# The **fontscale** package

A flexible interface for setting font sizes

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## 1 · Loading the package

```
% LaTeX2e version 2023-11-01 added \IfExplAtLeastTF.
\NeedsTeXFormat{LaTeX2e}[2023-11-01]
\ProvidesExplPackage
  {fontscale}
  {2025-02-13}
  {3.1.2}
  {A flexible interface for setting font sizes}

% l3kernel version 2023-11-09 added documentation for \c_nan_fp.
\IfExplAtLeastTF { 2023-11-09 } { }
  {
    \msg_new:nnn { fontscale } { l3kernel-out-of-date }
      {
        The~ fontscale~ package~ could~ not~ load. \\
        This~ package~ requires~
        L3~ programming~ layer~ version~ 2023-11-09~ or~ newer.
      }
    \msg_critical:nn { fontscale } { l3kernel-out-of-date }
  }
```

## 2 · Messages

```
\msg_new:nnn { fontscale } { key-musical-base-out-of-bounds }
  {
    Invalid~ value~ '#1'~ \msg_line_context:. \\
    The~ value~ of~ the~ key~ 'musical / base'~ must~ be~ a~ positive~ length.
  }
\msg_new:nnn { fontscale } { key-musical-ratio-out-of-bounds }
  {
    Invalid~ value~ '#1'~ \msg_line_context:. \\
    The~ value~ of~ the~ key~ 'musical / ratio'~ must~ be~ greater~ than~ 1.
  }
\msg_new:nnn { fontscale } { key-musical-notes-out-of-bounds }
  {
    Invalid~ value~ '#1'~ \msg_line_context:. \\
    The~ value~ of~ the~ key~ 'musical / notes'~ must~ be~ a~ positive~
    integer.
```

```
    }
\msg_new:nnn { fontscale } { key-font-scale-out-of-bounds }
  {
    Invalid~ value~ '#2'~ \msg_line_context:. \\
    The~ value~ of~ the~ key~ '#1 / scale'~ must~ be~ positive.
  }
\msg_new:nnn { fontscale } { key-font-size-out-of-bounds }
  {
    Invalid~ value~ '#2'~ \msg_line_context:. \\
    The~ value~ of~ the~ key~ '#1 / size'~ must~ be~ a~ positive~ length.
  }
\msg_new:nnn { fontscale } { key-font-scale-overwritten }
  {
    The~ font~ size~ set~ by~ the~ key~ '#1 / scale'~
    has~ been~ overwritten~ by~ the~ key~ '#1 / size'~ \msg_line_context:.
  }
\msg_new:nnn { fontscale } { font-sizes-out-of-order }
  {
    The~ font~ sizes~ are~ not~ in~ the~ correct~ order~ \msg_line_context:. \\
    The~ lengths~ of~ the~ font~ sizes~ should~ be~ ordered~ from~
    \iow_char:N \\tiny~ to~ \iow_char:N \\Huge.
  }


% This package tests for math mode only at the user level because this is not
% necessary for programmers. To avoid confusion, this package issues a warning
% when \fontsize + \selectfont would be used in math mode because it would not
% change the math font size.
\msg_new:nnn { fontscale } { math-mode-warning }
  { '#1'~ does~ nothing~ if~ used~ in~ math~ mode~ \msg_line_context:. }
% \@ and \par cannot be used in math mode.
\msg_new:nnn { fontscale } { math-mode-error }
  { '#1'~ cannot~ be~ used~ in~ math~ mode~ \msg_line_context:. }
\msg_new:nnn { fontscale } { font-size-out-of-bounds }
  {
    Invalid~ font~ size~ '#1'~ \msg_line_context:. \\
    The~ font~ size~ must~ be~ a~ positive~ length.
  }
\msg_new:nnn { fontscale } { font-step-out-of-bounds }
  {
    Invalid~ font~ step~ '#1'~ \msg_line_context:. \\
    The~ font~ step~ must~ equal~ the~ font~ step~ of~
    any~ font~ size~ command~ from~ \iow_char:N \\tiny~ to~ \iow_char:N \\Huge~
    unless~ the~ value~ of~ the~ key~ 'typographic-scale'~ is~ 'musical'.
  }
\msg_new:nnn { fontscale } { current-font-step-out-of-bounds }
  {
    The~ new~ font~ step~ could~ not~ be~ calculated~
    because~ the~ current~ font~ step~ is~ undefined~ \msg_line_context:.
```

```
  }
```

# 3  Some variables

```
% Declares and initializes the font step, font scale, font size, and font
% baselineskip of each font size command from \tiny to \Huge.

\fp_const:Nn \c_fontscale_tiny_step_fp         { -4 }
\fp_const:Nn \c_fontscale_scriptsize_step_fp   { -3 }
\fp_const:Nn \c_fontscale_footnotesize_step_fp { -2 }
\fp_const:Nn \c_fontscale_small_step_fp        { -1 }
\fp_const:Nn \c_fontscale_normalsize_step_fp   {  0 }
\fp_const:Nn \c_fontscale_large_step_fp        {  1 }
\fp_const:Nn \c_fontscale_Large_step_fp        {  2 }
\fp_const:Nn \c_fontscale_LARGE_step_fp        {  3 }
\fp_const:Nn \c_fontscale_huge_step_fp         {  4 }
\fp_const:Nn \c_fontscale_Huge_step_fp         {  5 }


\fp_const:Nn \c_fontscale_normalsize_scale_fp { 1 }


\fp_new:N \l_fontscale_tiny_scale_fp
\fp_new:N \l_fontscale_scriptsize_scale_fp
\fp_new:N \l_fontscale_footnotesize_scale_fp
\fp_new:N \l_fontscale_small_scale_fp
\fp_new:N \l_fontscale_large_scale_fp
\fp_new:N \l_fontscale_Large_scale_fp
\fp_new:N \l_fontscale_LARGE_scale_fp
\fp_new:N \l_fontscale_huge_scale_fp
\fp_new:N \l_fontscale_Huge_scale_fp


\dim_new:N \l_fontscale_tiny_size_dim
\dim_new:N \l_fontscale_scriptsize_size_dim
\dim_new:N \l_fontscale_footnotesize_size_dim
\dim_new:N \l_fontscale_small_size_dim
\dim_new:N \l_fontscale_normalsize_size_dim
\dim_new:N \l_fontscale_large_size_dim
\dim_new:N \l_fontscale_Large_size_dim
\dim_new:N \l_fontscale_LARGE_size_dim
\dim_new:N \l_fontscale_huge_size_dim
\dim_new:N \l_fontscale_Huge_size_dim


\skip_new:N \l_fontscale_tiny_baselineskip_skip
\skip_new:N \l_fontscale_scriptsize_baselineskip_skip
\skip_new:N \l_fontscale_footnotesize_baselineskip_skip
\skip_new:N \l_fontscale_small_baselineskip_skip
\skip_new:N \l_fontscale_normalsize_baselineskip_skip
```

```
\skip_new:N \l_fontscale_large_baselineskip_skip
\skip_new:N \l_fontscale_Large_baselineskip_skip
\skip_new:N \l_fontscale_LARGE_baselineskip_skip
\skip_new:N \l_fontscale_huge_baselineskip_skip
\skip_new:N \l_fontscale_Huge_baselineskip_skip


\fp_set:Nn \l_fontscale_tiny_scale_fp         { 0.6 }
\fp_set:Nn \l_fontscale_scriptsize_scale_fp   { 0.7 }
\fp_set:Nn \l_fontscale_footnotesize_scale_fp { 0.8 }
\fp_set:Nn \l_fontscale_small_scale_fp        { 0.9 }
\fp_set:Nn \l_fontscale_large_scale_fp        { 1.1 }
