SEKVENČNÍ

int $n \leftarrow 0$

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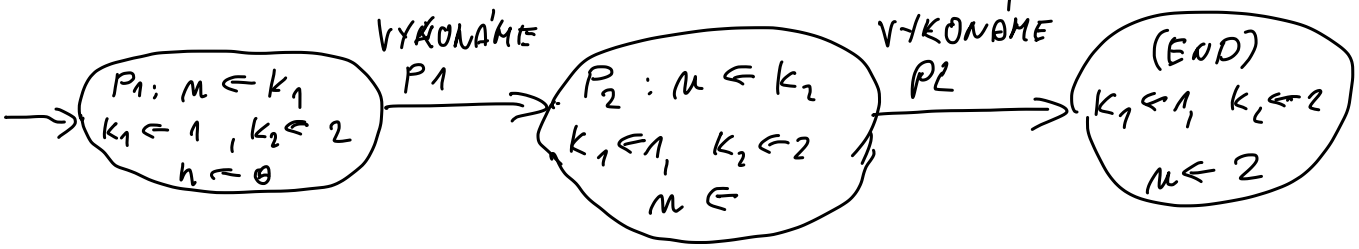
int $k_1 \leftarrow 1$

int $k_2 \leftarrow 2$

P1: $n \leftarrow k_1$

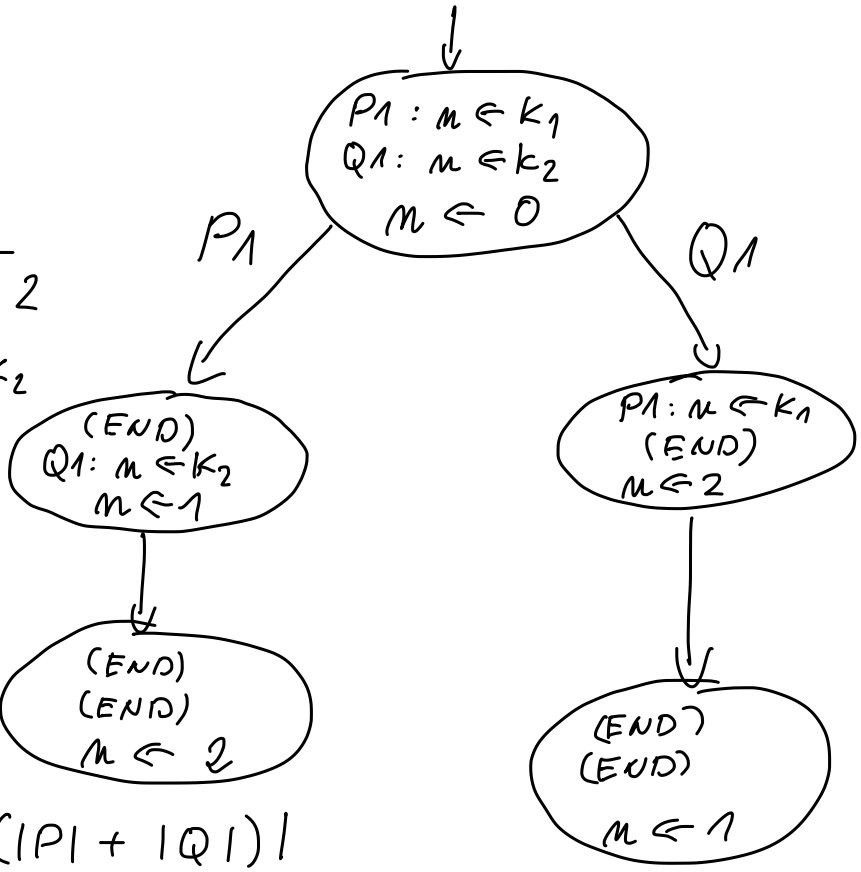
P2: $n \leftarrow k_2$



PARALELNÍ PROGRAM

int $n \leftarrow 0$

P	Q
int $k_1 \leftarrow 1$	int $k_2 \leftarrow 2$
P1: $n \leftarrow k_1$	Q1: $n \leftarrow k_2$



