Simplenodes

Bob Vergauwen

April 2, 2022

Contents

1 Introduction **2**

2 Usage **2**

2.1 Creating a node 3

2.2 Linking nodes 3

2.3 Positioning nodes 3

3 Package options **3**

4 Examples **4**

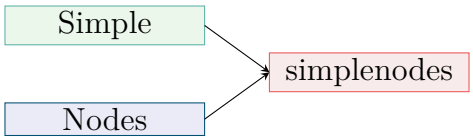
4.1 Hello world 4

4.2 More color 4

4.3 Order of the arrows and doule arrows 5

4.4 Overly complex 5

5 Implementation **6**



1 Introduction

Creating tikz figures may be fun but after a while it becomes repetitive and you find yourself implementing the same repetitive patterns over and over again. This has a few negative effects on your daily productivity;

- bad coding style by copy-pasting old solutions,
- un-maintainable code,
- repeating yourself over and over again,
- inconsistent styles in a single document and over multiple documents.

This package tries to solve these issues by providing two simple commands;

- one command to create simple nodes,
- one command to link these nodes. Some simple styling options can be changed upon loading the package.

2 Usage

After including the package via the command

```
\usepackage{simplenodes}
```

all package commands are available.

2.1 Creating a node

Four different nodes are supported at the moment;

Command	Result
`\simplenode{name}{Normal}`	Normal
`\examplenode{name}{Example}`	Example
`\warnnode{name}{Warning}`	Warning
`\alertnode{name}{Alert}`	Alert

The first parameter is the `name` used to link two nodes together. The third parameter is the `text` displayed inside the node.

2.2 Linking nodes

Linking nodes is done via the command `\link{name1}{name2}`, where the name is defined upon creating the node.

2.3 Positioning nodes

The intended use of this package is to position the nodes using the tabular environment. Nodes can be placed in cells of tables to create an easy and even layout. This usage is demonstrated in the examples. The usage of this package is not restricted to this usecase.

3 Package options

A few packaged options are provided by using

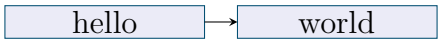
```
\usepackage[name1=value1,name2=value2,...]{simplenodes}
```

The name, default value and description is provided in the following table

Name	Default	Description
`align`	center	Specifies the alignment of the text in the nodes.
`width`	25mm	The width of the nodes.
`innersep`	2pt	The inner separation between the text and the node.
`outersep`	0pt	The outer separation between the nodes.
`thickness`	0.4pt	The line thickness of the nodes and links.

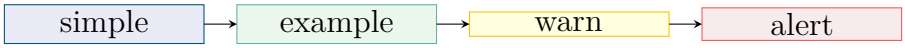
4 Examples

4.1 Hello world




```
\begin{tabular}{ll}
\simplenode{hello}{hello} & \simplenode{world}{world}\\
\end{tabular}
\link{hello}{world}
```

4.2 More color

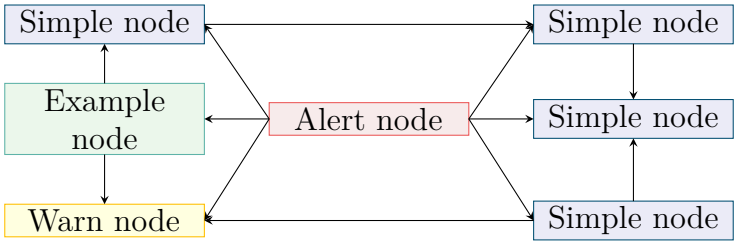



```
\begin{tabular}{llll}
\simplenode{1}{simple} &
\examplenode{2}{example} &
\warnnode{3}{warn} &
\alertnode{4}{alert}\\
\end{tabular}
\link{1}{2}
\link{2}{3}
\link{3}{4}
```

4.3 Order of the arrows and doule arrows

```
\begin{tabular}{lll}
\simplenode{1}{node 1} & \examplenode{2}{node 2} & \warnnode{3}{node 3}\\
\end{tabular}
\end{center}
\link{1}{2}
\link{2}{3}
\link{3}{2}
```

