

OSNOVE PODATKOVNIH BAZ

Vaje

Vaje 3

1. naloga

$$1. \pi_{\text{stranka}} (\sigma_{\text{operator} = \text{'Telekom'}} (k))$$

$$2. \pi_{\text{operator}} (\sigma_{\text{stranka} = \text{'Janez'}} (p \bowtie n))$$

$$3. \pi_{\text{operator}} (\sigma_{\text{stranka} = \text{'Petra'}} (p \bowtie n))$$

$$4. k / \pi_{\text{operator}} (p)$$

$$5. p / \pi_{\text{telefon}} (\sigma_{\text{stranka} = \text{'Janez'}} (n))$$

$$6. \pi_{\text{stranka}} (\sigma_{\text{opc} = 1} (\rho_{(\text{stranka}, \text{opc})} (\sigma_{\text{stranka} \neq \text{Count}(\text{operator} (k))}))$$

2. Naloga

$$1. \pi_{\text{ime}, \text{priimek}} (\sigma_{\text{skraj} = \text{'Kraj'}} \wedge \text{starost} \geq 18} (s))$$

$$2. \pi_{\text{ime}, \text{priimek}} (k \bowtie s)$$

$$3. \pi_{\text{ime}, \text{priimek}} (s) - \pi_{\text{ime}, \text{priimek}} (s \bowtie k)$$

$$4. \pi_{\text{ime}, \text{priimek}} (\sigma_{\text{tip} = \text{'nokia'}} (p \bowtie k \bowtie g))$$

$$5. \rho_{\text{sta}, \text{k}, \text{kozov}} (\sigma_{\text{tip} = \text{'nokia'}} (p \bowtie k \bowtie g))$$

3. Naloga

$$1. \pi_{\text{no}} (\sigma_{\text{rtype} = 1 \wedge \text{rprice} \leq 80} (r))$$

$$2. \pi_{\text{rno}, \text{rtype}, \text{rprice}} (\sigma_{\text{hname} = \text{'Bern'}} (r \bowtie h))$$

$$3. \pi_{\text{hname}, \text{rprice}, \text{rtype}} (r \bowtie (\sigma_{\text{hname} = \text{'Bern'}} \wedge \text{bfrom} \leq \text{'today'}} \wedge \text{bto} \geq \text{'today'}} (b \bowtie h)) \bowtie g)$$

$$4. \pi_{HName, Cno, Zlatno} \left(\rho_{HName, Cno, Zlatno} \left(\pi_{HName, COUNT ZNO, AV \& PPrice} (r \bowtie h) \right) \right)$$

lahko samo to v tem primeru

$$5. \pi_{TNo, RType, PPrice, HName} (r \bowtie (\sigma_{HName = 'Bernard'} (h)) \bowtie \sigma_{Pfrom < 'Today' \wedge \wedge Bto > 'Today'} (b \bowtie g))$$

Vaje 4

5.11.24

1. Na loga

$$1) RA: \pi_{sid} (\sigma_{color = red \vee green} (Parts \bowtie Catalog))$$

DRR:

$$\{ \langle C_s \rangle | \langle C_s, C_p, C_c \rangle \in Catalog \wedge \exists P_p, P_c (\langle P_p, P_n, P_c \rangle \in Parts \wedge (P_c = 'red' \vee P_c = 'green') \wedge P_p = C_p) \}$$

TRR:

$$\{ X | \exists C \in Catalog \exists P \in Parts (C.p.color = 'red' \vee P.p.color = 'green') \wedge P.pid = C.pid \wedge X.sid = C.sid \}$$

2) TRR:

$$\{ X | \exists C \in Catalog \exists S \in Suppliers \exists P \in Parts ((P.p.color = 'red' \vee S.address = 'Kopraska cest 25') \wedge P.pid = C.pid \wedge S.sid = C.sid \wedge X.sid = S.sid) \}$$

$$3) RA: \pi_{sid, pid} (Catalog / \pi_{pid} (Parts))$$

DRR

$$\{ \langle C_s \rangle | \langle C_s, C_p, C_c \rangle \in Catalog \wedge \forall P_p (\langle P_p, P_n, P_c \rangle \in Parts) \wedge C_p = P_p \}$$

TRR

$$\{ X | \exists C \in Catalog \forall P \in Parts (C.pid = P.pid \wedge X.sid = P.sid) \}$$

$$6) RA: \rho (R_1, Catalog) \rho (R_2, Catalog)$$

$$\pi_{R1.sid = R2.sid \wedge R1.pid = R2.pid} (R_1 \times R_2)$$

TRR:

$$\{ X | \forall C_1 \in Catalog \forall C_2 \in Catalog (C_1.pid = C_2.pid \wedge C_1.sid \neq C_2.sid \wedge X.pid = C_1.pid) \}$$

