The eventB package*

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Abstract

This class provides a template for typesetting Event-B models. It was developed at the Swiss Federal Institute of Technology Zurich (ETH-Zurich).

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1 Introduction

This package was developed in order to ease the type setting of Event-B models in LATEX.

2 Usage

3 Implementation

We load the standard article class and pass option 10pt to it.

```
%%%% BEGIN Package loading %%%%%
\RequirePackage{xspace}
\RequirePackage{xcolor}
%%%% END Package loading %%%%

%%%% Keywords can be coloured by package option "color"
\newcommand{\Bkeyword}[1]{\B@keyword{#1}}
\newcommand{\Bidentifier}[1]{\B@identifier{#1}}
\newcommand{\Blabel}[2][]{\B@label[#1]{#2}}
\newcommand{\Bpo}[1]{\B@po{#1}}
\newcommand{\Byspace}[1][2ex]{\\[#1]}
```

^{*}This document corresponds to eventB ?, dated ?.

```
\newcommand{\Bhspace}[1][2em]{\hspace{#1}}
\mbox{\newcommand{\Bsep}{\quad}}
\DeclareOption{color}{
  \colorlet{Bkeywordcolor}{blue}
  \colorlet{Blabelcolor}{green!50!black}
  \colorlet{Bpocolor}{red}
  %%%%% Keywords are coloured.
  \renewcommand{\Bkeyword}[1]{\textcolor{Bkeywordcolor}{\B@keyword{#1}}}
  \renewcommand{\Blabel}[2][]{\textcolor{Blabelcolor}{\B@label[#1]{#2}}}
  \renewcommand{\Bpo}[1]{\textcolor{Bpocolor}{\B@po{#1}}}
}
\DeclareOption{colour}{
  \colorlet{Bkeywordcolor}{blue}
  \colorlet{Blabelcolor}{green!50!black}
  \colorlet{Bpocolor}{red}
  %%%% Keywords are coloured.
  \renewcommand{\Bkeyword}[1]{\textcolor{Bkeywordcolor}{\B@keyword{#1}}}
  \renewcommand{\Blabel}[2][]{\textcolor{Blabelcolor}{\B@label[#1]{#2}}}
  \label{lem:lem:boson} $$\operatorname{Bpo}[1]_{\text{Bpocolor}_{B0}^{\#1}}}
}
\newcommand{\B@identifier}[1]{\ensuremath{\mathit{#1}}\xspace}
\newcommand{\B@label}[2][]{
  \def\is@thm{#1}
  \ifx\is@thm\@empty
  \verb|\ensuremath{\mathsf{#2}}| xspace|
  \ensuremath{\mathit{#2}}\xspace
}
%%%%% Bcode environment %%%%%%
\%\%\% the same as ''center'' \%\%\%\%
\newenvironment{Bcode}[1][\normalsize]{\begin{center}#1}{\end{center}}
\newcommand{\Bdeclaration}[2]{
  \footnote{Months}
    \ensuremath{
      \B@declaration{#1}{#2}
   }
 }
}
\newcommand{\Bsection}[3][]{
  \setlength{\B@oldfboxsep}{\fboxsep}
  \setlength{\fboxsep}{2ex}
  \fbox{
    \ensuremath{
      \B@section[#1]{#2}{#3}
    }
  \setlength{\fboxsep}{\B@oldfboxsep}
```

```
\newcommand{\event}[7][]{
 \setlength{\B@oldfboxsep}{\fboxsep}
 \setlength{\fboxsep}{2ex}
 \footnote{Months}
   \ensuremath{
     \B@event[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 }
 \setlength{\fboxsep}{\B@oldfboxsep}
\newcommand{\eventinline}[7][]{
 \setlength{\B@oldfboxsep}{\fboxsep}
 \setlength{\fboxsep}{2ex}
 \footnotemark
   \ensuremath{
     \B@eventinline[#1]{#2}{#3}{#4}{#5}{#6}{#7}
   }
 }
 }
\DeclareOption{compact}{
 \renewenvironment{Bcode}[1][\footnotesize]{\begin{center}#1}{\end{center}}
 \renewcommand{\Bdeclaration}[2]{
   \B@declaration{#1}{#2}