\fp_set:Nn \l_fontscale_Large_scale_fp        { 1.2 }
\fp_set:Nn \l_fontscale_LARGE_scale_fp        { 1.4 }
\fp_set:Nn \l_fontscale_huge_scale_fp         { 1.6 }
\fp_set:Nn \l_fontscale_Huge_scale_fp         { 1.8 }


\dim_set:Nn \l_fontscale_tiny_size_dim         {  6pt }
\dim_set:Nn \l_fontscale_scriptsize_size_dim   {  7pt }
\dim_set:Nn \l_fontscale_footnotesize_size_dim {  8pt }
\dim_set:Nn \l_fontscale_small_size_dim        {  9pt }
\dim_set:Nn \l_fontscale_normalsize_size_dim   { 10pt }
\dim_set:Nn \l_fontscale_large_size_dim        { 11pt }
\dim_set:Nn \l_fontscale_Large_size_dim        { 12pt }
\dim_set:Nn \l_fontscale_LARGE_size_dim        { 14pt }
\dim_set:Nn \l_fontscale_huge_size_dim         { 16pt }
\dim_set:Nn \l_fontscale_Huge_size_dim         { 18pt }


\skip_set:Nn \l_fontscale_tiny_baselineskip_skip         {  7.2pt }
\skip_set:Nn \l_fontscale_scriptsize_baselineskip_skip   {  8.4pt }
\skip_set:Nn \l_fontscale_footnotesize_baselineskip_skip {  9.6pt }
\skip_set:Nn \l_fontscale_small_baselineskip_skip        { 10.8pt }
\skip_set:Nn \l_fontscale_normalsize_baselineskip_skip   { 12  pt }
\skip_set:Nn \l_fontscale_large_baselineskip_skip        { 13.2pt }
\skip_set:Nn \l_fontscale_Large_baselineskip_skip        { 14.4pt }
\skip_set:Nn \l_fontscale_LARGE_baselineskip_skip        { 16.8pt }
\skip_set:Nn \l_fontscale_huge_baselineskip_skip         { 19.2pt }
\skip_set:Nn \l_fontscale_Huge_baselineskip_skip         { 21.6pt }


% Stores the current font step, font scale, font size, and font baselineskip.
% They are set in the selectfont hook.
\fp_new:N   \l_fontscale_step_fp
\fp_new:N   \l_fontscale_scale_fp
\dim_new:N  \l_fontscale_size_dim
\skip_new:N \l_fontscale_baselineskip_skip


% For speed, \__fontscale_hook_code_selectfont: tries to avoid computing a
% floating point expression by using \fp_set_eq:NN when the font size equals
```

```
% the font size of any font size command from \tiny to \Huge. The case when
% the font size equals that of \normalsize is optimized further because it is
% by far the most common case. \f@size and \f@baselineskip are not used
% elsewhere in the code.
\cs_new_protected:Npn \__fontscale_hook_code_selectfont:
  {
    \dim_set:Nn \l_fontscale_size_dim { \f@size pt }
    \skip_set:Nn \l_fontscale_baselineskip_skip { \f@baselineskip }
    \dim_compare:nNnTF \l_fontscale_size_dim = \l_fontscale_normalsize_size_dim
      {
        \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_normalsize_step_fp
        \fp_set_eq:NN \l_fontscale_scale_fp \c_fontscale_normalsize_scale_fp
      }
      { \__fontscale_hook_code_selectfont_auxi: }
  }
\cs_new_protected:Npn \__fontscale_hook_code_selectfont_auxi:
  {
    \dim_case:nnF { \l_fontscale_size_dim }
      {
        { \l_fontscale_small_size_dim }
        {
          \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_small_step_fp
          \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_small_scale_fp
        }
        { \l_fontscale_large_size_dim }
        {
          \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_large_step_fp
          \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_large_scale_fp
        }
        { \l_fontscale_footnotesize_size_dim }
        {
          \fp_set_eq:NN \l_fontscale_step_fp \c_fontscale_footnotesize_step_fp
          \fp_set_eq:NN \l_fontscale_scale_fp
            \l_fontscale_footnotesize_scale_fp
        }
        { \l_fontscale_Large_size_dim }
        {
          \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_Large_step_fp
          \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_Large_scale_fp
        }
        { \l_fontscale_scriptsize_size_dim }
        {
          \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_scriptsize_step_fp
          \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_scriptsize_scale_fp
        }
        { \l_fontscale_LARGE_size_dim }
        {
          \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_LARGE_step_fp
          \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_LARGE_scale_fp
```

```
        }
      { \l_fontscale_tiny_size_dim }
      {
        \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_tiny_step_fp
        \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_tiny_scale_fp
      }
      { \l_fontscale_huge_size_dim }
      {
        \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_huge_step_fp
        \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_huge_scale_fp
      }
      { \l_fontscale_Huge_size_dim }
      {
        \fp_set_eq:NN \l_fontscale_step_fp  \c_fontscale_Huge_step_fp
        \fp_set_eq:NN \l_fontscale_scale_fp \l_fontscale_Huge_scale_fp
      }
    }
    { \__fontscale_hook_code_selectfont_auxii: }
  }
\cs_new_protected:Npn \__fontscale_hook_code_selectfont_auxii:
  {
    \fp_set:Nn \l_fontscale_scale_fp
      {
        \dim_to_fp:n { \l_fontscale_size_dim } /
        \l__fontscale_normalsize_size_fp
      }
    \str_if_eq:VnTF \l__fontscale_typographic_scale_str { musical }
      {
        \fp_set:Nn \l_fontscale_step_fp
          {
            \l__fontscale_musical_selectfont_fp *
            ln
              (
                \dim_compare:nNnTF \l__fontscale_musical_base_dim =
                  \l_fontscale_normalsize_size_dim
                  { \l_fontscale_scale_fp }
                  {
                    \dim_to_fp:n { \l_fontscale_size_dim } /
                    \l__fontscale_musical_base_fp
                  }
              )
          }
      }
      { \fp_set_eq:NN \l_fontscale_step_fp \c_nan_fp }
  }
\hook_gput_code:nnn { selectfont } { fontscale }
  { \__fontscale_hook_code_selectfont: }
```

```
% Used only to speed up floating point calculations.
