Package 'gdiff'

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Type Package

Title Graphical Difference Testing

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Description Functions for performing graphical difference testing.
Differences are generated between raster images.
Comparisons can be performed between different package
versions and between different R versions.

Imports grDevices, utils, tools, parallel, magick, pdftools

Suggests gridBezier, grImport, metapost, ssh, stevedore

URL https://github.com/pmur002/,
https://stattech.wordpress.fos.auckland.ac.nz/2020/01/06/2020-01-visual-testing-for-graphics-in-r/

License GPL (>= 2)

NeedsCompilation no

Repository CRAN

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Contents

`diffFiles` *Names of Files Showing Differences*

Description

List all files that show differences between control and test output (as red pixels).

Usage

```
diffFiles(x)
```

Arguments

x	A "gdiffComparison" object, as created by gdiff or gdiffCompare.

Value

A character vector of file names (with paths).

Author(s)

Paul Murrell

See Also

gdiff and gdiffCompare.

Examples

```
f1 <- function() plot(1)
f2 <- function() plot(2)

result <- gdiff(list(control=f1, test=f2), name="f",
                controlDir=file.path(tempdir(), "Control"),
                testDir=file.path(tempdir(), "Test"),
                compareDir=file.path(tempdir(), "Compare"))
result
diffFiles(result)
```

gdiff *Generate and Compare Control and Test Output*

Description

Generate a set of "control" graphical output files in one directory, a set of "test" graphical output files in another directory, and compare the two sets of output files (possibly generating "compare" graphical output of the differences in a third directory).

Usage

```
gdiff(x, ...)
## S3 method for class 'function'
gdiff(x, name=deparse(substitute(x)), ...)
## S3 method for class 'list'
gdiff(x, name, ...)
```

Arguments

`x`	Either a function, or a named list of functions (with names `control` and `test`).
`name`	A name to be used for output files.
`...`	Further arguments, currently including:

controlDir, testDir, compareDir The names of the directories where output is produced.

clean A logical indicating whether the output directories should be emptied. Can also be a list of logicals with names `control`, `test`, and `compare`.

compare A logical indicating whether to perform the comparison step.

device A specification of the graphics device to use for output; see `gdiffDevice`. Can also be a list of graphics devices.

session A specification of the R session to use for output; see `gdiffSession`. Can also be a list of sessions with names `control` and `test`.

ncpu How many cpus to employ when generating output.

Value

A `"gdiffComparison"` object, which is a list containing information about the output files generated and the differences detected.

Author(s)

Paul Murrell

See Also

`gdiffExamples`, `gdiffPackage`, `gdiffOutput`, and `gdiffCompare`.

Examples

```
f <- function() plot(1)

gdiff(f,
      controlDir=file.path(tempdir(), "Control"),
      testDir=file.path(tempdir(), "Test"),
      compareDir=file.path(tempdir(), "Compare"))
```

`gdiffCompare` *Compare Control and Test Output*

Description

Compare a set of "control" graphical output files in one directory with a set of "test" graphical output files in another directory (possibly generating "compare" graphical output of the differences in a third directory).

Usage

```
gdiffCompare(controlDir, testDir, compareDir, ...)
```

Arguments

`controlDir`, `testDir`, `compareDir`	The names of the directories where output is produced.
`...`	Further arguments, not currently used.

Value

A `"gdiffComparison"` object, which is a list containing information about the output files generated and the differences detected.

Author(s)

Paul Murrell

See Also

`gdiff`, and `gdiffOutput`.

gdiffDevice *Define a Graphics Device for Generating Output*

Description

Define the device to be used for generating graphical output files. There are several predefined graphical devices, e.g., `pngDevice()`, and further devices can be defined using `gdiffDevice()`.

Usage

```
pngDevice(...)
pdfDevice(...)
postscriptDevice(...)
cairo_pdf_device(suffix=".cairo.pdf", ...)

gdiffDevice(name, suffix=name, open,
            close=function(dir, name) dev.off())
```

Arguments

`name`	A name for the device (used by default for naming output files).
`suffix`	A suffix to be used for output files.
`open`	A function that opens a graphics device; this should open the device in such a way that multiple pages of graphical output will produce multiple files.
`close`	A function that closes the graphics device.
`...`	Further arguments typically used within the function that opens the device.

Value

A `"gdiffDevice"` object, which may be used as the `device` argument to `gdiff`.

Author(s)

Paul Murrell

See Also

`gdiff`.

Examples

```
f <- function() plot(1)

gdiff(f, device=pdfDevice(),
      controlDir=file.path(tempdir(), "Control"),
      testDir=file.path(tempdir(), "Test"),
      compareDir=file.path(tempdir(), "Compare"))
```

gdiffExamples *Generate and Compare Control and Test Output for Function Examples*

Description

Generate a set of "control" graphical output files in one directory, a set of "test" graphical output files in another directory, and compare the two sets of output files (possibly generating "compare" graphical output of the differences in a third directory).

Usage

```
gdiffExamples(fun, ...)
## S3 method for class 'function'
gdiffExamples(fun, name=NULL, ...)
## S3 method for class 'character'
gdiffExamples(fun, name=fun, ...)
```

Arguments

fun	Either a function or the name of a function.
name	A name to be used for output files.
...	Further arguments; see gdiff.

Value

A "gdiffComparison" object, which is a list containing information about the output files generated and the differences detected.

Author(s)

Paul Murrell

See Also

gdiff and gdiffPackage.

Examples

```
gdiffExamples(plot,
              controlDir=file.path(tempdir(), "Control"),
              testDir=file.path(tempdir(), "Test"),
              compareDir=file.path(tempdir(), "Compare"))
```

gdiffExamplesOutput *Generate Output Files from Function Examples*

Description

Generate a set of graphical output files by running the examples from the help page for a function.