 \renewcommand{\Bsection}[3][]{
   \B@section[#1]{#2}{#3}
 \renewcommand{\event}[7][]{
   \B@event[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 }
 \renewcommand{\eventinline}[7][]{
   \B@eventinline[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 }
 \renewcommand{\Bsep}{\ }
}
\DeclareOption{small}{
 \renewenvironment{Bcode}[1][\footnotesize]{\begin{center}#1}{\end{center}}
 \renewcommand{\Bhspace}[1][1em]{\hspace{#1}}
 \renewcommand{\Bdeclaration}[2]{
   \B@declaration{#1}{#2}
 }
 \renewcommand{\Bsection}[3][]{
   \B@section[#1]{#2}{#3}
```

```
}
 \renewcommand{\event}[7][]{
   \B@event[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 }
 \renewcommand{\eventinline}[7][]{
   \B@eventinline[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 \renewcommand{\Bsep}{\ }
\DeclareOption{tiny}{
 \renewenvironment{Bcode}[1][\scriptsize]{\begin{center}#1}{\end{center}}
 \renewcommand{\Bdeclaration}[2]{
   \B@declaration{#1}{#2}
 \renewcommand{\Bsection}[3][]{
   \B@section[#1]{#2}{#3}
 }
 \renewcommand{\event}[7][]{
   \B@event[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 \renewcommand{\eventinline}[7][]{
   \B@eventinline[#1]{#2}{#3}{#4}{#5}{#6}{#7}
 \renewcommand{\Bsep}{\ }
}
\newcommand{\B@declaration}[2]{
 \begin{array}{10{\Bsep}1}
   \Bkeyword{#1:} & #2
 \end{array}
}
\newlength{\B@oldfboxsep}
\newcommand{\B@section}[3][]{
 \def\no@title{#1}
 \ifx\no@title\@empty
 \begin{array}{1}
   \Bkeyword{#2:} \\
   \begin{array}{10{\S ep}1}
     #3
   \end{array}
 \end{array}
 \else
 \begin{array}{10{\Bsep}1}
   #3
 \end{array}
```

```
\fi
}
\newcommand{\B@po}[1]{\ensuremath{\mathsf{#1}}\xspace}
%%%% BEGIN Execution of options %%%%%
\ProcessOptions
%%%% END Execution of options %%%%%
%%%%% (BEGIN) Macros for Pretty-Print Event-B Components %%%
\newcommand{\eventB}{Event-B\xspace}
\newcommand{\SKIP}{\textsc{skip}}
%%%% Event-B Keywords %%%%%
\newcommand{\Bany}{\Bkeyword{any}}
\newcommand{\Bbegin}{\Bkeyword{begin}}
\newcommand{\Bend}{\Bkeyword{end}}
\newcommand{\Brefines}{\Bkeyword{refines}}
\newcommand{\Bstatus}{\Bkeyword{status}}
\newcommand{\Bthen}{\Bkeyword{then}}
\newcommand{\Bwhen}{\Bkeyword{when}}
\newcommand{\Bwhere}{\Bkeyword{where}}
\newcommand{\Bwith}{\Bkeyword{with}}
%%%% Event-B internal elements %%%%%
\newcommand{\Bctx}[1]{\ensuremath{\mathbf{#1}}\xspace}
\newcommand{\Bset}[1]{\Bidentifier{#1}}
\newcommand{\Bcst}[1]{\Bidentifier{#1}}
\newcommand{\Baxm}[1]{\Blabel{#1}}
\newcommand{\Bthm}[1]{\Blabel[thm]{#1}}
\newcommand{\Bmch}[1]{\ensuremath{\mathbf{#1}}\xspace}
\newcommand{\Bvrb}[1]{\Bidentifier{#1}}
\newcommand{\Binv}[1]{\Blabel{#1}}
\newcommand{\Bevt}[1]{\Blabel{#1}}
\newcommand{\Bpar}[1]{\Bidentifier{#1}}
\label{Bact} $$ \operatorname{\mathbb{L}}_{1}_{\mathbb{L}} \
\newcommand{\Bgrd}[1]{\Blabel{#1}}
\newcommand{\Bbap}[1]{\hbox{\sl\bfseries #1}}
%%%%
%%%%% Creating Event-B elements macros %%%%%
%%%%% Create a new B macro
%%%%% Arguments:
%%%%% 1. The macro string, (OPTIONAL) if empty then the expanded string will be used.