\fp_new:N \l__fontscale_normalsize_size_fp
\fp_set:Nn \l__fontscale_normalsize_size_fp { 10 }
\fp_new:N \l__fontscale_musical_base_fp
\fp_new:N \l__fontscale_musical_notes_fp
\fp_new:N \l__fontscale_musical_selectfont_fp


\fp_const:Nn \c__fontscale_five_fp { 5 }


% Scratch variables
\dim_new:N  \l__fontscale_tmp_dim
\skip_new:N \l__fontscale_tmp_skip
\fp_new:N   \l__fontscale_tmp_fp
```

# 4  Some functions

```
% Variants of l3kernel functions
\cs_generate_variant:Nn \msg_error:nnnn { nnnv }
% Sets a dimen/skip variable from a dimen/skip expression, appending a default
% unit 'pt', and removes extra trailing tokens, if any.
\cs_new_protected:Npn \__fontscale_dim_set_default_pt:Nn #1#2
  {
    \afterassignment \use_none_delimit_by_q_stop:w
      #1 = \dimexpr #2 pt \relax
    \q_stop
  }
\cs_generate_variant:Nn \__fontscale_dim_set_default_pt:Nn { c }
\cs_new_protected:Npn \__fontscale_skip_set_default_pt:Nn #1#2
  {
    \afterassignment \use_none_delimit_by_q_stop:w
      #1 = \glueexpr #2 pt \relax
    \q_stop
  }
\cs_generate_variant:Nn \__fontscale_skip_set_default_pt:Nn { c }
% Argument processors
\cs_new_protected:Npn \__fontscale_arg_process_dim:n #1
  {
    \__fontscale_dim_set_default_pt:Nn \l__fontscale_tmp_dim {#1}
    \tl_set:NV \ProcessedArgument \l__fontscale_tmp_dim
  }
\cs_new_protected:Npn \__fontscale_arg_process_skip:n #1
  {
    \__fontscale_skip_set_default_pt:Nn \l__fontscale_tmp_skip {#1}
    \tl_set:NV \ProcessedArgument \l__fontscale_tmp_skip
  }
% Used to define \tiny to \Huge. Sets \@currsize only for compatibility. Need
```

```
% \dim_use:N only for compatibility with versions of the microtype package
% older than v3.2 2024-12-12.
\cs_new_protected:Npn \__fontscale_name:NNN #1#2#3
  {
    \cs_set_eq:NN \@currsize #1
    \fontsize { \dim_use:N #2 } #3 \selectfont
  }
% Similar to \fontsize + \selectfont, except that it:
% (1) Takes dimen and skip expressions as arguments without appending a default
% unit of 'pt'.
% (2) Avoids the issue where \f@size is set to the new font size before the
% second argument is expanded.
% (3) Issues a user-friendly error message if the font size is not positive.
\cs_new_protected:Npn \__fontscale_set_font_size:nn #1#2
  {
    \use:e
      {
        \__fontscale_set_font_size_aux:nn { \dim_eval:n {#1} }
          { \skip_eval:n {#2} }
      }
  }
\cs_new_protected:Npn \__fontscale_set_font_size_aux:nn #1#2
  {
    \dim_compare:nNnTF {#1} > \c_zero_dim
      { \fontsize {#1} {#2} \selectfont }
      { \msg_error:nnn { fontscale } { font-size-out-of-bounds } {#1} }
  }
% Similar to \__fontscale_set_font_size:nn, except that it sets the font
% baselineskip equal to the new font size times the baselineskip-size-ratio.
\cs_new_protected:Npn \__fontscale_set_font_size:n #1
  { \exp_args:Ne \__fontscale_set_font_size_aux:n { \dim_eval:n {#1} } }
\cs_new_protected:Npn \__fontscale_set_font_size_aux:n #1
  {
    \dim_compare:nNnTF {#1} > \c_zero_dim
      {
        \fontsize {#1}
          {
            \fp_to_dim:n
              { \dim_to_fp:n {#1} * \l__fontscale_baselineskip_size_ratio_fp }
          }
        \selectfont
      }
      { \msg_error:nnn { fontscale } { font-size-out-of-bounds } {#1} }
  }
\cs_new:Npn \__fontscale_fp_eval_round:n #1
  { \fp_eval:n { round ( #1 , \c__fontscale_five_fp ) } }
```

# 5 Define keys

```
\str_new:N \l__fontscale_typographic_scale_str
\dim_new:N \l__fontscale_musical_base_dim

\cs_new_protected:Npn \__fontscale_keys_code_musical_base:
  {
    \__fontscale_dim_set_default_pt:Nn \l__fontscale_musical_base_dim
      { \l_keys_value_tl }
  }
\cs_new_protected:Npn \__fontscale_keys_code_name:
  {
    \tl_if_in:NnTF \l_keys_value_tl { / }
      { \exp_after:wN \__fontscale_keys_code_name:ww \l_keys_value_tl \q_stop }
      {
        \tl_set_eq:cN { l__fontscale_ \l_keys_key_str _size_tl }
          \l_keys_value_tl
      }
  }
\cs_new_protected:Npn \__fontscale_keys_code_name:ww #1 / #2 \q_stop
  {
    \tl_set:cn { l__fontscale_ \l_keys_key_str _size_tl } {#1}
    \tl_set:cn { l__fontscale_ \l_keys_key_str _baselineskip_tl } {#2}
  }


\keys_define:nn { fontscale }
  {
      baselineskip-size-ratio .fp_set:N =
        \l__fontscale_baselineskip_size_ratio_fp
    , baselineskip-size-ratio .value_required:n = true

    , typographic-scale .choices:nn =
        { classic-10pt , classic-11pt , classic-12pt , musical }
        { \str_set:Nn \l__fontscale_typographic_scale_str {#1} }
    , typographic-scale .value_required:n = true

    , classic-10pt .meta:n = { typographic-scale = classic-10pt }
    , classic-10pt .value_forbidden:n = true

    , classic-11pt .meta:n = { typographic-scale = classic-11pt }
    , classic-11pt .value_forbidden:n = true

    , classic-12pt .meta:n = { typographic-scale = classic-12pt }
