pbdPROF

October 16, 2013

`pbdPROF-package` *MPI Profiling Tools*

Description

This package contains several libraries for profiling MPI codes, as well as some R tools for parsing, analyzing, and plotting their outputs.

Details

Package:	pbdPROF
Type:	Package
License:	MPL
LazyLoad:	yes

This package requires an MPI library (OpenMPI, MPICH2, or LAM/MPI).

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References

Programming with Big Data in R Website: http://r-pbd.org/

Examples

```
## Not run:
demo(allreduce.fpmpi, "pbdPROF")
demo(svd.fpmpi, "pbdPROF")
demo(masterslavePI.fpmpi, "pbdPROF")
demo(allreduce.mpip, "pbdPROF")
demo(svd.mpip, "pbdPROF")
demo(masterslavePI.mpip, "pbdPROF")

## End(Not run)
```

`Profilers` *Profilers*

Description

Profilers Directly Supported by pbdPROF

Details

Currently, the **fpmpi** library is fully supported; a version of this library is bundled with the source of the pbdPROF package (see package vignette for more details). Additional libraries can easily be linked with pbdPROF, but these are not yet fully supported. The **mpiP** and **TAU** profilers are expected to be fully supported by the conclusion of Google Summer of Code (~September 30 2013).

References

Programming with Big Data in R Website: `http://r-pbd.org/`

fpmpi website: `http://www.mcs.anl.gov/research/projects/fpmpi/WWW/`

mpiP website: `http://mpip.sourceforge.net/`

TAU website: `http://www.cs.uoregon.edu/research/tau/home.php`

`prof-class` *Class prof*

Description

Class for Profiler Output

Slots

`profiler`**:** the profiler used stored as `character` data.

`raw`**:** raw profiler output (read in via `readLines()` cast as the virtual class `rawprof`.

`parsed`**:** a dataframe containing the parsed version of the `raw` slot.

Details

The prof class is a simple container for managing profiler output via R.

The slots are profiler, raw, and parsed. The first, profiler, is just a character string consisting of the profiler used to generate the output (e.g., "fpmpi", "mpiP", etc.).

Next, the slot raw contains the raw output from the profiling library, stored in R as a vector of character data (strings) directly from a readLines() call, and cast as the virtual class rawprof. In reality, we will cast the raw data as a virtual class of the same name as that found in the profiler slot, and rawprof is a superclass of each of these classes. This is for internal S3 dispatch. You should not mess around with this.

The final slot, parsed, contains a condensed version of the information from the raw slot, stored as a dataframe. This is the representation used for plotting.

Unless you really think you know what you are doing, you probably shouldn't directly mess around with the elements of this class. Instead, simply use the read.prof() function.

See Also

read.prof

Example datasets *Small example datasets*

Description

Sample profiler outputs for testing and package demonstration.

Format

Each dataset contains information profiled by **fpmpi** for pbdMPI/demo/allreduce.fpmpi.r, pbdDMAT/demo/svd.fpmpi.r, and Rmpi/demo/masterslavePI.fpmpi.r.

Each dataset contains information profiled by **mpiP** for pbdMPI/demo/allreduce.mpip.r, pbdDMAT/demo/svd.mpip.r, and Rmpi/demo/masterslavePI.mpip.r.

Details

Several sample profiler outputs are provided with the package, and utilized in the package demos to show off the functionality of the parsing and plotting methods provided by the package. These small datasets are located in the pbdPROF/extdata/ folder of the installed package (and pbdPROF/inst/extdata/ in the package source).

The example datasets are profiled in 2 processors.

read prof *Reading Profiling Outputs*

Description

Reader for profiler outputs.

Usage

```
read.prof(file.name, ...)
```

Arguments

`file.name`	a full file name.
`...`	options for `readLines`

Details

This function reads in profiling outputs from MPI-using R code and stores the output in a `prof` class object. The reading is managed by the `base::readLines()` function. The user does not need to specify the type of profiler output being used (e.g., whether the profiler text is from **fpmpi**, **mpiP**, etc.).

Additionally, this method automatically parses the output into a condensed, manageable dataframe (the `parsed` slot of the `prof` class).

Value

A `prof` class object.

See Also

`prof-class`

Examples

```
## Not run:
library(pbdPROF)

fn <- system.file("data/allreduce.fpmpi", package = "pbdPROF")
da <- read.prof(fn, lib.type = "fpmpi")

da

## End(Not run)
```

Print *Printing*

Description

Print and show methods for `prof` class objects.

Usage

```
  ## S4 method for signature prof
print(x, ...)
  ## S4 method for signature prof
show(object)
```

Arguments

`x, object`	prof class object
`...`	extra arguments

Methods

```
signature(x = "prof")
```

See Also

`prof-class`, `read.prof`

Plot *Plotting*

Description

Plot methods for `prof` class objects.

Usage

```
  ## S4 method for signature prof
plot(x, ..., which=1L:4L, show.title=TRUE,
                        plot.type="timing", label, bar.label=FALSE)
  ## S3 method for class prof
autoplot(object, ...)
```

Arguments

`x` `prof` class object

`object` `prof` class object

`...` extra arguments

`which` Vector consisting of a subset of the integers 1, 2, 3, 4. Determines which plots will be produced.

`show.title` Logical; determines whether or not the plot title will be shown.

`plot.type` for profiling mpiP including "timing", "stats1", "stat2", "messages1", "message2", and "counts".

`label` The label for the plot title.

`bar.label` show labeled legend.

Methods

`signature(x = "prof")`

See Also

`prof-class`, `read.prof`

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