POČET SCÉNÁŘŮ = $\frac{(|P| + |Q|)!}{|P|! \cdot |Q|!}$

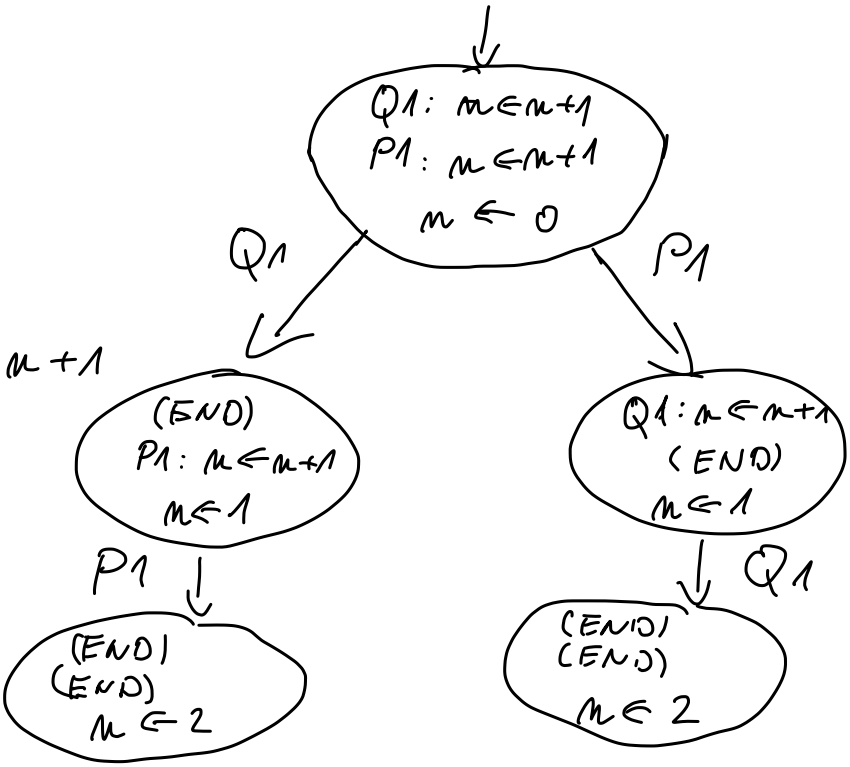
$$\frac{(|P| + |Q| + |R|)!}{|P|! \cdot |Q|! \cdot |R|!}$$

ATOMICKÉ AKCE

int $n \leftarrow 0$

P	Q
P1: $n \leftarrow n+1$	Q1: $n \leftarrow n+1$

PROBÍHNE ATOMICKY



int n ← 0

P	Q
int TMP	int TMP
P1: TMP ← n	Q1: TMP ← n
P2: n ← TMP+1	Q2: n ← TMP+1

SPRÁVNĚ

P1 > P2 > Q1 > Q2

Q1 > Q2 > P1 > P2

ŠPATNĚ

P1 > Q1 > P2 > Q2

PŘÍKLADY:

1. KOLIK JE MOŽNÝCH SCÉNÁŘŮ?

int n ← 0

p	q
p1: push n p2: push #1 p3: add p4: pop n	q1: push n q2: push #1 q3: add q4: pop n

2. NAJDĚTE SCÉNÁŘ PRO KTERÝ JE HODNOTA n = 10.

Algorithm 2.9. Concurrent counting algorithm

integer n ← 0

p	q
integer temp p1: do 10 times p2: temp ← n p3: n ← temp + 1	integer temp q1: do 10 times q2: temp ← n q3: n ← temp + 1

BODOVANÉ ÚKOLY

4. For positive values of K, what are the possible final values of n in the following algorithm?

Algorithm 2.10. Incrementing and decrementing

integer n ← 0

p	q
integer temp p1: do K times p2: temp ← n p3: n ← temp + 1	integer temp q1: do K times q2: temp ← n q3: n ← temp - 1

7. Consider the following algorithm:

Algorithm 2.17. Concurrent algorithm B

integer n ← 0

p	q
p1: while n < 2 p2: write(n)	q1: n ← n + 1 q2: n ← n + 1

a. Construct scenarios that give the output sequences: 012, 002, 02.

b. Must the value 2 appear in the output?

c. How many times can the value 2 appear in the output?

d. How many times can the value 1 appear in the output?