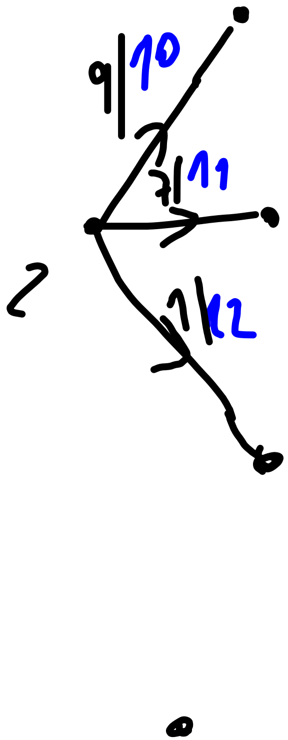
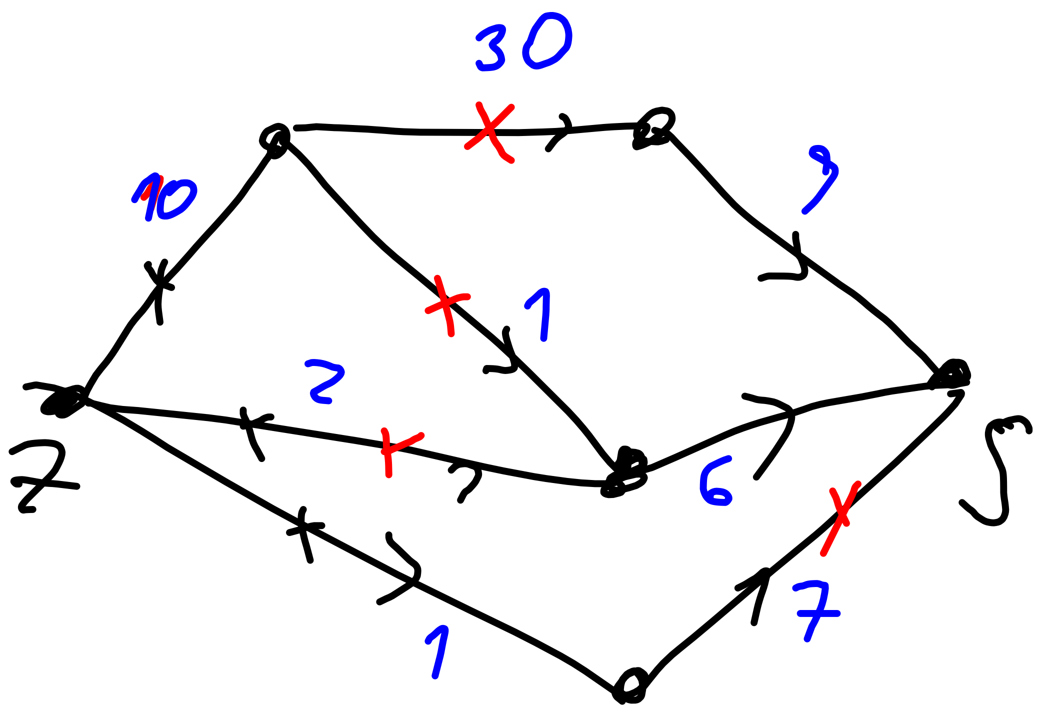
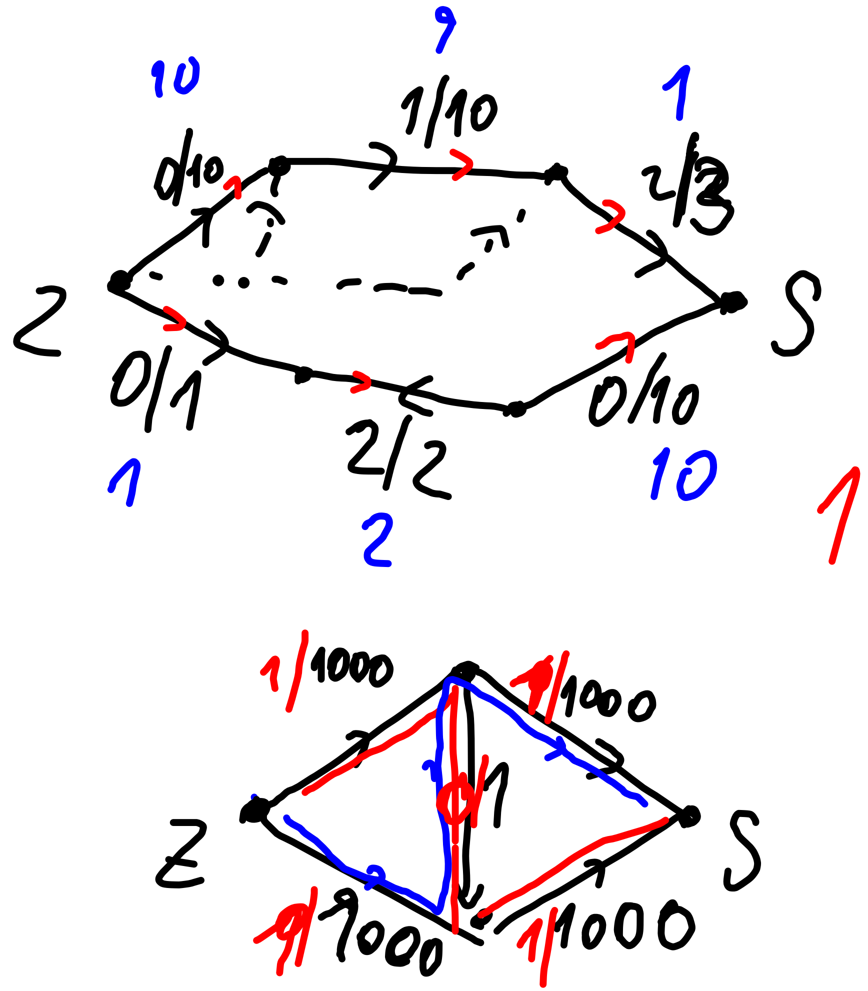
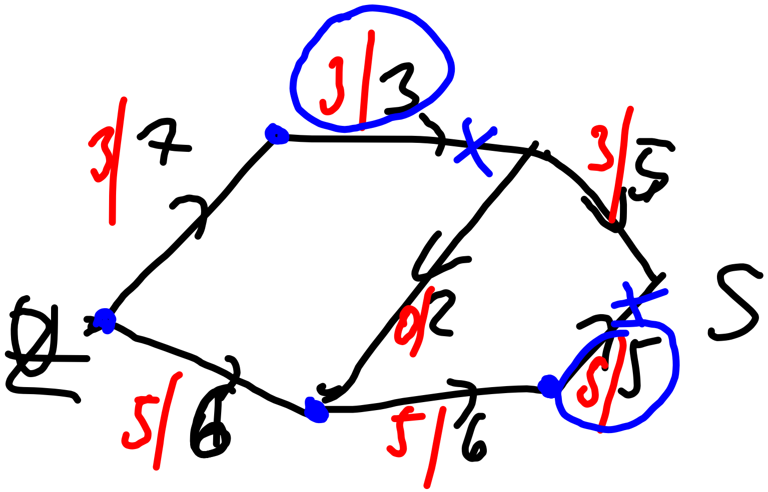


