# The gradient-text package*

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January 17, 2023 v1.2

## 1 Changes in this version

Thanks to the TEXnicians who kindly gave valuable and earnest suggestions to this package, the version 1.2 is now released. The main changes include

1. Made the syntax of the user command more convenient;
2. Modified the format in the source code to improve compatibility;

## 2 User instructions

The gradient-text package enables writers to conveniently decorate text with linear gradient colors. It's effect can be seen from the title.

`\gradientRGB` `{`⟨*text*⟩`}{`⟨*first RGB*⟩`}{`⟨*last RGB*⟩`}` This is the syntax of the command for putting gradient color on text . It takes three mandatory arguments.

`{`⟨***text***⟩`}` is the text you desire to have gradient color. Be aware that this command most likely wouldn't output content as expected if this parameter is filled with tokens that cannot expand into pure text. Below are two examples.

A correct usage

```
\newcommand{\hello}{Hello!}
\gradientRGB{\hello}{0,255,0}{255,0,0}
```

Hello!

× An incorrect usage

```
\newcommand{\hello}{\textit{Hello!}}
\gradientRGB{\hello}{0,255,0}{255,0,0}
```

\protect \textit

For this wrong example, the intended result can be obtained by

```
\textit{\gradientRGB{hello!}{0,255,0}{255,0,0}}
```

just like how I created the title by typing

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```
\textsf{\gradientRGB{gradient-text}{255,63,63}{6,60,255}}
```

In addition, for any space characters in {⟨*text*⟩}, they will not be take a unique color, although they will still show up in their original position.

| Example of space characters | |
|---|---|
| `\gradientRGB{Hello  World}{0,255,0}{255,0,0}` | Hello World |
| `\gradientRGB{HelloWorld}{0,255,0}{255,0,0}` | HelloWorld |

**{⟨*first RGB*⟩}** specifies the RGB value given to the first character of the {⟨*text*⟩}. It should be formatted as a three-item comma list in brackets {}, of which each item is a natural number not exceeding 255.

All of {13,28,176}, {0,59,2} and {255,34,5} are correct examples.

**{⟨*last RGB*⟩}** is similar to {⟨*first RGB*⟩} except that it controls the RGB color of the last character in the {⟨*text*⟩}.

*Notice.* The syntax of {⟨*first RGB*⟩} and {⟨*last RGB*⟩} have changed. Version 1.1 required an additional pair of curly brackets.

# 3 Code implementation

Here is the heading,

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{gradient-text}[2022/12/24]
\ExplSyntaxOn
```

Then we define some variables

```
\clist_new:N\l_gtext_FirstRGB_clist
\clist_new:N\l_gtext_LastRGB_clist
\int_new:N\l_gtext_MaxIndex_int      % max index (detach spaces)
\int_new:N\l_gtext_Ratio_int
```

Now we define the internal command \gr@dientRGB

```
\newcommand{\gr@dientRGB}[7]{
  \int_set:Nn\l_gtext_MaxIndex_int{\int_eval:n{\str_count:n
     {#1}}}
  \int_step_inline:nnn{1}{\l_gtext_MaxIndex_int}{
      \exp_args:Ne\str_if_eq:nnTF{\str_item:Nn
         {#1}{##1}}{~}{}{
        \int_set:Nn\l_gtext_Ratio_int{\int_eval:n{\
           l_gtext_Ratio_int+1}}
      }
        \color_select:nn{RGB}{
          \int_eval:n{(\int_use:N\l_gtext_Ratio_int*#5+(\
             l_gtext_MaxIndex_int-##1)*#2)/\
             l_gtext_MaxIndex_int},
```

```
19            \int_eval:n{(\int_use:N\l_gtext_Ratio_int*#6+(\
                  l_gtext_MaxIndex_int-##1)*#3)/\
                  l_gtext_MaxIndex_int},
20            \int_eval:n{(\int_use:N\l_gtext_Ratio_int*#7+(\
                  l_gtext_MaxIndex_int-##1)*#4)/\
                  l_gtext_MaxIndex_int}
21        }\str_item:Nn{#1}{##1}
22    }
23 }
```

Lastly we define the user command. The l3clist package is used to interpret the parameters into three integers.

```
24 \NewDocumentCommand\gradientRGB{mmm}{{
25   \clist_set:Nn\l_gtext_FirstRGB_clist {#2}
26   \clist_set:Nn\l_gtext_LastRGB_clist {#3}
27   \gr@dientRGB{#1}
28   {\clist_item:Nn\l_gtext_FirstRGB_clist{1}}
29   {\clist_item:Nn\l_gtext_FirstRGB_clist{2}}
30   {\clist_item:Nn\l_gtext_FirstRGB_clist{3}}
31   {\clist_item:Nn\l_gtext_LastRGB_clist{1}}
32   {\clist_item:Nn\l_gtext_LastRGB_clist{2}}
33   {\clist_item:Nn\l_gtext_LastRGB_clist{3}}
34 }}
35 \ExplSyntaxOff
```