%%%%% 2. The expanded string
%%%%% 3. The mark-up macros, e.g. \Bvrb
%%%%% Usage:
\%\%\%\% - \B@newmacro[aaa]{a\_a\_a}{\Bvrb} will create a new macro \aaa
%%%% which will be expanded to be \Bvrb{a\_a\_a}
%%%%% - \B@newmacro{aaa}{\Bvrb} will create a new macro \aaa
%%%%% which will be expanded to be \Bvrb{aaa}
%%%%%
```

```
\newcommand{\B@newmacro}[3][]{
     \def\input@macro{#1}
     \ifx\input@macro\@empty
     \expandafter\def\csname #2\endcsname{#3{#2}}
     \expandafter\def\csname #1\endcsname{#3{#2}}
     \fi
}
%%%% Create a new context macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
%%%%% - \newBctx[aaa]{a\_a\_a} will create a new macro \aaa
%%%%% which will be expanded to be Bctx{a\_a\_a}.
%%%%% - \newBctx{aaa} will create a new macro \aaa which will be
%%%% expanded to be \Bctx{aaa}.
%%%%%
\newcommand{\newBctx}[2][]{%
    \B@newmacro[#1]{#2}{\Bctx}
%%%%% Create a new carrier set macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
\%\%\% - \newBset[aaa]{a\_a\_a} will create a new macro \aaa
%%%%% which will be expanded to be Bset{a_a_a}.
%%%%% - \newBset{aaa} will create a new macro \aaa which will be
%%%% expanded to be \Bset{aaa}.
%%%%%
\newcommand{\newBset}[2][]{%
    \B@newmacro[#1]{#2}{\Bset}
\%\%\%\% Create a new constant macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
\hfill 
%%%%% which will be expanded to be \Bcst{a\_a\_a}.
%%%%% - \newBcst{aaa} will create a new macro \aaa which will be
%%%% expanded to be \Bcst{aaa}.
\newcommand{\newBcst}[2][]{%
     \B@newmacro[#1]{#2}{\Bcst}
%%%%% Create a new axiom macro
%%%%% Arguments:
```

```
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
\%\%\% - \newBaxm[aaa]{a\_a\_a} will create a new macro \aaa
%%%%% which will be expanded to be Baxm{a\_a\_a}.
%%%%% - \newBaxm{aaa} will create a new macro \aaa which will be
%%%% expanded to be \Baxm{aaa}.
%%%%%
\B@newmacro[#1]{#2}{\Baxm}
%%%% Create a new theorem macro
%%%%% Arguments:
\%\%\% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
\%\%\% - \newBthm[aaa]{a\_a\_a} will create a new macro \aaa
%%%%% which will be expanded to be \beta_a.
%%%%% - \newBthm{aaa} will create a new macro \aaa which will be
%%%%% expanded to be Bthm{aaa}.
%%%%%
\B@newmacro[#1]{#2}{\Bthm}
%%%% Create a new machine macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
%%%%% - \newBmch[aaa]{a\_a\_a} will create a new macro \aaa
\%\%\% which will be expanded to be Bmch\{a\_a\_a\}.
%%%%% - \newBmch{aaa} will create a new macro \aaa which will be
%%%% expanded to be \Bmch{aaa}.
