

# Package ‘colorDF’

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**Title** Colorful Data Frames in R Terminal

**Version** 0.1.7

**Description** Colorful Data Frames in the terminal. The new class does change the behaviour of any of the objects, but adds a style definition and a print method. Using ANSI escape codes, it colors the terminal output of data frames. Some column types (such as p-values and identifiers) are automatically recognized.

**URL** <https://january3.github.io/colorDF/>,  
<https://github.com/january3/colorDF/>

**Depends** R (>= 2.10)

**License** GPL-3

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colorDF-package	<i>colorDF – colorful data frames in your terminal</i>
-----------------	--

---

## Description

colorDF – colorful data frames in your terminal

## Details

colorDF allows you to view data frames using the color and styling capabilities of an ANSI terminal: 216 colors! 16 base colors! 24 shades of gray! Italic, bold, inverse *and* underline! Well, OK, this may not seem much, but in fact it allows at highlighting, showing different column types or coloring significant p-values in red. Trust me, it is useful if you work a lot with huge data frames.

colorDF does not really introduce a new type of a data frame; when applied to tibbles, data frames or data tables it does not change their behavior except for the print method. In other words, it is only a visualization layer on top of a data frame like object, which will otherwise work exactly as expected.

To get started, continue with the [colorDF\(\)](#) help page.

## Known issues

- In Rstudio, inverse does not work correctly (known bug in Rstudio 1.3)
- colorDF relies on the [crayon](#) package. In certain instances, the crayon package will enforce only 8 basic colors even if more colors can be displayed. See the vignette of colorDF for an example and on how to deal with this issue.

**See Also**

[colorDF\(\)](#) on creating colorful data frames; [global options](#) for colorDF; [df\\_style\(\)](#) on how to modify style of the colorful data frame; [col\\_type\(\)](#) on how to change column types; [colorDF\\_themes\(\)](#) to list all themes; [colorDF\\_themes\\_show\(\)](#) to view all themes.

---

add_colorDF_theme	<i>Add a new theme</i>
-------------------	------------------------

---

**Description**

Add a new theme

**Usage**

```
add_colorDF_theme(theme, id, description = NULL)
```

**Arguments**

theme	a list containing style definitions
id	an identifier (name) for the theme
description	Description of th theme

**Value**

invisibly the new theme.

**Examples**

```
newtheme <- get_colorDF_theme("bw")
## Like "bw" theme, but significant p-values are red
newtheme$type.styles$pval$fg_sign <- "#FF0000"
add_colorDF_theme(newtheme, "new", "My new theme")
```

---

colorDF	<i>Make a dataframe colorful</i>
---------	----------------------------------

---

**Description**

Make a dataframe colorful

**Usage**

```
colorDF(x, theme = NULL)

as.colorDF(x, ...)
```

**Arguments**

x	a data frame or similar object, e.g. <code>tibble</code> , <code>data.table</code> or any object for which <code>as.data.frame</code> call returns a data frame
theme	Which theme to use
...	further arguments are passed to <code>colorDF()</code> .

**Details**

These functions turn any data frame like object (i.e. object which inherits the `data.frame` class, such as a `tibble` or a `data table`).

Apart from adding the S3 class "colorDF", the `.style` attribute (and later the `.coltp` attribute), the only thing that really changes is the print method (see `print_colorDF()`). In other words, the behavior of the object does not change (e.g., a `base::data.frame()` will by the default drop dimensions if one column is selected, while a `tibble::tibble()` will not). `colorDF` is just for visualization, never truly manipulation.

Several color themes come with the package; see `colorDF_themes_show()`. When creating a colorful data frame, a theme might be directly selected; otherwise the `getOption("colorDF_theme")` is consulted and if `NULL`, a default theme will be selected. The theme associated with an object becomes a style and can be further manipulated (see `df_style()`).

`as.colorDF()` calls `colorDF()`; this function is only here for completeness.

**Value**

a colorful data frame – identical object but with the `.style` attribute set and class "colorDF" added.

**See Also**

[Introduction to the package](#); `df_style()` on how to modify style of the colorful data frame; `col_type()` on how to change column types; `colorDF_themes()` to list all themes; `colorDF_themes_show()` to view all themes.

