

AXIOMATIC SEMANTICS OF while

$$\text{skip}_P \quad \{P\} \text{ skip } \{P\}$$

$$\text{ass}_P \quad \{Q[a/x]\} x := a \{Q\}$$

$$\text{comp}_P \quad \frac{\{P\} S_1 \{R\} \quad \{R\} S_2 \{Q\}}{\{P\} S_1; S_2 \{Q\}}$$

$$\text{if}_P \quad \frac{\{P \wedge b\} S_1 \{Q\} \quad \{P \wedge \neg b\} S_2 \{Q\}}{\{P\} \text{ if } b \text{ then } S_1 \text{ else } S_2 \{Q\}}$$

$$\text{while}_P \quad \frac{\{P \wedge b\} S \{P\}}{\{P\} \text{ while } b \text{ do } S \{P \wedge \neg b\}}$$

$$\text{cons}_P \quad \frac{\{P'\} S \{Q'\}}{\{P\} S \{Q\}} \quad \text{if } P \Rightarrow P' \quad Q' \Rightarrow Q$$