    , classic-12pt .value_forbidden:n = true

    , musical .meta:n = { typographic-scale = musical }
    , musical .value_forbidden:n = true
```

```
    }
\keys_define:nn { fontscale / musical }
  {
      base .code:n = \__fontscale_keys_code_musical_base:
    , base .value_required:n = true

    , ratio .fp_set:N = \l__fontscale_musical_ratio_fp
    , ratio .value_required:n = true

    , notes .int_set:N = \l__fontscale_musical_notes_int
    , notes .value_required:n = true
  }
\keys_define:nn { fontscale / normalsize }
  {
      size .tl_set:N = \l__fontscale_normalsize_size_tl
    , size .value_required:n = true

    , baselineskip .tl_set:N = \l__fontscale_normalsize_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / tiny }
  {
      scale .tl_set:N = \l__fontscale_tiny_scale_tl
    , scale .value_required:n = true

    , size .tl_set:N = \l__fontscale_tiny_size_tl
    , size .value_required:n = true

    , baselineskip .tl_set:N = \l__fontscale_tiny_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / scriptsize }
  {
      scale .tl_set:N = \l__fontscale_scriptsize_scale_tl
    , scale .value_required:n = true

    , size .tl_set:N = \l__fontscale_scriptsize_size_tl
    , size .value_required:n = true

    , baselineskip .tl_set:N = \l__fontscale_scriptsize_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / footnotesize }
  {
      scale .tl_set:N = \l__fontscale_footnotesize_scale_tl
    , scale .value_required:n = true
```

```
    , size .tl_set:N = \l__fontscale_footnotesize_size_tl
    , size .value_required:n = true


    , baselineskip .tl_set:N = \l__fontscale_footnotesize_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / small }
  {
      scale .tl_set:N = \l__fontscale_small_scale_tl
    , scale .value_required:n = true


    , size .tl_set:N = \l__fontscale_small_size_tl
    , size .value_required:n = true


    , baselineskip .tl_set:N = \l__fontscale_small_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / large }
  {
      scale .tl_set:N = \l__fontscale_large_scale_tl
    , scale .value_required:n = true


    , size .tl_set:N = \l__fontscale_large_size_tl
    , size .value_required:n = true


    , baselineskip .tl_set:N = \l__fontscale_large_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / Large }
  {
      scale .tl_set:N = \l__fontscale_Large_scale_tl
    , scale .value_required:n = true


    , size .tl_set:N = \l__fontscale_Large_size_tl
    , size .value_required:n = true


    , baselineskip .tl_set:N = \l__fontscale_Large_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / LARGE }
  {
      scale .tl_set:N = \l__fontscale_LARGE_scale_tl
    , scale .value_required:n = true


    , size .tl_set:N = \l__fontscale_LARGE_size_tl
    , size .value_required:n = true
```

```
    , baselineskip .tl_set:N = \l__fontscale_LARGE_baselineskip_tl
    , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / huge }
  {
    scale .tl_set:N = \l__fontscale_huge_scale_tl
  , scale .value_required:n = true

  , size .tl_set:N = \l__fontscale_huge_size_tl
  , size .value_required:n = true

  , baselineskip .tl_set:N = \l__fontscale_huge_baselineskip_tl
  , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale / Huge }
  {
    scale .tl_set:N = \l__fontscale_Huge_scale_tl
  , scale .value_required:n = true

  , size .tl_set:N = \l__fontscale_Huge_size_tl
  , size .value_required:n = true

  , baselineskip .tl_set:N = \l__fontscale_Huge_baselineskip_tl
  , baselineskip .value_required:n = true
  }
\keys_define:nn { fontscale }
  {
    tiny .code:n = \__fontscale_keys_code_name:
  , tiny .value_required:n = true

  , scriptsize .code:n = \__fontscale_keys_code_name:
  , scriptsize .value_required:n = true

  , footnotesize .code:n = \__fontscale_keys_code_name:
  , footnotesize .value_required:n = true

  , small .code:n = \__fontscale_keys_code_name:
  , small .value_required:n = true

  , normalsize .code:n = \__fontscale_keys_code_name:
  , normalsize .value_required:n = true

  , large .code:n = \__fontscale_keys_code_name:
  , large .value_required:n = true

  , Large .code:n = \__fontscale_keys_code_name:
```

```
  , Large .value_required:n = true

  , LARGE .code:n = \__fontscale_keys_code_name:
  , LARGE .value_required:n = true

  , huge .code:n = \__fontscale_keys_code_name:
  , huge .value_required:n = true

  , Huge .code:n = \__fontscale_keys_code_name:
  , Huge .value_required:n = true
}
```

# 6 Initialize and pre-compile keys

```
% Pre-compiles the keys with their initial values and then sets the keys to
% their initial values. This is significantly faster than using .initial:n and
% \keys_precompile:nnN. The special value of \q_no_value is used to test if the
% corresponding key has been set by the user.