DRR:

$\{ \langle C_1 \rangle | \langle C_1, C_{p1}, C_{c1} \rangle \in \text{Catalog} \wedge \langle C_1, C_{p2}, C_{c2} \rangle \in \text{Catalog} \wedge C_{c1} \neq C_{c2} \wedge C_{p1} = C_{p2} \}$

2. Naloga
3) TRR:

$\{ X | \exists A \in \text{Aircraft} \exists F \in \text{Flights} (F.\text{from} = \text{'Paris'} \wedge F.\text{to} = \text{'Vancouver'} \wedge F.\text{distance} < A.\text{cruising_range} \wedge X.\text{aid} = A.\text{aid}) \}$

4) TRR:

$\{ X | \exists E \in \text{Employees} \exists C_1 \in \text{Certified} \exists A_1 \in \text{Aircraft} (E.\text{eid} = C_1.\text{eid} \wedge A_1.\text{range} > 3000 \wedge C_1.\text{aid} = A_1.\text{aid}) \wedge \neg (\exists A_2 \in \text{Aircraft} \exists C_2 \in \text{Certified} (A_2.\text{aid} = C_2.\text{aid} \wedge A_2.\text{aname} = \text{'BOEING'}) \wedge X.\text{ename} = E.\text{ename}) \}$

5) DRR:

$\{ \langle E_1 \rangle | \langle E_1, E_{n1}, E_{s1} \rangle \in \text{Employees} \wedge \neg (\exists E_2 (\langle E_2, E_{n2}, E_{s2} \rangle \in \text{Employees} \wedge E_{s2} > E_{s1})$

$\{ \langle E_1 \rangle | \langle E_1, E_{n1}, E_{s1} \rangle \in \text{Employees} \wedge \neg (\exists E_2 (\langle E_2, E_{n2}, E_{s2} \rangle \in \text{Employees} \wedge E_{s2} \leq E_{s1})$

3. Naloga

1) (Stik vseh tabel in preverjamo eno stvar)

2) (Preverjamo 2 stvari)

3)

4) TRR:

$\{ X | \neg \exists P \in \text{Pristanice} \exists A \in \text{Letalo} (P.\text{idTL} = A.\text{idTL} \wedge X.\text{idLE} = P.\text{idLE}) \}$

Vaje 5

7.11.24

1. Naloga

1)

Pilot	surname
P.	like 'B'

2)

airport	country	wame
P.	'Slovenia'	like 'R'

3)

aircraft	type	capacity
UNQ.	P.	< 170

4)

pilot	id_pilot	name	surname
	-P	P.	P.

airport	id_airport	country
	-A	Italy

flight	id_pilot	id_airport_arrival
	-P	-A

5)

pilot	name	surname	id-airline	
	P.	P.	-I	P.A

airline	id-airline	name
	-I	-A

6.

airline	id-airline
P.	-I

aircraft	id-airline	type
	-I	NOT'AN-148'

2. Naloga

Tabele:

Emp (eid: integer, ename: string, salary: real)

Works (eid: integer, did: integer)

Dept (did: integer, dname: string, managerid: integer,
floornum: integer)

1)

Emp	eid	e name	salary	Works	eid	did
	10	P.	<50k		-10	-0

Dept	did	dname	managerid	floornum
	-0			10

2)

Emp	eid	e name	salary
	- MID	P.	

Dept	clid	dname	managerid	floornum
	- D1		- MID	- F
	- D2		- MID	- F
	- D3		- MID	- F

Conditions

D1 != D2 AND D2 != D3 AND D1 != D3

3)

Emp	eid	e name	salary
	- M	P.	

Dept	clid	dname	managerid	floornum
	- D		G. - M	G. - F

Conditions

COUNT. - D >= 10

4)

Emp	eid	e name	salary	Works	eid	did
	-E		U.S*1.1		-E	-D

Dept	did	dname	managerid	floornum
	-D	'IGRACE'		

5)

Emp	eid	e name	salary	Works	eid	did
	-E	'BOŽIČEK'			-E	-D

Dept	did	dname	managerid	floornum
	-D	P.A.O.		