**Examples**

```
colorDF(mtcars)
colorDF(mtcars, theme="bw")
```

---

colorDF-global-options

*Global options for colorDF*

---

**Description**

The behavior of colorful data frames can be influenced by a number of global options set with `options()`. All options and their defaults can be viewed with `colorDF_options()`.

**Usage**

```
colorDF_options()
```

**Details**

The following global options are interpreted by functions in the colorDF package:

- `colorDF_n` (default: 20): how many rows at maximum are printed (set to Inf to always show all rows).
- `colorDF_theme` (default: "light"): theme assigned by default to the new objects by `colorDF()` (and also when passing a data frame directly to `summary_colorDF()`).
- `colorDF_tibble_style` (default: FALSE): if TRUE, then only column will be shown which fit on the screen (much like in the default print method for `tibbles`).
- `colorDF_noitalic` (default: FALSE): some terminals do not support italics and instead use video inverse. This will make some styles look really weird. If this option is set to TRUE at time that the colorDF package is loaded, then the italic style will be silently ignored. Changing this option will have no effect when set after the package is loaded, so best put it in your `.Rprofile`.
- `colorDF_sep`: separator for the table columns
- `width`: width of the terminal in characters

**See Also**

`colorDF()` on creating colorful data frames; `df_style()` on how to modify style of the colorful data frame; `colorDF_themes()` to list all themes; `colorDF_themes_show()` to view all themes.

**Examples**

```
## use the dark theme for a terminal with dark background
options(colorDF_theme="dark")
colorDF(mtcars)
```

---

<code>colorDF_themes</code>	<i>List all available themes for colorful data frames</i>
-----------------------------	---

---

**Description**

List all available themes for colorful data frames

**Usage**

```
colorDF_themes()
```

**Value**

A character vector with the names of the themes

**See Also**

[colorDF\\_themes\\_show\(\)](#) for a demonstration of all themes.

---

colorDF\_themes\_show     *Demonstrate all defined themes*

---

**Description**

Demonstrate all defined themes

**Usage**

```
colorDF_themes_show(themes = NULL, force_bg = FALSE)
```

**Arguments**

themes	character vector with theme names to show
force_bg	force background to "white" for light themes and "black" for dark themes

**Details**

"Themes" are simply predefined styles for colorful data frames. Some are suitable only for dark or light backgrounds, so this function is useful for choosing what looks best on your terminal.

When a colorful data frame is created with [colorDF\(\)](#) or [as.colorDF\(\)](#), the default theme is assigned to it. The default theme is defined by the option "colorDF\_theme" set using [options\(\)](#) (at startup, the default theme is "light").

You can also specify the theme to use when making a data frame colorful with [colorDF\(\)](#) by using the theme= parameter.

**Examples**

```
colorDF_themes_show()  
colorDF_themes_show(themes=c("wb", "bw"))
```

---

col\_type<-                    *Set or retrieve a column type*

---

## Description

Set or retrieve a column type of a colorful data frame

## Usage

```
col_type(x, cols = NULL) <- value
```

```
col_type(x, cols = NULL)
```

## Arguments

x	a colorful data frame
cols	column names to set or retrieve
value	character vector with column types

## Details

Rather than directly assigning a style to a column (which is possible using the `col.styles` element) it is preferable to change a style associated with a column type. Several such types are defined in the default styles:

- character
- numeric
- integer
- factor
- identifier
- pval
- match
- hidden
- default

Of course, new column types may be defined and their formatting defined in a theme or a particular data frame style.

## Examples

```
mc <- colorDF(mtcars)
col_type(mc, "gear") <- "factor"
col_type(mc, "gear")
col_type(mc) <- list(gear="factor", cyl="integer")
## Note: the *class* of the columns did not change!
```

```
## Chaning column type merely changes the way it is displayed
class(mcl[["gear"]])

## Hide some columns
col_type(mc, c("disp", "hp")) <- "hidden"

## Create a new type and style
col_type(mc, "carb") <- "carbstyle"
df_style(mc)$type.styles$carbstyle <- list(fg="red", decoration="bold")
```

---

df\_search

*Search and highlight occurences of a pattern*


---

## Description

Search and highlight occurences of a pattern in a data frame

## Usage

```
df_search(x, pattern = NULL, cols = NULL)
```

## Arguments

x	a data frame
pattern	a pattern; if NULL, the search results will be removed
cols	which columns to search for (if NULL, all columns will be searched)

## Details

df\_search is for highlighting cells matching a specific pattern.