\cs_new_protected:Npn \__fontscale_keys_set_initial:
  {
    \fp_set:Nn  \l__fontscale_baselineskip_size_ratio_fp { 1.2 }
    \str_set:Nn \l__fontscale_typographic_scale_str      { classic-10pt }
    \dim_set:Nn \l__fontscale_musical_base_dim           { 10pt }
    \fp_set:Nn  \l__fontscale_musical_ratio_fp           { 2 }
    \int_set:Nn \l__fontscale_musical_notes_int          { 5 }

    \tl_map_inline:nn
      {
        \l__fontscale_tiny_scale_tl
        \l__fontscale_scriptsize_scale_tl
        \l__fontscale_footnotesize_scale_tl
        \l__fontscale_small_scale_tl
        \l__fontscale_large_scale_tl
        \l__fontscale_Large_scale_tl
        \l__fontscale_LARGE_scale_tl
        \l__fontscale_huge_scale_tl
        \l__fontscale_Huge_scale_tl

        \l__fontscale_tiny_size_tl
        \l__fontscale_scriptsize_size_tl
        \l__fontscale_footnotesize_size_tl
        \l__fontscale_small_size_tl
        \l__fontscale_normalsize_size_tl
        \l__fontscale_large_size_tl
        \l__fontscale_Large_size_tl
        \l__fontscale_LARGE_size_tl
```

```
        \l__fontscale_huge_size_tl
        \l__fontscale_Huge_size_tl


        \l__fontscale_tiny_baselineskip_tl
        \l__fontscale_scriptsize_baselineskip_tl
        \l__fontscale_footnotesize_baselineskip_tl
        \l__fontscale_small_baselineskip_tl
        \l__fontscale_normalsize_baselineskip_tl
        \l__fontscale_large_baselineskip_tl
        \l__fontscale_Large_baselineskip_tl
        \l__fontscale_LARGE_baselineskip_tl
        \l__fontscale_huge_baselineskip_tl
        \l__fontscale_Huge_baselineskip_tl
      }
      { \tl_set:Nn ##1 { \q_no_value } }
  }
\__fontscale_keys_set_initial:
```

## 7 Set and process keys

```
\NewDocumentCommand \fontscalesetup { s m }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \fontscalesetup }
      }
      {
        \IfBooleanTF #1
          { \__fontscale_keys_reset:n {#2} }
          { \__fontscale_keys_set:n   {#2} }
      }
  }
\cs_new_protected:Npn \__fontscale_keys_reset:n
  { \__fontscale_keys_set_initial: \__fontscale_keys_set:n }
\cs_new_protected:Npn \__fontscale_keys_set:n #1
  {
    \keys_set:nn { fontscale } {#1}
    \__fontscale_keys_process:
    \normalsize
    \prg_break:
    \prg_break_point:
  }
\cs_new_protected:Npn \__fontscale_keys_process:
  {
    \__fontscale_keys_process_start:
    \__fontscale_keys_process_normalsize:
```

```
      \__fontscale_keys_process_other:
      \__fontscale_keys_process_check_order:
  }
\cs_new_protected:Npn \__fontscale_keys_process_start:
  {
    \dim_compare:nNnF \l__fontscale_musical_base_dim > \c_zero_dim
      {
        \msg_error:nnV { fontscale } { key-musical-base-out-of-bounds }
          \l__fontscale_musical_base_dim
        \prg_break:
      }
    \fp_compare:nNnF \l__fontscale_musical_ratio_fp > \c_one_fp
      {
        \msg_error:nne { fontscale } { key-musical-ratio-out-of-bounds }
          { \fp_use:N \l__fontscale_musical_ratio_fp }
        \prg_break:
      }
    \int_compare:nNnF \l__fontscale_musical_notes_int > 0
      {
        \msg_error:nnV { fontscale } { key-musical-notes-out-of-bounds }
          \l__fontscale_musical_notes_int
        \prg_break:
      }
  }
% Sets the font size and font baselineskip of \normalsize. Its font size must
% be set before doing any processing involving the font scale.
\cs_new_protected:Npn \__fontscale_keys_process_normalsize:
  {
    \quark_if_no_value:NTF \l__fontscale_normalsize_size_tl
      {
        \dim_set:Nn \l_fontscale_normalsize_size_dim
          {
            \str_case:Vn \l__fontscale_typographic_scale_str
              {
                { classic-10pt } { 10pt }
                { classic-11pt } { 11pt }
                { classic-12pt } { 12pt }
                { musical } { \l__fontscale_musical_base_dim }
              }
          }
      }
      {
        \__fontscale_dim_set_default_pt:Nn \l_fontscale_normalsize_size_dim
          { \l__fontscale_normalsize_size_tl }
        \dim_compare:nNnF \l_fontscale_normalsize_size_dim > \c_zero_dim
          {
            \msg_error:nnnV { fontscale } { key-font-size-out-of-bounds }
              { normalsize } \l_fontscale_normalsize_size_dim
            \prg_break:
```

```
            }
        }
    \fp_set:Nn \l__fontscale_normalsize_size_fp
        { \dim_to_fp:n { \l_fontscale_normalsize_size_dim } } }
    \quark_if_no_value:NTF \l__fontscale_normalsize_baselineskip_tl
        {
            \skip_set:Nn \l_fontscale_normalsize_baselineskip_skip
                {
                    \fp_to_dim:n
                        {
                            \l__fontscale_normalsize_size_fp *
                            \l__fontscale_baselineskip_size_ratio_fp
                        }
                }
        }
        {
            \__fontscale_skip_set_default_pt:Nn
                \l_fontscale_normalsize_baselineskip_skip
                { \l__fontscale_normalsize_baselineskip_tl }
        }
    }
% Auxiliary functions that expand to the font size depending on the name of the
% font size command.
\cs_new:Npn \__fontscale_keys_process_other_classic_xpt:n #1
    {
        \str_case:nn {#1}
            {
                { tiny         } {  6pt }
                { scriptsize   } {  7pt }
                { footnotesize } {  8pt }
                { small        } {  9pt }
                { large        } { 11pt }
                { Large        } { 12pt }
                { LARGE        } { 14pt }
                { huge         } { 16pt }
                { Huge         } { 18pt }
            }
    }
\cs_new:Npn \__fontscale_keys_process_other_classic_xipt:n #1
    {
        \str_case:nn {#1}
            {
                { tiny         } {  7pt }
                { scriptsize   } {  8pt }
                { footnotesize } {  9pt }
                { small        } { 10pt }
                { large        } { 12pt }
                { Large        } { 14pt }
                { LARGE        } { 16pt }
```

```
      { huge          } { 18pt }
      { Huge          } { 21pt }
    }
  }
\cs_new:Npn \__fontscale_keys_process_other_classic_xiipt:n #1
  {
    \str_case:nn {#1}
      {
        { tiny          } {  8pt }
        { scriptsize    } {  9pt }
        { footnotesize  } { 10pt }
        { small         } { 11pt }
        { large         } { 14pt }
        { Large         } { 16pt }
        { LARGE         } { 18pt }
        { huge          } { 21pt }
        { Huge          } { 24pt }
      }
  }
\cs_new:Npn \__fontscale_keys_process_other_musical:n #1
  {
    \fp_to_dim:n
      {
        \l__fontscale_musical_base_fp * \l__fontscale_musical_ratio_fp ^
        ( \use:c { c_fontscale_#1_step_fp } / \l__fontscale_musical_notes_fp )
      }
  }
% Sets the font size, font scale, and font baselineskip of the other font size
% commands.