%%%%%
\newcommand{\newBmch}[2][]{%
 \B@newmacro[#1]{#2}{\Bmch}
%%%%% Create a new variable macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
%%%%% - \newBvrb[aaa]{a\_a\_a} will create a new macro \aaa
%%%%% which will be expanded to be \Bvrb{a\a\a\a}.
%%%%% - \newBvrb{aaa} will create a new macro \aaa which will be
%%%%% expanded to be \Bvrb{aaa}.
%%%%%
\newcommand{\newBvrb}[2][]{%
 \B@newmacro[#1]{#2}{\Bvrb}
```

```
%%%%% Create a new invariant macro
%%%%% Arguments:
\%\%\% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
%%%%% - \mathbb{a}a \{a\_a\} will create a new macro \aaa
%%%%% which will be expanded to be \Big\{a\_a\_a.
%%%%% - \newBinv{aaa} will create a new macro \aaa which will be
%%%%% expanded to be \Binv{aaa}.
%%%%%
\newcommand{\newBinv}[2][]{%
    \B@newmacro[#1]{#2}{\Binv}
}
%%%%% Create a new event macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
%%%%% - \mbox{newBevt[aaa]}{a\_a} \ \mbox{will create a new macro } \aaa
%%%%% which will be expanded to be \Bevt{a\_a\_a}.
%%%%% - \newBevt{aaa} will create a new macro \aaa which will be
%%%%% expanded to be \Bevt{aaa}.
%%%%%
\newcommand{\newBevt}[2][]{%
    \B@newmacro[#1]{#2}{\Bevt}
}
%%%%% Create a new parameter macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
%%%%% - \infty [aaa]{a_a}  will create a new macro \aaa
%%%%% which will be expanded to be Bpar{a_a}.
\hfill 
%%%% expanded to be \Bpar{aaa}.
%%%%%
\newcommand{\newBpar}[2][]{%
    \B@newmacro[#1]{#2}{\Bpar}
%%%%% Create a new guard macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
\hfill - \newBgrd[aaa]{a\_a\_a} will create a new macro \aaa
%%%%% which will be expanded to be \Bgrd{a\_a\_a}.
%%%%% - \newBgrd{aaa} will create a new macro \aaa which will be
%%%% expanded to be \Bgrd{aaa}.
%%%%%
```

```
\newcommand{\newBgrd}[2][]{%
     \B@newmacro[#1]{#2}{\Bgrd}
}
%%%%% Create a new action macro
%%%%% Arguments:
%%%%% 1. The macro string (OPTIONAL)
%%%%% 2. The expanded string
%%%%% Usage:
\hline 
%%%%% which will be expanded to be Bact{a_a}.
%%%%% - \newBact{aaa} will create a new macro \aaa which will be
%%%%% expanded to be Bact{aaa}.
%%%%%
\newcommand{\newBact}[2][]{%
     \B@newmacro[#1]{#2}{\Bact}
%%%%% Pretty print carrier sets
%%%%% Arguments:
%%%%% 1. (Comma-separated) list of carrier sets.
%%%%%
%%%%% Usage: \carriersets{S, T}
\newcommand{\carriersets}[1]{
     \Bdeclaration{sets}{#1}
%%%%% Pretty print constants
%%%%% Arguments:
%%%%% 1. (Comma-separated) list of constants.
%%%%%
%%%%% Usage: \constants{m, n}
\newcommand{\constants}[1]{
     \Bdeclaration{constants}{#1}
}
%%%%% Pretty print axioms
%%%%% Arguments:
\%\%\% 1. (Newline(\\)-separated) list of axioms.
%%%%%
%%%%% Usage: \axioms{\Baxm{axm0\_1}: & x \in \nat \\
%%%%%
                                                       \Delta m{axm0\_2}: & y \in \n \in \([2ex])
\newcommand{\axioms}[2][]{
     \Bsection[#1]{axioms}{#2}
}
%%%%% Pretty print variables
%%%%% Arguments:
%%%%% 1. (Comma-separated) list of variables.
