

UNIVERSITETET I OSLO
Institutt for Informatikk
Precise modelling and analysis
Martin Steffen



INF [9/5]906: static analysis

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Handout 4

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Handout 4: SOS-while

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$$\begin{array}{c}
 \langle [x := a]^l, \sigma \rangle \rightarrow \sigma[x \mapsto [a]_{\sigma}^{\mathcal{A}}] \quad \text{Ass} \quad \langle [\text{skip}]^l, \sigma \rangle \rightarrow \sigma \quad \text{SKIP} \\
 \frac{\langle S_1, \sigma \rangle \rightarrow \langle \dot{S}_1, \dot{\sigma} \rangle}{\langle S_1; S_2, \sigma \rangle \rightarrow \langle \dot{S}_1; S_2, \dot{\sigma} \rangle} \text{SEQ}_1 \quad \frac{\langle S_1, \sigma \rangle \rightarrow \dot{\sigma}}{\langle S_1; S_2, \sigma \rangle \rightarrow \langle S_2, \dot{\sigma} \rangle} \text{SEQ}_2 \\
 \frac{[b]_{\sigma}^{\mathcal{B}} = \top}{\langle \text{if}[b]^l \text{ then } S_1 \text{ else } S_2, \sigma \rangle \rightarrow \langle S_1, \sigma \rangle} \text{IF}_1 \\
 \frac{[b]_{\sigma}^{\mathcal{B}} = \top}{\langle \text{while}[b]^l \text{ do } S, \sigma \rangle \rightarrow \langle S; \text{while}[b]^l \text{ do } S, \sigma \rangle} \text{WHILE}_1 \\
 \frac{[b]_{\sigma}^{\mathcal{B}} = \perp}{\langle \text{while}[b]^l \text{ do } S, \sigma \rangle \rightarrow \sigma} \text{WHILE}_2
 \end{array}$$

Table 1: While: operational semantics

References

- [1] Flemming Nielson, Hanne-Riis Nielson, and Chris L. Hankin. *Principles of Program Analysis*. Springer-Verlag, 1999.