4.4 Overly complex




```
\begin{tabular}{lllll}
\simplenode{11}{ Simple node} &  &  &  & \simplenode{13}{ Simple node}\\
 &  &  &  & \\
\examplenode{21}{ Example node} &  & \alertnode{22}{Alert node}
                                    &  & \simplenode{23}{ Simple node}\\
 &  &  &  & \\
\warnnode{31}{ Warn node} &  &  &  & \simplenode{33}{ Simple node}\\
 &  &  &  & \\
\end{tabular}
\link{22}{23} \link{22}{21} \link{22}{33}
```

```
\link{22}{31} \link{22}{11} \link{22}{13}
\link{11}{13} \link{33}{31} \link{21}{11}
\link{21}{31} \link{13}{23} \link{33}{23}
```

5 Implementation

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{simplenodes}[
   2022/03/31 A packages that provides simple nodes in four colors.
]

\RequirePackage{kvoptions}

\DeclareStringOption[25mm]{width}
\DeclareStringOption[center]{align}
\DeclareStringOption[2pt]{innersep}
\DeclareStringOption[0pt]{outersep}
\DeclareStringOption[0.4pt]{thickness}
\ProcessKeyvalOptions*

\RequirePackage{kvoptions}
\RequirePackage{tikz}
\RequirePackage{color}
\usetikzlibrary{math}

% Coordinate manipulations
\newcommand{\gettikzxy}[3]{%
  \tikz@scan@one@point\pgfutil@firstofone#1\relax
  \edef#2{\the\pgf@x}%
  \edef#3{\the\pgf@y}%
}

% Define the main color
\definecolor{InvisibleRed}{rgb}{0.97, 0.92, 0.92}
\definecolor{InvisibleGreen}{rgb}{0.92, 0.97, 0.92}
\definecolor{InvisibleBlue}{rgb}{0.92, 0.92, 0.97}
\definecolor{InvisibleYellow}{rgb}{1.0, 1.0, 0.88}
```

```
\definecolor{MediumRed}{rgb}{0.925, 0.345, 0.345}
\definecolor{MediumGreen}{rgb}{0.37, 0.7, 0.66}
\definecolor{MediumBlue}{rgb}{0.015, 0.315, 0.45}
\definecolor{MediumYellow}{rgb}{1.0, 0.75, 0.0}

% Define the node
\newcommand\mynode[2]{
    \tikz[remember picture,baseline]
    \node[
        draw=#1,fill=#2,
        rectangle,
        line width = \simplenodes@thickness,
        align=\simplenodes@align,
        text width=\simplenodes@width,
        inner sep=\simplenodes@innersep,
        outer sep=\simplenodes@outersep
        ]
}

% Define the line
\newcommand\myline[2]{
    \draw[
        ->,
        line width = \simplenodes@thickness
    ] (#1) to (#2);
}

\newcommand\link[2]{
    \begin{tikzpicture}[
      remember picture, overlay, >=stealth, shift={(0,0)}
    ]
        \gettikzxy{(#1)}{\ax}{\ay}
        \gettikzxy{(#2)}{\bx}{\by}
        \tikzmath{
            if \ax == \bx then {
                if \ay < \by then {
                    {\myline{#1.north}{#2.south}};
```

```
                };
                if \ay > \by then {
                    {\myline{#1.south}{#2.north}};
                };
            };
            if \ax < \bx then {
                {\myline{#1.east}{#2.west}};
            };
            if \ax > \bx then {
                {\myline{#1.west}{#2.east}};
            };
        };
    \end{tikzpicture}
}

% Provide the commands
\newcommand\simplenode[2]{\mynode{MediumBlue}{InvisibleBlue} (#1){#2};}
\newcommand\examplenode[2]{\mynode{MediumGreen}{InvisibleGreen} (#1){#2};}
\newcommand\alertnode[2]{\mynode{MediumRed}{InvisibleRed} (#1){#2};}
\newcommand\warnnode[2]{\mynode{MediumYellow}{InvisibleYellow} (#1){#2};}
```