%%%%%
%%%%% Usage: \variables{x, y}
\newcommand{\variables}[1]{
     \Bdeclaration{variables}{#1}
```

```
}
%%%%% Pretty print invariants
%%%%% Arguments:
%%%%% 1. (Newline(\\)-separated) list of invariants.
%%%%%
%%%%% Usage: \invariants{\Binv{inv0\_1:} & x \in \nat \\
                          \mathbb{2} \Binv{inv0\_2:} & y \in \nat \\[2ex]}
\newcommand{\invariants}[2][]{
  \Bsection[#1]{invariants}{#2}
}
%%%%% Pretty print variant
%%%%% Arguments:
%%%%% 1. The variant
%%%%%
%%%%% Usage: \variant{V}
\newcommand{\variant}[1]{
  \Bdeclaration{variant}{#1}
}
\%\%\% Pretty print an general Event-B event
%%%%% Arguments:
%%%%% 1. (Optional) convergence status.
%%%%% 2. Name of the event.
%%%%% 3. Name of the abstract event.
%%%%% 4. (Comma-separated) list of parameters.
%%%%% 5. (Newline(\\)-separated) list of guards.
%%%%% 6. (Newline(\\)-separated) list of witness predicates.
\%\%\% 7. (Newline(\\)-separated) list of assignments.
%%%%%
%%%%% Usage: \B@event[conv]{conc}{abs}{x,y}{G1(x,y)}(G2(x,y)){W1}(W2){S1(v,x,y)}(S2(w,x,y))}
%%%%%
            will produce the following
%%%%%
%%%%%
            conc
            refines abs
%%%%%
%%%%%
            status conv
%%%%%
            any x, y where
%%%%%
              G1(x, y)
              G2(x, y)
%%%%%
%%%%%
            with
              W1
%%%%%
%%%%%
              W2
%%%%%
            then
%%%%%
              S1(v, x, y)
%%%%%
              S2(w, x, y)
%%%%%
            end
%%%%%
%%%%% Special case:
%%%%% - Empty abstract event --> refines clause is omitted.
\mbox{\ensuremath{\%\%\%\%}} - Empty convergence status --> status clause is omitted.
%%%%% - Empty witness --> with clause is omitted.
%%%%% - Empty parameters, empty guards --> begin ... end
```

```
\%\%\% - Empty parameters --> when ... then ... end
%%%%% - Empty actions --> \SKIP
\newcommand{\B@event}[7][]{
  \def\evt@sts{#1}
  \def\evt@name{#2}
  \def\evt@absevts{#3}
  \def\evt@pars{#4}
  \def\evt@grds{#5}
  \def\evt@wits{#6}
  \def\evt@acts{#7}
  %% Pretty-print convergence status
  \ifx\evt@sts\@empty
  \def\pretty@sts{}
  \else
  \def\pretty@sts{\Bsep\Bstatus \Bsep \evt@sts \\}
 % Pretty-print abstract events
  \ifx\evt@absevts\@empty
  \def\pretty@absevts{}
  \else
  \def\pretty@absevts{\Bsep\Brefines \Bsep \evt@absevts \\}
 \fi
 % Pretty-print parameters
  \ifx\evt@pars\@empty
  \def\pretty@pars{}
  \else
  \def\pretty@pars{\Bsep\Bany \Bsep \evt@pars \Bsep \Bwhere \\}
 % Pretty-print guards
 \ifx\evt@grds\@empty
  \def\pretty@grds{}
  \else
  \def\evt@grds@tmp{
    \begin{array}{@{\Bsep\Bsep}1@{\Bsep}1}
      \evt@grds
    \end{array}\\
  \ifx\evt@pars\@empty
  \def\pretty@grds{
    \Bsep \Bwhen \\
    \evt@grds@tmp
 }
  \else
  \def\pretty@grds{\evt@grds@tmp}
 \fi
 % Pretty-print witnesses
  \ifx\evt@wits\@empty
  \def\pretty@wits{}
  \else
  \def\pretty@wits{
    \Bsep\Bwith\\
    \begin{array}{@{\Bsep\Bsep}11}
      \evt@wits
```

```
\end{array}\\
 }
 \fi
 % Pretty-print actions
  \ifx\evt@acts\@empty
  \def\evt@acts{\SKIP}
  \else
  \fi
  \def\evt@acts@tmp{
    \begin{array}{@{\Bsep\Bsep}1@{\Bsep}1}
      \evt@acts
    \end{array}\\
  \def\evt@acts@keyword{\Bsep\Bthen \\}
  \ifx\evt@pars\@empty
  \ifx\evt@grds\@empty
  \def\evt@acts@keyword{\Bsep\Bbegin \\}
  \else
  \fi
  \else
  \fi
  \def\pretty@acts{
    \evt@acts@keyword
    \evt@acts@tmp
  % Really do it now
  \begin{array}{1}
    \Bevt{\evt@name} \\
    \pretty@sts
    \pretty@absevts
    \pretty@pars
    \pretty@grds
    \pretty@wits
    \pretty@acts
    \Bsep\Bend
  \end{array}
}
%%%%% Pretty print an general Event-B event
%%%%% Arguments:
%%%%% 1. (Optional) convergence status.
