User manual for Timed-CSP Simulator

Hoang Nga Nguyen, Markus Roggenbach
Swansea University, UK

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1 Introduction

Timed CSP Simulator is based on the presentation of Timed CSP in [3]. For a brief discussion of the tool architecture see [1]. The semantical questions regarding simulating Timed CSP are discussed in [2].

2 Supported operators

In addition to CSP-M operators already defined in ProB, Timed-CSP Simulator supports several timed operators of Timed-CSP. These extra operators are listed in Table 1 where:

- $d$ denotes a time delay which is either an integer $i$ or a rational number $i/j$ where $i$ and $j$ are integers.
- $P, Q$ are Timed-CSP processes.

<table>
<thead>
<tr>
<th>Name</th>
<th>Pretty print</th>
<th>ASCII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay event prefix</td>
<td>$a \rightarrow^d P$</td>
<td>$a -&lt;d&gt;- P$</td>
</tr>
<tr>
<td>Wait</td>
<td>$WAIT d$</td>
<td>WAIT d</td>
</tr>
<tr>
<td>Timed timeout</td>
<td>$P \triangleright^d Q$</td>
<td>$P [&lt;d&gt;] Q$</td>
</tr>
<tr>
<td>Timed interrupt</td>
<td>$P \triangle^d Q$</td>
<td>$P /&lt;d&gt; Q$</td>
</tr>
</tbody>
</table>

Table 1: Timed Operators in Timed-CSP Simulators
3 Timed-CSP mode

There are two ways to activate Timed-CSP mode in ProB while opening files:

Explicit: Files are named with the extension “.tcsp”.

Implicit: Files contain one of the timed operators listed in Table 1.

4 Timed-CSP animation

Timed-CSP simulators supports two animation strategy:

Random: At each step of the animation, the simulator randomly selects an event or timed progress available from the interface to perform.

Maximal progress: At each step of the animation, the simulator selects an event or timed progress available from the interface to perform, with respect to the following priority:

1. Randomly select an external event.
2. Select an internal event.
3. Select a maximal timed progress.
4. Select a random timed progress.

References