6)

Emp	eid	e name	salary	Works	eid	did
	-E	P.	P.		-E	-D

Dept	did	dname	managerid	floornum
	-D		'IGRACE'	
	-D		'SLADKARIJE'	

7)

Emp	eid	e name	salary
		P.	<10K
		P.	>100K

8)

Emp	eid	e name	salary	Works	eid	clid
	-B	'BOZICEK'			-B	-D
P.	-E				-E	-D

9)

Emp	eid	e name	salary	Works	eid	clid
D.	-E	'BOZICEK'			-E	-D

Dept	clid	dname	managerid	floornum
	-D			
			-E	

10)

Emp	eid	e name	salary	Works	eid	clid
	-E	P.	>20K		-E	-D

Dept	clid	dname	managerid	floornum
	-D	-N		

Conditions:

-N = 'GRACE' OR -N = 'VIDEU'

11)

Emp	eid	e name	salary	Works	eid	clid
	-E	P.	>S		-E	-D
	-M		-S			

Dept	clid	dname	managerid	floornum
	-D		-M	

Conditions:

12)

Emp	eid	e name	salary	Works	eid	did
	-E2	P.			-E2	-D2
	-E3	'JANEZ'			-E3	-D3

Dept	did	dname	managerid	floornum
	-D2			-F
	-D3			-F

Vaje 6

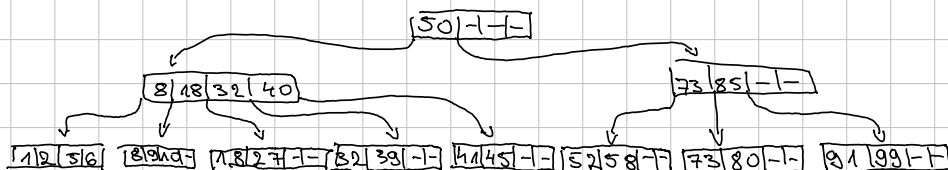
14.11.24

1.

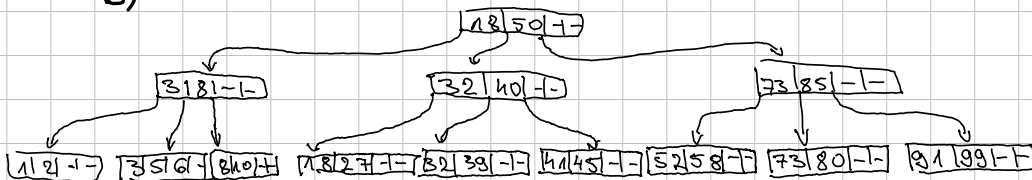
Začetno drevo



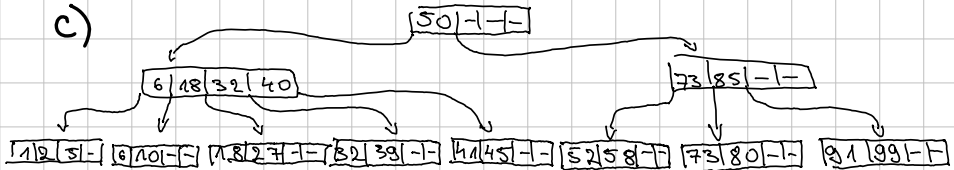
a)



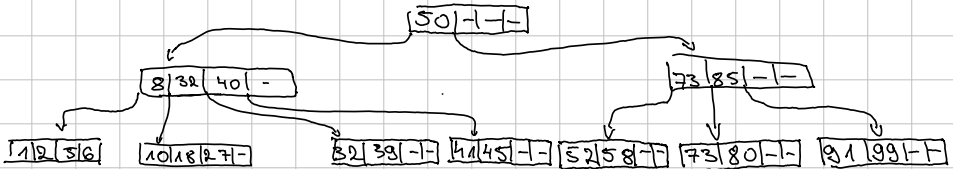
b)



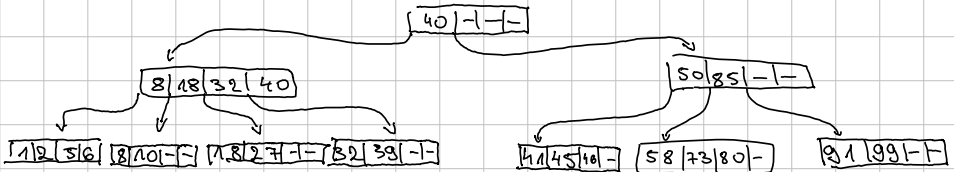
c)



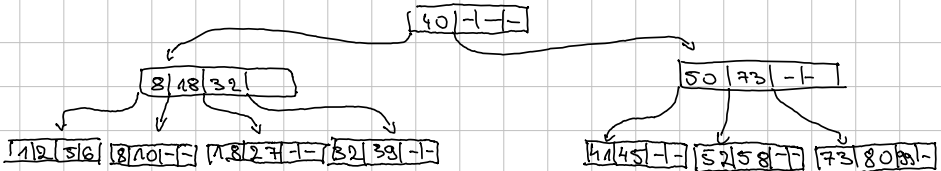
d)