## Value

a color data frame object with the search pattern set for the given columns (or reset, if the pattern was NULL)

## Examples

```
options(colorDF_tibble_style=TRUE)
if(require(dplyr)) {

  # Search for "blue" in any column
  starwars %>% df_search("blue")

  # Search in a specific column
  starwars %>% df_search("(Human|Wookiee)", "species")

  # save the search pattern in a new object
  saved <- starwars %>% df_search("blue")
```



```

# remove the search patterns
saved <- df_search(saved)
}

```

---

df\_style<- *Get or set style of a colorful data frame*

---

## Description

Get or set style of a colorful data frame

## Usage

```

df_style(x, element = NULL) <- value

df_style(x, element)

```

## Arguments

x	a colorful data frame
element	element or elements of the style
value	one or more values to set

## Details

Colorful data frames store the styles in the `.style` attribute of the data frame object. This attribute is a list with a number of keywords:

- `fg, bg, decoration`: formatting styles to be applied to the whole table (see "Formatting styles" below)
- `row.names, col.names, interleave`: formatting styles for row names, table header and every second line in the table. If these elements are `NULL`, no styles will be applied. See "Formatting styles" below.
- `autoformat` (logical): whether column type should be guessed from column names (which allows automatically recognizing a column called "pvalue" as a p-value and color significant cells).
- `col.styles`: a list mapping the column names to formatting styles.
- `col.types`: a list mapping the column names to column types. For example, if it is `list(result="pval")`, then the column with name "result" will be considered to be a p-value and styled accordingly.
- `type.styles`: a list mapping column types to formatting styles. See "Formatting styles" below and help page for `col_type()`.
- `fixed.width`: if not `NULL`, all columns have the same width
- `sep`: string separating the columns
- `digits`: how many digits to use
- `tibble.style`: if not `NULL`, cut off columns that do not fit the width

**Value**

df\_style(x) returns a list. Assignment results in a data frame with a modified style.

**Formatting styles**

Each formatting style is a list describing style of the formatting and coloring the text elements. Following elements of that list are recognized:

- fg, bg: foreground and background colors specified as R name (use colors() to get available colors) or HTML hexadecimal code
- fg\_sign: for p-values, foreground color for significant values
- fg\_true, fg\_false: foreground colors for logical vectors
- fg\_neg: for numeric values, foreground color for negative values
- fg\_na: color for NA values
- is.pval: whether the values are to be treated as p-values
- is.numeric: whether the values are to be treated as numeric
- align: how the values should be aligned (right, left or center)
- sign.thr: for p-values, the threshold of significance
- digits: how many digits to use
- decoration: a character vector which may include the following key words: inverse, bold, italic

**See Also**

[print.colorDF\(\)](#) on printing options; [col\\_type\(\)](#) for column types.

**Examples**

```
df <- as.colorDF(mtcars)

## row names should be red on yellow background (yikes!)
df_style(df, "row.names") <- list(fg="red", bg="#FFFF00")

## you can use `$$` to access the elements
## here, show significant p-values in green
df_style(df)$type.styles$pval$fg_sign <- "green"

## example of assigning multiple values in one assignment:
df_style(df) <- list(interleave=list(fg="#FFFFFF", bg="blue"),
  row.names=list(fg="blue", bg="#FFFF00"),
  col.names=list(bg="#FFFFFF", fg="#FF00FF",
    decoration=c("bold", "italic")))
```

---

example_colorDF	<i>Example data frame for colorDF</i>
-----------------	---------------------------------------

---

**Description**

Example data frame for colorDF

---

format_col	<i>Format a vector using styles</i>
------------	-------------------------------------

---

**Description**

Format a vector (data frame column) aligning, rounding the numbers and adding color.