\cs_new_protected:Npn \__fontscale_keys_process_other:
  {
    \str_case:Vn \l__fontscale_typographic_scale_str
      {
        { classic-10pt }
        {
          \cs_set_eq:NN \__fontscale_keys_process_other_fn_aux:n
            \__fontscale_keys_process_other_classic_xpt:n
        }
        { classic-11pt }
        {
          \cs_set_eq:NN \__fontscale_keys_process_other_fn_aux:n
            \__fontscale_keys_process_other_classic_xipt:n
        }
        { classic-12pt }
        {
          \cs_set_eq:NN \__fontscale_keys_process_other_fn_aux:n
            \__fontscale_keys_process_other_classic_xiipt:n
        }
        { musical }
```

```
          {
            \cs_set_eq:NN \__fontscale_keys_process_other_fn_aux:n
              \__fontscale_keys_process_other_musical:n
            \fp_set:Nn \l__fontscale_musical_base_fp
              { \dim_to_fp:n { \l__fontscale_musical_base_dim } }
            \fp_set:Nn \l__fontscale_musical_notes_fp
              { \int_use:N \l__fontscale_musical_notes_int }
            \fp_set:Nn \l__fontscale_musical_selectfont_fp
              {
                \int_use:N \l__fontscale_musical_notes_int /
                ln ( \l__fontscale_musical_ratio_fp )
              }
          }
      }
    \tl_map_function:nN
      {
        {tiny} {scriptsize} {footnotesize} {small}
        {large} {Large} {LARGE} {huge} {Huge}
      }
      \__fontscale_keys_process_other_fn:n
  }
\cs_new_protected:Npn \__fontscale_keys_process_other_fn:n #1
  {
    \quark_if_no_value:cF { l__fontscale_#1_scale_tl }
      {
        \dim_set:cn { l_fontscale_#1_size_dim }
          {
            \fp_to_dim:n
              {
                \l__fontscale_normalsize_size_fp *
                ( \use:c { l__fontscale_#1_scale_tl } )
              }
          }
        \dim_compare:nNnF { \use:c { l_fontscale_#1_size_dim } } > \c_zero_dim
          {
            \tl_map_break:n
              {
                \msg_error:nnne { fontscale } { key-font-scale-out-of-bounds }
                  {#1} { \fp_eval:n { \use:c { l__fontscale_#1_scale_tl } } }
                \prg_break:
              }
          }
        \quark_if_no_value:cT { l__fontscale_#1_size_tl } { \prg_break: }
      }
    \quark_if_no_value:cF { l__fontscale_#1_size_tl }
      {
        \__fontscale_dim_set_default_pt:cn { l_fontscale_#1_size_dim }
          { \use:c { l__fontscale_#1_size_tl } }
        \dim_compare:nNnF { \use:c { l_fontscale_#1_size_dim } } > \c_zero_dim
```

```
            {
              \tl_map_break:n
                {
                  \msg_error:nnnv { fontscale } { key-font-size-out-of-bounds }
                    {#1} { l_fontscale_#1_size_dim }
                  \prg_break:
                }
            }
          \quark_if_no_value:cF { l__fontscale_#1_scale_tl }
            {
              \msg_warning:nnn { fontscale } { key-font-scale-overwritten } {#1}
            }
          \prg_break:
        }
      \dim_set:cn { l_fontscale_#1_size_dim }
        { \__fontscale_keys_process_other_fn_aux:n {#1} }
      \prg_break:
      \prg_break_point:
      \fp_set:cn { l_fontscale_#1_scale_fp }
        {
          \dim_to_fp:n { \use:c { l_fontscale_#1_size_dim } } /
          \l__fontscale_normalsize_size_fp
        }
      \quark_if_no_value:cTF { l__fontscale_#1_baselineskip_tl }
        {
          \skip_set:cn { l_fontscale_#1_baselineskip_skip }
            {
              \fp_to_dim:n
                {
                  \dim_to_fp:n { \use:c { l_fontscale_#1_size_dim } } *
                  \l__fontscale_baselineskip_size_ratio_fp
                }
            }
        }
        {
          \__fontscale_skip_set_default_pt:cn
            { l_fontscale_#1_baselineskip_skip }
            { \use:c { l__fontscale_#1_baselineskip_tl } }
        }
    }
% Issues a warning if the font sizes are not in the correct order.
\cs_new_protected:Npn \__fontscale_keys_process_check_order:
  {
    \dim_compare:nF
      {
          \l_fontscale_tiny_size_dim
        < \l_fontscale_scriptsize_size_dim
        < \l_fontscale_footnotesize_size_dim
        < \l_fontscale_small_size_dim
```

```
        < \l_fontscale_normalsize_size_dim
        < \l_fontscale_large_size_dim
        < \l_fontscale_Large_size_dim
        < \l_fontscale_LARGE_size_dim
        < \l_fontscale_huge_size_dim
        < \l_fontscale_Huge_size_dim
      }
      { \msg_warning:nn { fontscale } { font-sizes-out-of-order } } }
  }
```

# 8   Document commands

```
% Defines the standard LaTeX font size commands from \tiny to \Huge and
% initializes to \normalsize. Their internal functions are not used elsewhere
% in the code for compatibility with hooks such as
% \AddToHook{cmd/<font size command>/after}{<code>}.