%%%%% 2. Name of the event.
%%%%% 3. Name of the abstract event.
%%%%% 4. (Comma-separated) list of parameters.
%%%%% 5. (Newline(\\)-separated) list of guards.
%%%%% 6. (Newline(\\)-separated) list of witness predicates.
\%\%\%\% 7. (Newline(\\)-separated) list of assignments.
%%%%%
%%%%% Usage: B@event[conv]{conc}{abs}{x,y}{G1(x,y)}{G2(x,y)}{W1}W2}{S1(v,x,y)}\S2(w,x,y)}
%%%%%
            will produce the following
%%%%%
%%%%%
            conc
%%%%%
            refines abs
%%%%%
            status conv
```

```
%%%%%
            any x, y where
%%%%%
              G1(x, y)
%%%%%
              G2(x, y)
%%%%%
            with
%%%%%
              W1
%%%%%
              W2
%%%%%
            then
%%%%%
              S1(v, x, y)
%%%%%
              S2(w, x, y)
%%%%%
            end
%%%%%
%%%%% Special case:
%%%%% - Empty abstract event --> refines clause is omitted.
\%\%\%\% - Empty convergence status --> status clause is omitted.
%%%%% - Empty witness --> with clause is omitted.
\ensuremath{\mbox{\%}\mbox{\%}\mbox{\%}}\mbox{\mbox{\mbox{$\sim$}}} --> begin ... end
\%\%\% - Empty parameters --> when ... then ... end
%%%%% - Empty actions --> \SKIP
\newcommand{\B@eventinline}[7][]{
  \def\evt@sts{#1}
  \def\evt@name{#2}
  \def\evt@absevts{#3}
  \def\evt@pars{#4}
  \def\evt@grds{#5}
  \def\evt@wits{#6}
  \def\evt@acts{#7}
  %% Ignore convergence status
  \def\pretty@sts{}
  \% Pretty-print abstract events
  \ifx\evt@absevts\@empty
  \def\pretty@absevts{}
  \else
  \def\pretty@absevts{\Brefines~\evt@absevts~}
  % Pretty-print parameters
  \ifx\evt@pars\@empty
  \def\pretty@pars{}
  \def\pretty@pars{\Bany~\evt@pars~\Bwhere~}
  % Pretty-print guards
  \ifx\evt@grds\@empty
  \def\pretty@grds{}
  \def\evt@grds@tmp{
      \evt@grds
  \ifx\evt@pars\@empty
  \def\pretty@grds{
    \Bwhen~
    \evt@grds@tmp~
  }
  \else
  \def\pretty@grds{\evt@grds@tmp~}
```

```
\fi
  % Pretty-print witnesses
  \ifx\evt@wits\@empty
  \def\pretty@wits{}
  \else
  \def\pretty@wits{
    \Bwith~
    \evt@wits~
 }
  \fi
  % Pretty-print actions
  \ifx\evt@acts\@empty
  \def\evt@acts{\SKIP}
  \else
  \fi
  \def\evt@acts@tmp{
    \evt@acts
  \def\evt@acts@keyword{\Bthen}
  \ifx\evt@pars\@empty
  \ifx\evt@grds\@empty
  \def\evt@acts@keyword{\Bbegin}
  \else
  \fi
  \else
  \fi
  \def\pretty@acts{
    \evt@acts@keyword~
    \evt@acts@tmp~
  % Really do it now
  \begin{array}{1}
    \Bevt{\evt@name}~\widehat{=}~
    \pretty@sts
    \pretty@absevts
    \pretty@pars
