`simtools` Package Documentation*

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2022/09/18

Abstract

This package provides utilities for simulation reports, including data array, Ti*k*Z/pgf plotting, table generation from raw data. This can be especially useful for automatic report generation from a simulation software that hopes for an elegant solution of LaTeX report.

1 Introduction

This package is for simulation report generation. With raw simulation data, you can easily generate elegant Ti*k*Z/pgf plotting as well as data tables.

The package is initially part of mmCEsim project where it is used to generate simulation report in LaTeX format. I hope that this package may also be useful to other researchers. The package can be freely used and distributed which is open source at https://github.com/mmcesim/simtools under the MIT License.

2 Data Array

`simtools` package provides user-friendly array access. The implementation is taken from TEX.SX written by **@egreg**.

3 The Code

```
\RequirePackage{xparse}
```

The following `\storedata` and `\getdata`, etc. code related to data array operations are all taken from TEX.SX written by **@egreg**.

```
\ExplSyntaxOn
```

`\storedata` Store data listed inside `{}` into an array.

```
\NewDocumentCommand{\storedata}{mm}
 {
  \bcp_store_data:nn { #1 } { #2 }
 }
```

`\appenddata` Append data to the array.

```
\NewDocumentCommand{\appenddata}{mm}
```

*The file has version number 1.0, last revised 2022/09/18.

```
{
 \bcp_append_data:nn { #1 } { #2 }
}
```

\getlength Get the length of the array.

```
\NewExpandableDocumentCommand{\getdata}{O{1}m}
{
 \bcp_get_data:nn { #1 } { #2 }
}
```

\removelast Remove the last element from the array.

```
\NewExpandableDocumentCommand{\getlength}{m}
{
 \seq_count:c { l_bcp_data_#1_seq }
}
```

\removelast Remove the last element from the array.

```
\NewDocumentCommand{\removelast}{om}
{
 \IfNoValueTF { #1 }
  {
   \bcp_remove_last:Nn \l_tmpa_tl { #2 }
  }
  {
   \bcp_remove_last:Nn #1 { #2 }
  }
}
```

Further implementation of the array interface.

```
\cs_new_protected:Npn \bcp_store_data:nn #1 #2
{
 % create the sequence if it doesn't exist or clear it if it exists
 \seq_clear_new:c { l_bcp_data_#1_seq }
 % append the items
 \__bcp_append_data:nn { #1 } { #2 }
}
\cs_new_protected:Npn \bcp_append_data:nn #1 #2
{
 % create the sequence if it doesn't exist, do nothing if it exists
 \seq_if_exist:cF { l_bcp_data_#1_seq }
  { \seq_new:c { l_bcp_data_#1_seq } }
 % append the items
 \__bcp_append_data:nn { #1 } { #2 }
}
\cs_new_protected:Npn \__bcp_append_data:nn #1 #2
{
 % append items one at a time
 \tl_map_inline:nn { #2 }
  {
   \seq_put_right:cn { l_bcp_data_#1_seq } { ##1 }
  }
}
\cs_new:Npn \bcp_get_data:nn #1 #2
{
```

```
  % retrieve the requested item
  \seq_item:cn { l_bcp_data_#2_seq } { #1 }
 }
\cs_new_protected:Nn \bcp_remove_last:Nn
 {
  \seq_pop_right:cN { l_bcp_data_#2_seq } #1
 }
\ExplSyntaxOff
```

`\hello` This is the function to display “Hello world!”

```
\newcommand{\hello}{Hello world!}
```