**Usage**

```
format_col(
  x,
  col_name = NULL,
  style = NULL,
  df_style = NULL,
  format = TRUE,
  col_width = NULL,
  prefix = " ",
  min.width = 5L,
  max.width = NULL
)
```

**Arguments**

x	a vector
col_name	optional: a column name (see Details)
style	A list with style definition
df_style	style for the whole data frame
format	Whether the vector should be formatted and aligned
col_width	optional: width to which elements of the vector should be aligned
prefix	prefix (column separator) to add to each element of x
min.width	minimum width of a column
max.width	maximum width of a column

`get_colorDF_theme`      *Return a style defined in a theme*

---

### **Description**

Return a style defined in a theme

### **Usage**

```
get_colorDF_theme(theme)
```

### **Arguments**

theme                  name

### **Value**

A list with the definitions of style

### **Examples**

```
get_colorDF_theme("bw")

## use it to change the style of a colorDF
foo <- colorDF(mtcars)
df_style(foo) <- get_colorDF_theme("wb")
## Slightly modify the style
df_style(foo)$type.styles$pval$fg_sign <- "red"
```

---

`highlight`                  *Highlight some rows in a data frame*

---

### **Description**

Highlight some rows in a data frame

### **Usage**

```
highlight(x, sel)
```

### **Arguments**

x                          data frame like object  
sel                        logical vector of length equal to number of rows in the data frame.

**Details**

Uses `print.colorDF()` to highlight selected rows in a data frame.

**Examples**

```
highlight(mtcars, mtcars$cyl == 6)
```

---

<code>is.colorDF</code>	<i>Test whether an object has the class of colorDF</i>
-------------------------	--

---

**Description**

Test whether an object has the class of colorDF

**Usage**

```
is.colorDF(x)
```

**Arguments**

`x` a data frame like object

**Value**

TRUE if the object is of colorDF class

---

<code>print.colorDF</code>	<i>Print method for colorful data frames</i>
----------------------------	--

---

**Description**

This is the core of the colorDF package – a print method for the colorful (and other) data frames.

**Usage**

```
## S3 method for class 'colorDF'
print(x, ...)

print_colorDF(
  x,
  n = getOption("colorDF_n"),
  width = getOption("width"),
  row.names = TRUE,
  tibble_style = getOption("colorDF_tibble_style"),
  highlight = NULL,
  sep = getOption("colorDF_sep"),
```

```

    bg = NULL,
    fg = NULL,
    ...
  )

```

### Arguments

<code>x</code>	a colorful data frame (object with class <code>colorDF</code> ), a <code>data.frame</code> , a <code>tibble</code> , a <code>data.table</code> or any other object which can be coerced to data frame with <code>as.data.frame</code> function.
<code>...</code>	further arguments are ignored
<code>n</code>	Number of rows to show (default=20, use <code>Inf</code> to show all; this value can be set with <code>options("colorDF_n")</code> )
<code>width</code>	number of characters that the data frame should span on output
<code>row.names</code>	if <code>TRUE</code> (default), row names will be shown on output
<code>tibble_style</code>	whether to print with tibble style (overrides style setting)
<code>highlight</code>	a logical vector indicating which rows to highlight
<code>sep</code>	column separator string (overrides style setting)
<code>bg</code>	set default background for the table
<code>fg</code>	set default foreground for the table

### Details

`print_colorDF` is the exported function, `print.colorDF` is the S3 method. Otherwise they are identical.

`print_colorDF` is a function that can be applied to any data frame like object. Using `colorDF()` to change the class of the object is only necessary if modifications to the style are required, such as specifying column type. However, `print_colorDF` applied to virtually any data frame, tibble or data table will work. In such a case, the theme used to display the data frame will either be taken from `getOption("colorDF_theme")` or a default theme will be used.

### Column types

Column types are basically the column classes (numeric, factor etc.) plus a few specialized types (such as p-value) which are displayed slightly differently. For example, an identifier will usually be shown in bold, and significant p-values will be red (details depend on the given theme and style; see `col_type()` and `df_style()` for more information).

### Changing the default methods

It is possible to assign `print_colorDF` to the default methods, thus changing the way how tibbles, data frames or other data frame like objects are displayed. This should be generally safe, but use it on your own peril and preferably only in interactive sessions. I use the following code in my `.Rprofile` file:

```

if(interactive()) {
  print.data.frame <- colorDF::print_colorDF
  print.tbl        <- colorDF::print_colorDF
  print.data.table <- colorDF::print_colorDF
}

```

### See Also

[df\\_style\(\)](#) on how to modify colorful data frames styles; [col\\_type\(\)](#) on how to change the column types; [colorDF\\_themes\\_show\(\)](#) to demonstrate available themes; [highlight\(\)](#) and [df\\_search\(\)](#) functions on how to use colorDF to highlight selected parts of a data frame.