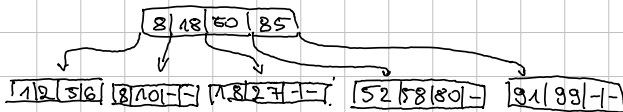
e)



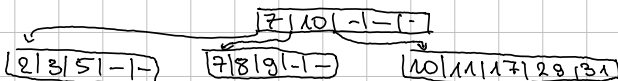
f)



g)

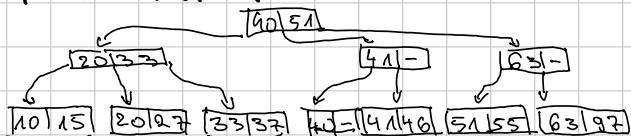


2.

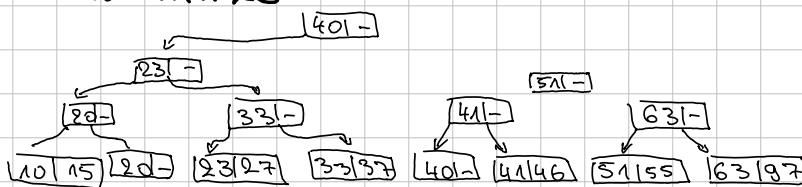


4.

Po vstavitvi 41

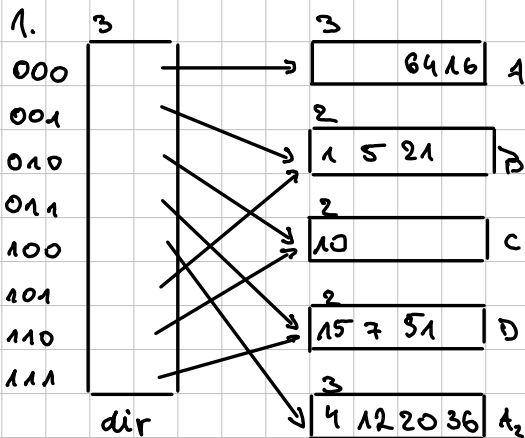


Po vstavitvi 23



Vaje 7

21.11.24



$$68 = 1000100$$

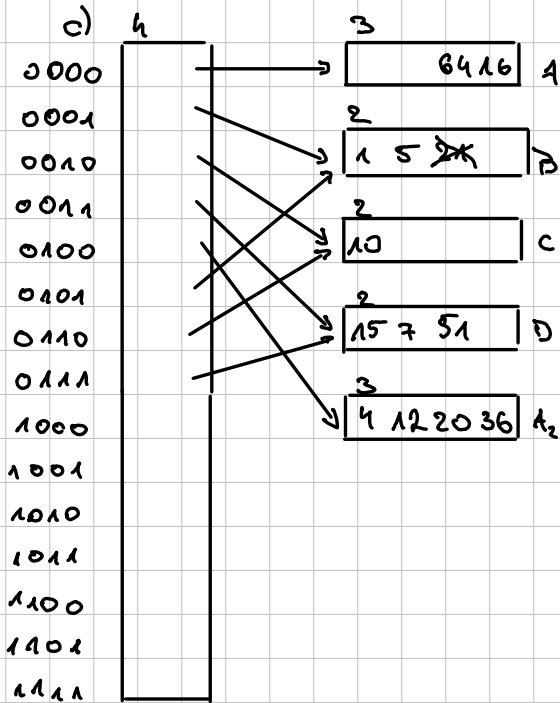
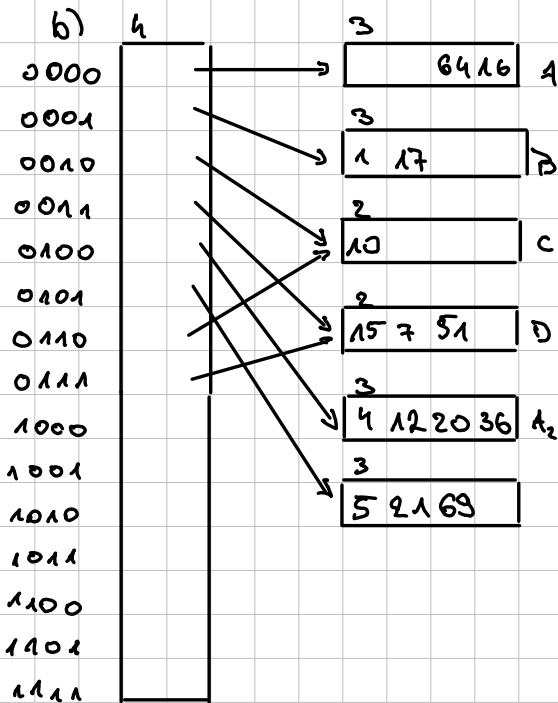
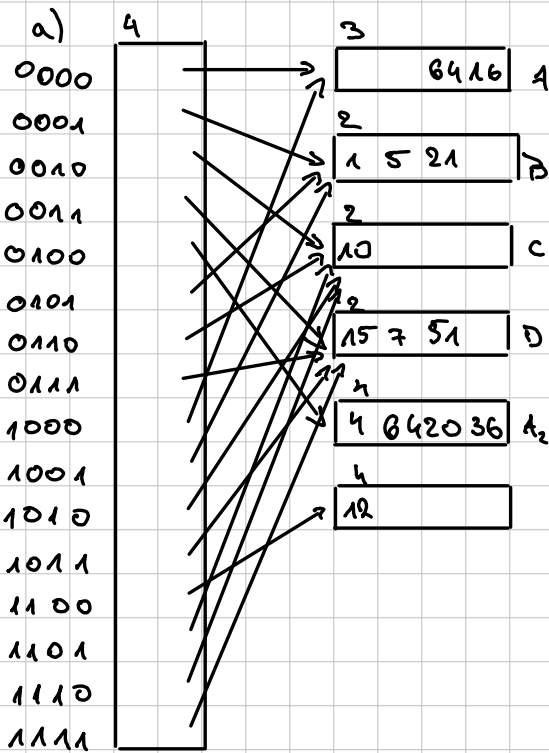
$$68 \% 2^3 = 4$$

