

Formal Methods and Functional Programming

Solutions of Exercise Sheet 13: Modelling and LTL

Submission deadline: -

Sample Promela files that solve Assignments 1, 2, 3, and 5 are posted online.

Assignment 4

First part:

$$\begin{aligned}
 T &\not\models \varphi_1, \quad t = s_1 s_4 s_5 s_4 s_5 s_4 \dots \\
 T &\models \varphi_2 \\
 T &\models \varphi_3 \\
 T &\not\models \varphi_4, \quad t = s_1 s_4 s_5 s_5 s_5 \dots \\
 T &\models \varphi_5 \\
 T &\not\models \varphi_6, \quad t = s_1 s_4 s_2 s_4 s_2 s_4 s_2 \dots \\
 T &\not\models \varphi_7, \quad t = s_1 s_4 s_2 s_4 s_2 s_4 s_2 \dots \\
 T &\models \varphi_8
 \end{aligned}$$

Second part:

- $\Diamond \Box \neg(p \wedge \neg q \wedge \neg r)$
- $\Box(r \rightarrow \bigcirc q)$
- $\bigcirc \Box(p \rightarrow r)$
- $\Box((p \wedge q \wedge r) \rightarrow ((p \wedge q \wedge r) \cup \neg r))$
- $\Diamond(q \wedge \bigcirc \Diamond q)$
- $\Box \Diamond q$
- $(p \wedge \bigcirc \Box \neg p) \rightarrow (\Box \Diamond \neg r)$
- $\Box(\neg p \wedge q \wedge \neg r \rightarrow \bigcirc \neg(\neg p \wedge q \wedge \neg r))$