\DeclareDocumentCommand \tiny { } 
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \tiny }
      }
      { \__fontscale_tiny: }
  }
\cs_new_protected:Npn \__fontscale_tiny:
  {
    \__fontscale_name:NNN \tiny \l_fontscale_tiny_size_dim
      \l_fontscale_tiny_baselineskip_skip
  }
\DeclareDocumentCommand \scriptsize { }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \scriptsize }
      }
      { \__fontscale_scriptsize: }
  }
\cs_new_protected:Npn \__fontscale_scriptsize:
  {
    \__fontscale_name:NNN \scriptsize \l_fontscale_scriptsize_size_dim
      \l_fontscale_scriptsize_baselineskip_skip
  }
\DeclareDocumentCommand \footnotesize { }
  {
    \mode_if_math:TF
```

```
        {
          \msg_warning:nne { fontscale } { math-mode-warning }
            { \token_to_str:N \footnotesize }
        }
        { \__fontscale_footnotesize: }
    }
\cs_new_protected:Npn \__fontscale_footnotesize:
    {
      \__fontscale_name:NNN \footnotesize \l_fontscale_footnotesize_size_dim
        \l_fontscale_footnotesize_baselineskip_skip
    }
\DeclareDocumentCommand \small { }
    {
      \mode_if_math:TF
        {
          \msg_warning:nne { fontscale } { math-mode-warning }
            { \token_to_str:N \small }
        }
        { \__fontscale_small: }
    }
\cs_new_protected:Npn \__fontscale_small:
    {
      \__fontscale_name:NNN \small \l_fontscale_small_size_dim
        \l_fontscale_small_baselineskip_skip
    }
\DeclareDocumentCommand \normalsize { }
    {
      \mode_if_math:TF
        {
          \msg_warning:nne { fontscale } { math-mode-warning }
            { \token_to_str:N \normalsize }
        }
        { \__fontscale_normalsize: }
    }
\cs_new_protected:Npn \__fontscale_normalsize:
    {
      \__fontscale_name:NNN \normalsize \l_fontscale_normalsize_size_dim
        \l_fontscale_normalsize_baselineskip_skip
    }
\DeclareDocumentCommand \large { }
    {
      \mode_if_math:TF
        {
          \msg_warning:nne { fontscale } { math-mode-warning }
            { \token_to_str:N \large }
        }
        { \__fontscale_large: }
    }
\cs_new_protected:Npn \__fontscale_large:
```

```
  {
    \__fontscale_name:NNN \large \l_fontscale_large_size_dim
      \l_fontscale_large_baselineskip_skip
  }
\DeclareDocumentCommand \Large { }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \Large }
      }
      { \__fontscale_Large: }
  }
\cs_new_protected:Npn \__fontscale_Large:
  {
    \__fontscale_name:NNN \Large \l_fontscale_Large_size_dim
      \l_fontscale_Large_baselineskip_skip
  }
\DeclareDocumentCommand \LARGE { }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \LARGE }
      }
      { \__fontscale_LARGE: }
  }
\cs_new_protected:Npn \__fontscale_LARGE:
  {
    \__fontscale_name:NNN \LARGE \l_fontscale_LARGE_size_dim
      \l_fontscale_LARGE_baselineskip_skip
  }
\DeclareDocumentCommand \huge { }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \huge }
      }
      { \__fontscale_huge: }
  }
\cs_new_protected:Npn \__fontscale_huge:
  {
    \__fontscale_name:NNN \huge \l_fontscale_huge_size_dim
      \l_fontscale_huge_baselineskip_skip
  }
\DeclareDocumentCommand \Huge { }
  {
    \mode_if_math:TF
```

```
        {
          \msg_warning:nne { fontscale } { math-mode-warning }
            { \token_to_str:N \Huge }
        }
        { \__fontscale_Huge: }
    }
\cs_new_protected:Npn \__fontscale_Huge:
    {
      \__fontscale_name:NNN \Huge \l_fontscale_Huge_size_dim
        \l_fontscale_Huge_baselineskip_skip
    }
\normalsize


\NewExpandableDocumentCommand \CurrentFontStep { } { \__fontscale_step: }
\cs_new:Npn \__fontscale_step:
  { \fp_if_nan:nF { \l_fontscale_step_fp } { \fp_use:N \l_fontscale_step_fp } }


\NewExpandableDocumentCommand \CurrentFontScale { } { \__fontscale_scale: }
\cs_new:Npn \__fontscale_scale: { \fp_use:N \l_fontscale_scale_fp }


\NewExpandableDocumentCommand \CurrentFontSize { } { \__fontscale_size: }
\cs_new:Npn \__fontscale_size: { \dim_use:N \l_fontscale_size_dim }


\NewExpandableDocumentCommand \CurrentFontBaselineskip { }
  { \__fontscale_baselineskip: }
\cs_new:Npn \__fontscale_baselineskip:
  { \skip_use:N \l_fontscale_baselineskip_skip }


\NewDocumentCommand \SetFontStep { s m }
    {
      \mode_if_math:TF
        {
          \msg_warning:nne { fontscale } { math-mode-warning }
            { \token_to_str:N \SetFontStep }
        }
        {
          \IfBooleanTF #1
            { \__fontscale_add_font_step:n {#2} }
            { \__fontscale_set_font_step:n {#2} }
        }
    }
\cs_new_protected:Npn \__fontscale_add_font_step:n #1
    {
      \fp_if_nan:nTF { \l_fontscale_step_fp }
        { \msg_error:nn { fontscale } { current-font-step-out-of-bounds } }
        { \__fontscale_set_font_step:n { (#1) + \l_fontscale_step_fp } }
    }
```

```
\cs_new_protected:Npn \__fontscale_set_font_step:n #1
  {
    \fp_set:Nn \l__fontscale_tmp_fp {#1}
    \str_case:enF { \__fontscale_fp_eval_round:n { \l__fontscale_tmp_fp } }
      {
        { -4 } { \tiny         }
        { -3 } { \scriptsize   }
        { -2 } { \footnotesize }
        { -1 } { \small        }
        {  0 } { \normalsize   }
        {  1 } { \large        }
        {  2 } { \Large        }
        {  3 } { \LARGE        }
        {  4 } { \huge         }
        {  5 } { \Huge         }
      }
      {
        \str_if_eq:VnTF \l__fontscale_typographic_scale_str { musical }
          {
            \__fontscale_set_font_size:n
              {
                \fp_to_dim:n
                  {
                    \l__fontscale_musical_base_fp *
                    \l__fontscale_musical_ratio_fp ^
                    ( \l__fontscale_tmp_fp / \l__fontscale_musical_notes_fp )
                  }
              }
          }
          {
            \msg_error:nne { fontscale } { font-step-out-of-bounds }
              { \fp_use:N \l__fontscale_tmp_fp }
          }
      }
  }

\NewDocumentCommand \SetFontScale { s m }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \SetFontScale }
      }
      {
        \IfBooleanTF #1
          { \__fontscale_add_font_scale:n {#2} }
          { \__fontscale_set_font_scale:n {#2} }
      }
```

```
  }
\cs_new_protected:Npn \__fontscale_add_font_scale:n #1
