 45 | 45 | 45 | 45 |
| 8 | 0 | 0+45 | 45+6 | 51 | 45+13=58 | 58 | 58 | 58 |
| 12 | 0 | 0+45 | 45+6 | 51 | 51+13=64 | 64 | 64 | 64 |
| 16 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| 20 | 80 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
| 24 | 80 | 125 | 125+6 | 131 | 125+13=138 | 138 | 138 | 138 |
| 28 | 80 | 125 | 125+6 | 131 | 131+13=144 | 144 | 144 | 144 |
| 32 | 80 | 125 | 125+6 | 125+19 | 144 | 156 | 156 | 156 |

↑ ↑ ↑ ↑

STVAR 6 \Rightarrow VOLUMEN 8 \Rightarrow $32 - 8 = 24$ STVAR 5 \Rightarrow VOLUMEN 4 \Rightarrow $24 - 4 = 20$ STVAR 2 \Rightarrow VOLUMEN 4 \Rightarrow $20 - 4 = 16$ STVAR 1 \Rightarrow VOLUMEN 16 \Rightarrow $16 - 16 = 0$

UKUPNA KORISNOST:

$$80 + 45 + 13 + 18$$

$$= 156$$

//

✓

PRIMJER PREZAT:

RIJEŠITE PROBLEM NARUČAJEĆE $C=8$ SA SYEDECÍH 5 STVARI O. 25- PRIBLUŽNIH ALGORITMOM.

| | 1 | 2 | 3 | 4 | 5 |
|---------|---|---|---|----|------------|
| v | 2 | 4 | 8 | 16 | 20 |
| d | 1 | 4 | 2 | 5 | 7 |
| ZAPREĆA | | | | | |
| | | | | | VEIJEDNOST |

1º $\epsilon_{\text{PSL}} = 1 - d = 1 - 0.25 = 0.75$

$N = 20$

$m = 5$

$\mu = \epsilon_{\text{PSL}} \cdot N/m = 3$

2º $v^l = \text{FLOOR}(v/\mu)$

| | 1 | 2 | 3 | 4 | 5 |
|-------|---|---|---|---|---|
| v^l | 0 | 1 | 2 | 5 | 6 |
| d | 1 | 4 | 2 | 5 | 7 |
| | | | | | ↑ |

$v_1^l = \text{FLOOR}(2/3) = 0$

$v_2^l = \text{FLOOR}(4/3) = 1$

$v_3^l = \text{FLOOR}(8/3) = 2$

$v_4^l = \text{FLOOR}(16/3) = 5$

$v_5^l = \text{FLOOR}(20/3) = 6$

DEFULTNA VRJEDNOST = $C+1 = 9$

3º TABLICA:

| j | {1} | {1,2} | {1,2,3} | {1,2,3,4} | {1,2,3,4,5} |
|---|-----|-------|---------|-----------|-------------|
| v | 1 | 2 | 3 | 4 | 5 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 9 | 9 | 0+4 | 4 | 4 |
| 2 | 9 | 9 | 9 | 0+2 | 2 |
| 3 | 9 | 9 | 9 | 4+2 | 6 |
| 4 | 9 | 9 | 9 | 9 | 9 |
| 5 | 9 | 9 | 9 | 9 | 5 |
| 6 | 9 | 9 | 9 | 9 | 0+7 |
| 7 | 9 | 9 | 9 | 9 | 9 |

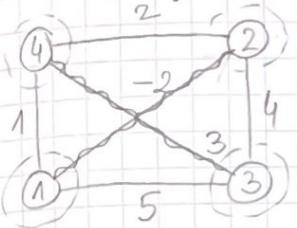
ZADNJI REDAK ZADNJI SMAC KI JE < 9
(DEFULTNA VRJEDNOST) JE NAŠE Rj.

gledam min(9, 0+4)!

↓
ZAVRIMA $C=7$ OD DOSTUPNIH 8

$v_5^l = 6 \Rightarrow \lambda_5 = 7 \Rightarrow 8-1=1$

Poštar kreće iz čvora 1 u dostavu poštyki po svim ulicama. Težine označavaju napor. Nakon obilaska se mora vratiti u čvor 1. Pronadite obilazak najmanjeg napora i napišite napornost takvog obilaska.

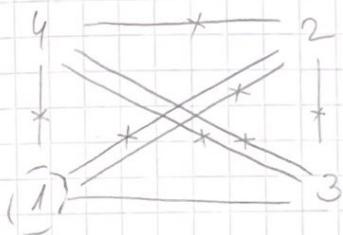


| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 2 | 3 | 4 | 1 |
| 3 | 1 | 2 | 4 |
| 4 | 2 | 1 | 3 |
| 1 | 3 | 4 | 2 |

$$\begin{aligned}
 1-2 &= -2 \quad (1-2) \\
 1-3 &= 2 \quad (1-2-3) \\
 1-4 &= 0 \quad (1-2-4) \\
 2-3 &= 4 \quad (2-3) \\
 2-4 &= 2 \quad (2-4) \\
 3-4 &= 3 \quad (3-4)
 \end{aligned}$$

$$\begin{aligned}
 12 + 34 &= -2 + 3 = 1 \quad w \\
 13 + 24 &= 2 + 2 = 4 \\
 14 + 23 &= 0 + 4 = 4
 \end{aligned}$$

12 ; 34 dobitna kombinacija!



EULEROV KRUG:

$$1-2-3-4-2-1-4-3-1 \\ -2 \quad 4 \quad 3 \quad 2 \quad -2 \quad 1 \quad 3 \quad 5 \quad //$$

TRGOVAC = 14

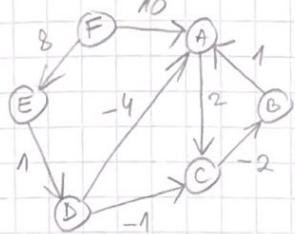
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w

BELLMAN FORD

UDAYENOST OD F DO SVIH ĆVOROVA.

\Rightarrow 6 ćvorova, 5 iteracija



1) SORTIRANA LISTA BRIDOVA:

AC, BA, CB, DA, DC, ED, FA, FE

2) TABLICA (VRHOCI, ITERACIJE)

| | F | E | D | A | C |
|----|----|------|-------|-------|-------|
| 0. | 0. | 1. | 2. | 3. | 4. |
| A | 00 | 10/F | | 9-4/D | |
| B | 00 | | | | 7-2/C |
| C | 00 | | 9-1/D | 5+2/A | |
| D | 00 | | 8+1/E | | |
| E | 00 | 8/F | | | |
| F | 0 | | | | |

$$\begin{aligned} F-C &= 7 \\ F-A &= 5 \\ F-B &= 5 \\ F-D &= 9 \\ F-E &= 8 \end{aligned}$$

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