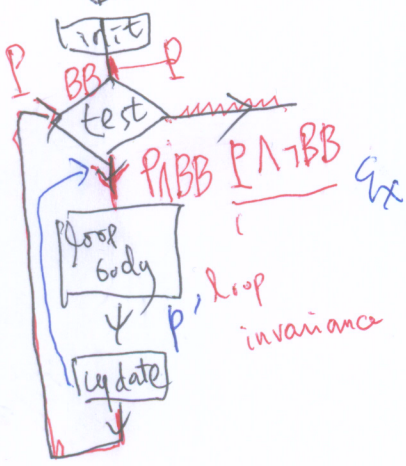
~~4~~/11(木) 제14강 ~~Parsing~~ Loop invariance



for (init; test; update) loop body

Ex $q_1, q_2, q_3, q_4 := Q_1, Q_2, Q_3, Q_4$;

9124 = 9124
4129
1429
1249

do
$q_1 > q_2 \rightarrow q_1, q_2 := q_2, q_1$
$\square\ q_2 > q_3 \rightarrow q_2, q_3 := q_3, q_2$
$\square\ q_3 > q_4 \rightarrow q_3, q_4 := q_4, q_3$
od

$S, i := 0, 1$;
~~$S := 0;\ i := 0$~~

do $i \le 100 \rightarrow S := S + i;\ i := i + 1$ od

$\left(P = S = \sum_{j=1}^{i-1} j \quad (\forall 0 \le i \le 100)\right) \wedge i = 101$

$\neg S$ $S, i := 1, 1$;
do $i \le 99 \rightarrow i := i + 1;\ S := S + i$ od

$S = \sum_{j=1}^{i} j \wedge i = 100$

i	S
0	0
1	1
2	3

S	i
0	0
0	1
1	2
3	3
6	4
⋮	⋮
	i
1+2+…i	
	i+1

$BB = B_1 \vee B_2 \vee \dots \vee B_n$

$\neg BB = \neg B_1 \wedge \neg B_2 \wedge \dots \wedge \neg B_n$

loop invariance P는 충분히 강해야 (strong) 합니다
(∵ $P \wedge \neg BB$ 가 우리가 원하는 최종 조건이 되어야 하므로)

loop invariance P는 필요한 만큼 약해야 (weak) 합니다
(∵ P가 쉽게 (loop 없이도) initialize 되어야 하므로)

Parsing of CFL

FA + stack

& Guess $A \mid \xrightarrow{\text{stack input symbol}} \omega \mid$ $\quad A \rightarrow \omega \in P$

Verify $a \mid a \rightarrow \mid$ $\quad a \in \Sigma$

$s \mid x \xrightarrow{*} \mid$