  { \__fontscale_set_font_scale:n { (#1) + \l_fontscale_scale_fp } }
\cs_new_protected:Npn \__fontscale_set_font_scale:n #1
  {
    \__fontscale_set_font_size:n
      { \fp_to_dim:n { (#1) * \l__fontscale_normalsize_size_fp } }
  }


\NewDocumentCommand \SetFontSize { s >{ \__fontscale_arg_process_dim:n } m }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \SetFontSize }
      }
      {
        \IfBooleanTF #1
          { \__fontscale_add_font_size:n {#2} }
          { \__fontscale_set_font_size:n {#2} }
      }
  }
\cs_new_protected:Npn \__fontscale_add_font_size:n #1
  { \__fontscale_set_font_size:n { (#1) + \l_fontscale_size_dim } }


\NewDocumentCommand \ScaleFont { m }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \ScaleFont }
      }
      { \__fontscale_scale_font:n {#1} }
  }
\cs_new_protected:Npn \__fontscale_scale_font:n #1
  {
    \fp_set:Nn \l__fontscale_tmp_fp {#1}
    \__fontscale_set_font_size:nn
      {
        \fp_to_dim:n
          { \l__fontscale_tmp_fp * \dim_to_fp:n { \l_fontscale_size_dim } }
      }
      {
        \fp_to_dim:n
          {
            \l__fontscale_tmp_fp *
            \dim_to_fp:n { \l_fontscale_baselineskip_skip }
          }
```

```
      }
  }


\NewDocumentCommand \SetFontSizeBaselineskip
  {
    >{ \__fontscale_arg_process_dim:n  } m
    >{ \__fontscale_arg_process_skip:n } m
  }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \SetFontSizeBaselineskip }
      }
      { \__fontscale_set_font_size:nn {#1} {#2} }
  }


\NewDocumentCommand \SetFontBaselineskip
  { s >{ \__fontscale_arg_process_skip:n } m }
  {
    \mode_if_math:TF
      {
        \msg_warning:nne { fontscale } { math-mode-warning }
          { \token_to_str:N \SetFontBaselineskip }
      }
      {
        \IfBooleanTF #1
          { \__fontscale_add_font_baselineskip:n {#2} }
          { \__fontscale_set_font_baselineskip:n {#2} }
      }
  }
\cs_new_protected:Npn \__fontscale_add_font_baselineskip:n #1
  {
    \__fontscale_set_font_baselineskip:n
      { (#1) + \l_fontscale_baselineskip_skip }
  }
\cs_new_protected:Npn \__fontscale_set_font_baselineskip:n
  { \__fontscale_set_font_size:nn { \l_fontscale_size_dim } }


\NewDocumentCommand \PrintFontSizeParameters { }
  { \__fontscale_print_font_size_parameters: }
\cs_new_protected:Npn \__fontscale_print_font_size_parameters:
  {
    step~ =~
    \fp_if_nan:nF { \l_fontscale_step_fp }
      { \__fontscale_fp_eval_round:n { \l_fontscale_step_fp } }
    ,~
    scale~ =~ \__fontscale_fp_eval_round:n { \l_fontscale_scale_fp } ,~
```

```
      size~ =~ \dim_use:N \l_fontscale_size_dim ,~
      baselineskip~ =~ \skip_use:N \l_fontscale_baselineskip_skip
  }


\NewDocumentCommand \PrintAllFontSizeParameters { }
  {
    \mode_if_math:TF
      {
        \msg_error:nne { fontscale } { math-mode-error }
          { \token_to_str:N \PrintAllFontSizeParameters }
      }
      { \__fontscale_print_all_font_size_parameters: }
  }
\cs_new_protected:Npn \__fontscale_print_all_font_size_parameters:
  {
    \tl_map_inline:nn
      {
        {tiny} {scriptsize} {footnotesize} {small} {normalsize}
        {large} {Large} {LARGE} {huge} {Huge}
      }
      {
        \token_to_str:c {##1} \@ \c_colon_str \c_space_tl
        step~ =~ \fp_use:c { c_fontscale_##1_step_fp } ,~
        scale~ =~
        \str_if_eq:nnTF {##1} { normalsize }
          { 1 }
          {
            \__fontscale_fp_eval_round:n
              { \use:c { l_fontscale_##1_scale_fp } }
          }
        ,~
        size~ =~ \dim_use:c { l_fontscale_##1_size_dim } ,~
        baselineskip~ =~ \skip_use:c { l_fontscale_##1_baselineskip_skip }
        \str_if_eq:nnF {##1} { Huge } { \newline }
      }
  }


\NewDocumentCommand \PrintSampleText { >{ \ReverseBoolean } s +m }
  {
    \mode_if_math:TF
      {
        \msg_error:nne { fontscale } { math-mode-error }
          { \token_to_str:N \PrintSampleText }
      }
      {
        \IfBooleanTF #1
          { \__fontscale_print_sample_text_ascending_order:n  {#2} }
          { \__fontscale_print_sample_text_descending_order:n {#2} }
```

```
        }
    }
\cs_new_protected:Npn \__fontscale_print_sample_text_ascending_order:n #1
  {
    \group_begin:
      \tl_map_inline:nn
        {
          \tiny \scriptsize \footnotesize \small \normalsize
          \large \Large \LARGE \huge \Huge
        }
        { ##1 #1 \par }
    \group_end:
  }
\cs_new_protected:Npn \__fontscale_print_sample_text_descending_order:n #1
  {
    \group_begin:
      \tl_map_inline:nn
        {
          \Huge \huge \LARGE \Large \large
          \normalsize \small \footnotesize \scriptsize \tiny
        }
        { ##1 #1 \par }
    \group_end:
  }


\NewDocumentCommand \PrintFontSizeCommand { }
  {
    \mode_if_math:TF
      {
        \msg_error:nne { fontscale } { math-mode-error }
          { \token_to_str:N \PrintFontSizeCommand }
      }
      { \__fontscale_print_name: }
  }
\cs_new_protected:Npn \__fontscale_print_name:
  {
    \token_to_str:c
      {
        \dim_case:nnF { \l_fontscale_size_dim }
          {
            { \l_fontscale_tiny_size_dim          } { tiny         }
            { \l_fontscale_scriptsize_size_dim    } { scriptsize   }
            { \l_fontscale_footnotesize_size_dim  } { footnotesize }
            { \l_fontscale_small_size_dim         } { small        }
            { \l_fontscale_normalsize_size_dim    } { normalsize   }
            { \l_fontscale_large_size_dim         } { large        }
            { \l_fontscale_Large_size_dim         } { Large        }
            { \l_fontscale_LARGE_size_dim         } { LARGE        }
```

```
                 { \l_fontscale_huge_size_dim             } { huge         }
                 { \l_fontscale_Huge_size_dim             } { Huge         }
             }
             { undefined }
          }
      \@
   }
```

# 9   Purifying text

```
\NewExpandableDocumentCommand \__fontscale_use_none_sm:w { s m } { }
\tl_map_inline:nn
  {
    \fontscalesetup
    \SetFontStep
    \SetFontScale
    \SetFontSize
    \SetFontBaselineskip
  }
  { \text_declare_purify_equivalent:Nn #1 { \__fontscale_use_none_sm:w } }
\text_declare_purify_equivalent:Nn \ScaleFont { \use_none:n }
\text_declare_purify_equivalent:Nn \SetFontSizeBaselineskip { \use_none:nn }
```