    \pretty@grds
    \pretty@wits
    \pretty@acts
    \Bend
  \end{array}
}
%%%%% INITIALISATION label
\newBevt{init}
\ensuremath{\mbox{\%}\mbox{\%}\mbox{\%}}\mbox{\mbox{\mbox{$M$}}} Pretty print the initialisation: no ''refines'' clause. no parameters, no
%%%%% guards
%%%%% Arguments:
%%%%% 1. (Newline(\\)-separated) list of assignments.
%%%%%
%%%%% Usage: \int S1(v,x,y)\S2(w,x,y)
            will produce the following
%%%%%
```

\fi

```
%%%%%
%%%%%
          init
%%%%%
          begin
%%%%%
           S1(v, x, y)
%%%%%
           S2(w, x, y)
%%%%%
%%%%%
\newcommand{\initialisation}[1]{
 \event{\init}{}{}{}{#1}
%%%%% Theorem Proof Obligation
%%%%% Print the theorem proof obligation, given the theorem label.
%%%%% Arguments:
%%%%% 1. Theorem label
%%%%%
%%%%% Usage:
\%\%\% - \thmpo{thm} will produce "thm/THM"
%%%% Axiom Well-definedness Proof Obligation
%%%%% Print the axiom well-definedness proof obligation, given the
%%%%% axiom label.
%%%%% Arguments:
%%%%% 1. Axiom label
%%%%%
%%%%% Usage:
%%%%% - \axmwdpo{axm} will produce "axm/WD"
%%%%% Invariant Proof Obligation
%%%%% Print the invariant proof obligation, given the event name and
%%%%% invariant label
%%%%% Arguments:
%%%%% 1. Event name
%%%%% 2. Invariant label
%%%%%
%%%%% Usage:
%%%%% - \invpo{evt}{inv} will produce "evt/inv/INV"
%%%%% Theorem (in guard) Proof Obligation
%%%%% Print the simulation proof obligation, given the event name and
%%%%% the theorem (in guard) label.
%%%%% Arguments:
%%%%% 1. Event name
%%%%% 2. Theorem (in guard) label
%%%%%
%%%%% Usage:
%%%%% - \grdthmpo{evt}{thm} will produce "evt/thm/THM"
```

```
%%%%% Feasibility Proof Obligation
%%%%% Print the feasibility proof obligation, given the event name and
%%%%% the action label
%%%%% Arguments:
%%%%% 1. Event name
%///// 2. Action label
%%%%%
%%%%% Usage:
%%%%% - \fispo{evt}{act} will produce "evt/act/FIS"
%%%%% Variant finiteness Proof Obligation
%%%%% Print the Variant finiteness proof obligation
%%%% Arguments: No arguments
%%%%%
%%%%% Usage:
%%%%% - \finpo will produce "FIN"
\newcommand{\finpo}{\Bpo{FIN}}
%%%%% Variant Proof Obligation
%%%%% Print the guard strengthen proof obligation, given the event name
%%%%% Arguments:
%%%%% 1. Event name
%%%%%
%%%%% Usage:
%%%%% - \grdpo{evt} will produce "evt/VAR"
\newcommand{\varpo}[1]{\Bevt{#1}/\Bpo{VAR}}
%%%%% Simulation Proof Obligation
%%%%% Print the simulation proof obligation, given the event name and
%%%%% the action label.