Usage

```
gdiffExamplesOutput(fun, dir, ...)
## S3 method for class 'function'
gdiffExamplesOutput(fun, dir, name=NULL, ...)
## S3 method for class 'character'
gdiffExamplesOutput(fun, dir, name=fun, ...)
```

Arguments

fun	Either a function or the name of a function.
dir	The name of a directory in which to create output files.
name	A name to be used for output files.
...	Further arguments; see gdiffOutput.

Value

A character vector containing the names (and paths) of all output files that were generated.

Author(s)

Paul Murrell

See Also

gdiffOutput and gdiffPackageOutput.

Examples

```
gdiffExamplesOutput(plot, dir=file.path(tempdir(), "Control"))
```

gdiffOutput *Generate Graphical Output*

Description

Generate a set of graphical output files.

Usage

```
gdiffOutput(x, dir, ...)
## S3 method for class 'function'
gdiffOutput(x, dir, name=deparse(substitute(x)), ...)
```

Arguments

x	A function.
dir	The name of a directory in which to create output files.
name	A name to be used for output files.
...	Further arguments, currently including:

clean A logical indicating whether the output directories should be emptied. Can also be a list of logicals with names `control`, `test`, and `compare`.

device A specification of the graphics device to use for output; see `gdiffDevice`. Can also be a list of graphics devices.

session A specification of the R session to use for output; see `gdiffSession`. Can also be a list of sessions with names `control` and `test`.

ncpu How many cpus to employ when generating output.

Value

A character vector containing the names (and paths) of all output files that were generated.

Author(s)

Paul Murrell

See Also

`gdiffExamplesOutput`, `gdiffPackageOutput`, and `gdiff`.

Examples

```
f <- function() plot(1)

gdiffOutput(f, dir=file.path(tempdir(), "Control"))
```

gdiffPackage *Generate and Compare Control and Test Output for a Package*

Description

Generate a set of "control" graphical output files in one directory, a set of "test" graphical output files in another directory, and compare the two sets of output files (possibly generating "compare" graphical output of the differences in a third directory).

Usage

```
gdiffPackage(pkg, ...)
```

Arguments

pkg	The name of a package.
...	Further arguments; see gdiff.

Value

A "gdiffComparison" object, which is a list containing information about the output files generated and the differences detected.

Author(s)

Paul Murrell

See Also

gdiff and gdiffExamples.

gdiffPackageOutput *Generate Output Files from Function Package*

Description

Generate a set of graphical output files by running the examples from the help page for a function.

Usage

```
gdiffPackageOutput(pkg, dir, ...)
```

Arguments

pkg	The name of a package.
dir	The name of a directory in which to create output files.
...	Further arguments; see gdiffOutput.

Value

A character vector containing the names (and paths) of all output files that were generated.

Author(s)

Paul Murrell

See Also

gdiffOutput and gdiffExamplesOutput.

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gdiffSession *Define an R Session for Generating Output*

Description

Define the R session to be used for generating graphical output files. There are several predefined sessions, e.g., currentSession(), and further sessions can be defined using gdiffSession().

Usage

```
currentSession(libPaths=NULL)
localSession(libPaths=NULL,
             Rpath=file.path(R.home("bin"), "Rscript"),
             ...)
remoteSession(remote, ...)
## S3 method for class 'character'
remoteSession(remote, libPaths=NULL, Rpath="Rscript", ...)
## S3 method for class 'cluster'
remoteSession(remote, libPaths=NULL, user=NULL, ...)
dockerSession(image, volumes=NULL, env=NULL, network="bridge",
              libPaths=NULL, Rpath="Rscript", ...)

gdiffSession(class, ...)
gdiffGenerateOutput(codeFun, dir, device, clean, ncpu)
```

Arguments

libPaths	One or more paths to installed R packages.
Rpath	A path to an Rscript binary.
remote	Either the name of a host or a cluster object (as produced by parallel::makeCluster()).
user	A user name.
image	The name of a Docker image.
volumes	A character vector of volumes to mount on the container (of the form /path/on/host:/path/on/contai

env	A character vector of environment variable settings for the container (of the form VAR=value).
network	A character vector describing the network connection for the container.
class	A unique class for a new type of R session.
...	Further arguments for future methods.
codeFun, dir, device, clean, ncpu	Arguments passed to generateOutput methods that can be passed on to gdiffGenerateOutput.

Details

When defining a new session, gdiffSession() is just used to establish a new class. The important thing to do is to provide a generateOutput method for that class. Typically, this method will call gdiffGenerateOutput().

Value

A "gdiffSession" object, which may be used as the session argument to gdiff.

Author(s)

Paul Murrell

See Also

gdiff.

Examples

```
f <- function() plot(1)

gdiff(f, session=currentSession(),
      controlDir=file.path(tempdir(), "Control"),
      testDir=file.path(tempdir(), "Test"),
      compareDir=file.path(tempdir(), "Compare"))
```

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samePDF *Compare Two PDF Files*

Description

Check whether two PDF files have the same content, ignoring some details like creation time and modification time.

Usage

```
samePDF(file1, file2)
```

Arguments

`file1`, `file2` Names of PDF files to compare.

Details

This function will compare any two files, byte by byte, but if a file is a PDF file that was generated by R, it will discard the file header, which may contain differences that do not matter, such as the creation date.

Value

A logical value.

Author(s)

Paul Murrell

Examples

```
f1 <- tempfile(fileext=".pdf")
f2 <- tempfile(fileext=".pdf")
pdf(f1)
plot(1)
dev.off()
pdf(f2)
plot(2)
dev.off()
samePDF(f1, f1)
samePDF(f1, f2)
```

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