### Examples

```

colorDF(mtcars)
print_colorDF(mtcars, row.names=FALSE)

if(require(dplyr)) {
  starwars %>% colorDF
  starwars %>% print_colorDF(highlight=.$homeworld == "Tatooine")

  ## equivalently
  starwars %>% highlight(.$homeworld == "Tatooine")

  ## with another style
  options(colorDF_theme="bw")
  starwars %>% print_colorDF(tibble_style=TRUE, sep=" |%| ")
}

```

---

remove_df_style	<i>Remove the colorful dataframe style attribute</i>
-----------------	--

---

### Description

Remove the colorful dataframe style attribute

### Usage

```
remove_df_style(x)
```

### Arguments

x                    a colorful dataframe

### Details

Strips the color data frame style, but leaves the `.coltp` and class intact.

**Value**

colorless data frame

**See Also**

To completely remove the colorDF class and attributes, use `uncolor()`

---

summary_colorDF	<i>Meaningful summary of lists and data frames</i>
-----------------	--

---

**Description**

Meaningful, row-wise summary function for lists and data frames

**Usage**

```
summary_colorDF(
  object,
  numformat = "quantiles",
  digits = 3,
  width = getOption("width")
)

## S3 method for class 'colorDF'
summary(object, ...)
```

**Arguments**

<code>object</code>	a data frame (possibly a color data frame)
<code>numformat</code>	format of the summary for numerical values. Can be one of "quantiles", "mean" and "graphics"
<code>digits</code>	number of significant digits to show (default: 3)
<code>width</code>	width of the summary table in characters
<code>...</code>	passed to <code>summary_colorDF</code>

**Details**

While this function is a summary method for objects of the colorDF class, it can also be applied to any other data frame-like object.

The summary table has five columns and as many rows as there are columns in the summarized data frame (or elements in a list). First four columns contain, respectively, column name, column class (abbreviated as in `tibbles`), number of unique values and number of missing values (NA's). The contents of the fifth column depends on the column class and column type as follows:

- first, any lists are unlisted
- numeric columns (including integers) are summarized (see below)



- for character vectors and factors, if all values are unique or missing (NA) then this is stated explicitly
- otherwise, for character vectors and factors, the values will be listed, starting with the most frequent. The list will be shortened to fit the screen.

For numeric columns, by default the quantiles 0 (minimum), .25, .50 (median), .75 and 1 (maximum) are shown. Following alternatives can be specified using the option numformat:

- "mean": mean +/- standard deviation
- "graphics": a graphical summary. Note that all numerical columns will be scaled with the same parameter, so this option makes sense only if the numerical columns are comparable. The graphics summary looks like this: —| + |— and corresponds to a regular box plot, indicating the extremes and the three quartiles (- ... - indicates the data range, |...| the interquartile range and '+' stands for the median).

summary\_colorDF is the exported version of this function to facilitate usage in cases when converting an object to a colorDF is not desirable.

## Value

A colorful data frame of class colorDF containing useful information on a dataframe-like object.

## Examples

```
summary(colorDF(iris))
summary_colorDF(iris)
summary_colorDF(iris, numformat="g")
if(require(dplyr) && require(tidyr)) {
  starwars %>% summary_colorDF

  ## A summary of iris data by species
  iris %>%
    mutate(row=rep(1:50, 3)) %>%
    gather(key="parameter", value="Size", 1:4) %>%
    mutate(pa.sp=paste(parameter, Species, sep=".")) %>%
    select(row, pa.sp, Size) %>%
    spread(key=pa.sp, value=Size) %>%
    select(-row) %>%
    summary_colorDF(numformat="g")
}
```

---

term\_boxplot

*Boxplot in a terminal*

---

## Description

Show a boxplot using characters in the terminal window

**Usage**

```
term_boxplot(formula, data = NULL, width = getOption("width"))
```

**Arguments**

formula	a formula
data	data frame or matrix
width	width of the boxplot in characters

**Value**

invisibly return the color summary data frame used to draw the boxplot

**Examples**

```
term_boxplot(mpg ~ cyl, data=mtcars)
term_boxplot(Sepal.Length ~ Species, data=iris, width=70)
```

---

uncolor

*Strip the colorDF class and style*

---

**Description**

Strip the colorDF class and style

**Usage**

```
uncolor(x)
```

**Arguments**

x	colorful data frame
---	---------------------

**Value**

the original data frame like object

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