%%%%% Arguments:
%%%%% 1. Event name
%%%%% 2. Action label
%%%%%
%%%%% Usage:
%%%%% - \simpo{evt}{act} will produce "evt/act/SIM"
%%%% Guard Strengthen Proof Obligation
%%%% Print the guard strengthen proof obligation, given the event
%%%%% name and the guard label
%%%%% Arguments:
%%%%% 1. (Abstract) Event name
%%%%% 2. (Abstract) Guard label
%%%%%
%%%%% Usage:
%%%%% - \grdpo{evt}{grd} will produce "evt/grd/GRD"
\newcommand{\grdpo}[2]{\Bevt{#1}/\Bgrd{#2}/\Bpo{GRD}}
%%%%% Variant Natural Number Proof Obligation
%%%%% Print the Variant Natural Number proof obligation, given the event name
```

```
%%%%% Arguments:
%%%%% 1. Event name
%%%%%
%%%%% Usage:
%%%%% - \natpo{evt} will produce "evt/NAT"
\newcommand{\natpo}[1]{\Bevt{#1}/\Bpo{NAT}}
```

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the definition; numbers in roman refer to the pages where the entry is used.

Symbols	\Binv 5, 8, 10, 15	\evt@acts@keyword 12, 14
\@empty 2, 4, 6, 11-14	\Bkeyword 1, 2, 4, 5	\evt@acts@tmp 12, 14
\\ 1, 3, 4, 9–12, 14	\Blabel	\evt@grds 11-14
_ \ 5-10	\Bmch 5, 7	\evt@grds@tmp 11, 13
(3 10	\Bpar 5, 8	\evt@name 11-14
	\Bpo 1, 2, 15–17	\evt@pars 11-14
\	\Brefines 5, 11, 13	\evt@sts 11, 13
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	\Bsection 2-4, 9, 10	\evt@wits 11, 13, 14
${f A}$	\Bsep 2-4, 11, 12	\expandafter 6
\aaa 5-9	\Bset 5, 6	(expander ter o
\axioms 9	\Bstatus 5, 11	F
\axmwdpo 15	\Bthen 5, 12, 14	\fbox 2, 3
-	\Bthm 5, 7, 15	\fboxsep 2, 3
${f B}$	\Bvrb 5, 7	\fi 2, 5, 6, 11-14
\B@declaration $2-4$	\Bvspace 1, 3, 4	\finpo 16
\B@event $3, 4, 10-12$	\Bwhen 5, 11, 13	\fispo 16
\B@eventinline . $3, 4, 13$	\Bwhere 5, 11, 13	\footnotesize 3
\B@identifier $1, 2$	\Bwith 5, 11, 14	
\B@keyword \dots 1, 2	, ,	\mathbf{G}
\B@label 1, 2	${f C}$	\grdpo 16
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$\label{eq:bounds} $$ \B@oldfboxsep \dots 2-4$ $$ \B@po \dots 1, 2, 5$$		
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$\label{eq:bounds} $$ \B@oldfboxsep \dots 2-4$ $$ \B@po \dots 1, 2, 5$$	\colorlet 2 \constants 9	\grdthmpo 15 H
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$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	\constants 9 \csname 6	\grdthmpo 15 H \hbox 5 \hspace 2-4 I
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$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	\colorlet	\grdthmpo 15 H \hbox 5 \hspace 2-4 I \ifx 2, 4, 6, 11-14 \in 9, 10
\B@oldfboxsep 2-4 \B@po 1, 2, 5 \B@section 2-4 \Bact 5, 9, 16 \Bany 5, 11, 13 \Baxm 5, 7, 9, 15 \Bbap 5 \Bbegin 5, 12, 14 \Bcst 5, 6	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	\grdthmpo 15 H \hbox 5 \hspace 2-4 I \ifx 2, 4, 6, 11-14 \in 9, 10 \init 14, 15
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Change History

v1.0 General: Initial version 1