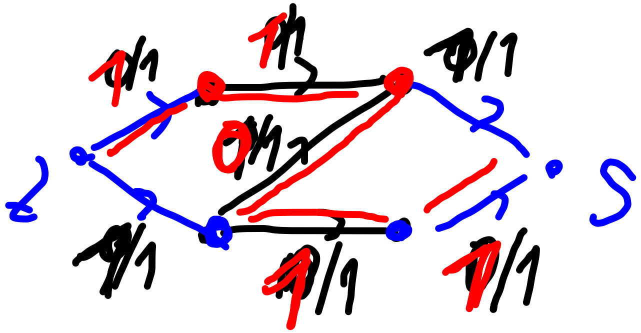
$$|f| = 17$$

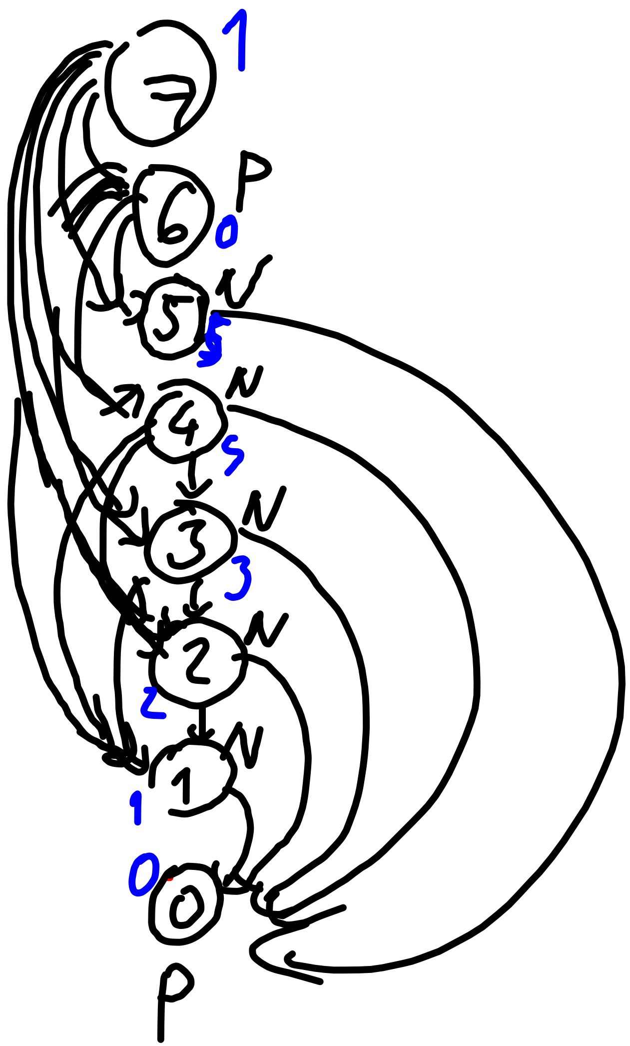

30
10
1
9
2
6
1
7
Z
S


Z
S
10
9
1
1
0/10
1/10
2/3
0/1
2/2
0/10
1
2
10
1
1/1000
1/1000
0/1
1/1000
1/1000



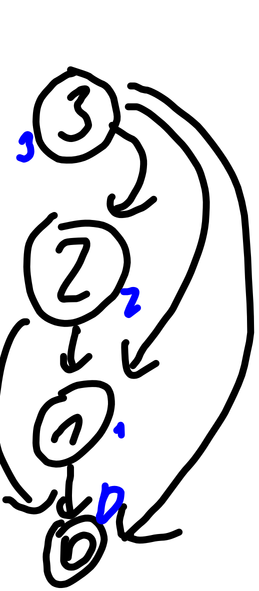
$U =$


z
S

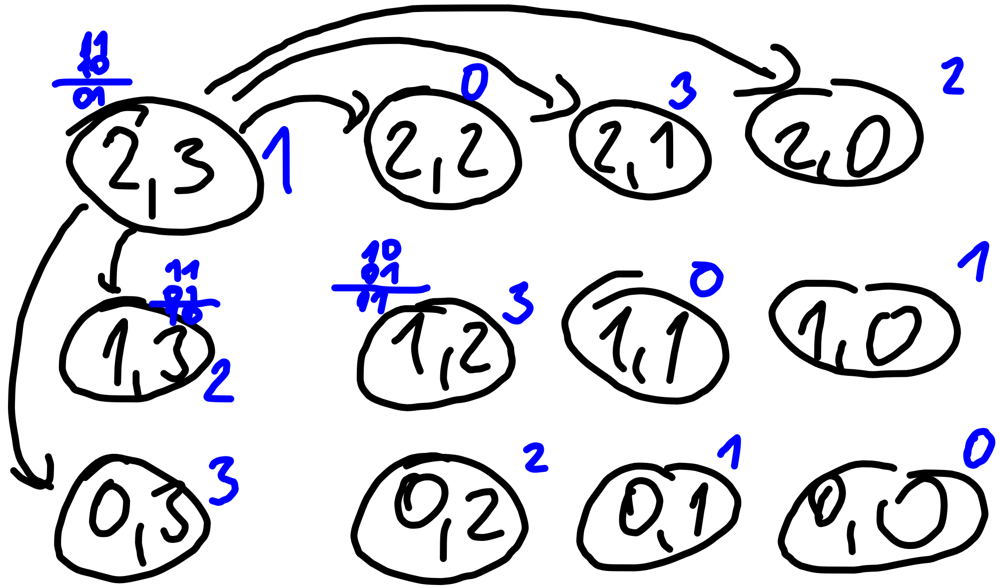

7
1
6
P
0
5
N
5
4
N
5
3
N
3
2
N
2
1
N
1
0
0
P

G_1

G_2



$G_1 + G_2$



Důkaz. Nechť $v_1 v_2$ je pozice v $G_1 + G_2$.

Ukážeme, že $g(v_1 v_2) = g(v_1) \oplus g(v_2)$:

i) pro všechna $a < g(v_1) \oplus g(v_2)$ existuje pozice $w_1 w_2 \in G_1 + G_2$ taková, že ex. hrana (tah) z $v_1 v_2$ do $w_1 w_2$

ii) ~~moc~~ v $G_1 + G_2$ neexistuje hrana do uzlu (pozice) $s_1 s_2$, kde $g(s_1 s_2) = g(v_1) \oplus g(v_2)$

i) Nechť $a < g(v_1) \oplus g(v_2) =: d$

Uvažme $a \oplus d$ a první jedničku zleva tohoto čísla. Potom ve stejném řádu musí být číslo 1 v bin. zápisu d. BÚNO v tomto řádu je 1 v bin. zápisu $g(v_1)$

Potom $\underbrace{a \oplus d}_{\text{1. na 2. místě}} \oplus \underbrace{g(v_1)}_{\text{1 na 2. místě}} < g(w_1)$

To znamená, ve hře G_1 existuje hrana do uzlu w_1 s $g(w_1) = \boxed{a \oplus d \oplus g(v_1)}$.

Uvažme hranu $(v_1 v_2, w_1 v_2)$ vedoucí do posice $w_1 v_2$. Víme, že

$$g(w_1 v_2) = g(w_1) + g(v_2) = a \oplus d \oplus g(v_1) + g(v_2) = a.$$

ii) Kdyby vedla hrana z $v_1 v_2$ do $w_1 v_2$, kde $g(w_1 v_2) = g(v_1) \oplus g(v_2)$, pak by

$$g(w_1) \oplus g(v_2) = g(v_1) \oplus g(v_2) \Rightarrow$$

$g(w_1) = g(v_1)$, ale (v_1, w_1) je hrana v G_1