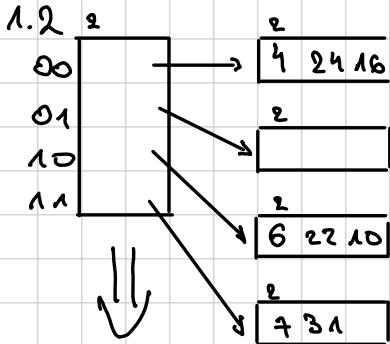
$$4 = 0100$$

$$12 = 1100$$

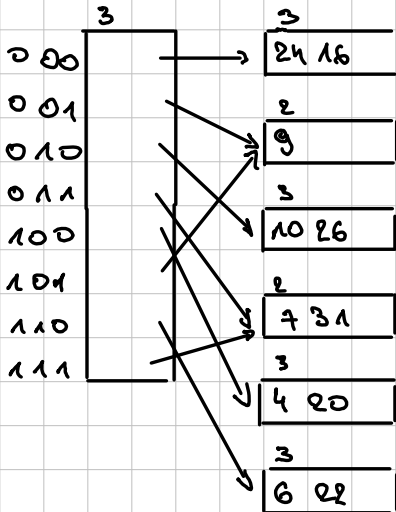
$$20 = 10100$$

$$36 = 100100$$





$g = 1001$
 $20 = 10100$
 $26 = 11010$



2.1 (level=0, N=4)

h(0)	Primaries str Next=0
00	32 8 4
01	9 25 41
10	14 18 10 30
11	31 35 7 11

⇒

h(1)	h(0)	Primaries str Next=1	Preliminary
000	00	32 8	
001	01	9 25 41 17	
010	10	14 18 10 30	
011	11	31 35 7	↔ 19
100	00	4	

2.2

level = 0, N = 4

h(0)	Primarne str
0 0	Next = 0 32 3 4
0 1	9 25 41
1 0	14 18 10
1 1	31 35

⇒

h(1)	h(0)	Primarne str
0 00	0 0	Next = 1 32 3
0 01	0 1	9 25 41
0 10	1 0	14 18 10
0 11	1 1	31 35 7 19
1 00	0 0	4

↓

h(0)	Primarne str
0 0	Next = 0 32 3
0 1	9 25 41
1 0	14 18 10
1 1	31 35 7 19

2.3

level = 0, N = 2

h(0)	Next = 0
0	32 2
1	9 25

⇒

h(1)	h(0)	Primarne	Prelimne
0 0	0	Next = 1 32	
0 1	1	9 25 7	19
1 0	0	2	

↓

h(1)	h(0)	Primarne	Prelimne
0 0	0	Next = 0 32	
0 1	1	9 25 17	
1 0	0	2	
1 1	1	7 19	

Ker smo podvojili indeks se level poveča za 1 in N se poveča za 2x
level = 1
N = 4