

# 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}
  {2025-02-03}
  {3.1.0}
  {A flexible interface for setting font sizes}

% l3kernel version 2023-10-10 added many 'e'-variants.
\IfExplAtLeastTF { 2023-10-10 } { }
  {
    \msg_new:nnn { fontscale } { expl3-out-of-date }
    {
      The~ fontscale~ package~ could~ not~ load.~
      This~ package~ requires~
      L3~ programming~ layer~ version~ 2023-10-10~ or~ newer.
    }
    \msg_critical:nm { fontscale } { expl3-out-of-date }
  }

% This package does not require any other packages!
```

## 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 { fontsize } { key-font-scale-out-of-bounds }
{
  Invalid~ value~ '#1'~ \msg_line_context:. \\
  The~ value~ of~ the~ key~ '#2 / scale'~
  must~ be~ positive.
}
\msg_new:nnn { fontsize } { key-font-size-out-of-bounds }
{
  Invalid~ value~ '#1'~ \msg_line_context:. \\
  The~ value~ of~ the~ key~ '#2 / size'~
  must~ be~ a~ positive~ length.
}
\msg_new:nnn { fontsize } { 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 { fontsize } { 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 { fontsize } { 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 { fontsize } { math-mode-error }
{ '#1'~ cannot~ be~ used~ in~ math~ mode~ \msg_line_context:. }
\msg_new:nnn { fontsize } { font-size-out-of-bounds }
{
  Invalid~ font~ size~ '#1'~ \msg_line_context:. \\
  The~ font~ size~ must~ be~ a~ positive~ length.
}
\msg_new:nnn { fontsize } { 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 { fontsize } { 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.
\hook_gput_code:nnn { selectfont } { fontscale }
  { \__fontscale_hook_code_selectfont: }
\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
}
}
{ \l_fontscale_hook_code_selectfont_auxii: }
}
\cs_new_protected:Npn \l_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 }
}

```

% 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 { nnv , nne }

```

% Used to process user input. Sets an integer/dimen/skip variable from an  
 % integer/dimen/skip expression and removes extra trailing tokens, if any. A  
 % default unit of 'pt' is appended in the dimen and skip expressions.

```

\cs_new_protected:Npn \__fontscale_int_set_from_user:Nn #1#2

```

```

{
  \afterassignment \use_none_delimit_by_q_stop:w
  #1 = \numexpr #2 \relax
  \q_stop
}

```

```

\cs_new_protected:Npn \__fontscale_dim_set_from_user: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_from_user:Nn { c }

```

```

\cs_new_protected:Npn \__fontscale_skip_set_from_user: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_from_user:Nn { c }

```

```

% Argument processors
\cs_new_protected:Npn \__fontscale_arg_process_dim:n #1
{
  \__fontscale_dim_set_from_user: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_from_user: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

```

% Variables not defined with \keys_define:nn.
\str_new:N \l__fontscale_typographic_scale_str
\dim_new:N \l__fontscale_musical_base_dim
\int_new:N \l__fontscale_musical_notes_int

% Used to define .code:n keys.
\cs_new_protected:Npn \__fontscale_keys_code_musical_base:
{
    \__fontscale_dim_set_from_user:Nn \l__fontscale_musical_base_dim
    { \l_keys_value_tl }
}
\cs_new_protected:Npn \__fontscale_keys_code_musical_notes:
{
    \__fontscale_int_set_from_user:Nn \l__fontscale_musical_notes_int
    { \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 .code:n = \__fontscale_keys_code_musical_notes:
, 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 { fontsize / 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 { fontsize / 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 { fontsize / 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 { fontsize / 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 { fontsize }

```

```

{
  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 { fontsize } { math-mode-warning }
      { \token_to_str:N \fontscylesetup }
  }
  {
    \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 { fontsize } {#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 { fontsize } { 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 { fontsize } { 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 { fontsize } { 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_from_user:Nn \l__fontscale_normalsize_size_dim
    { \l__fontscale_normalsize_size_tl }
    \dim_compare:nNnF \l__fontscale_normalsize_size_dim > \c_zero_dim
    {
      \msg_error:nnVn { fontscale } { key-font-size-out-of-bounds }
      \l__fontscale_normalsize_size_dim { normalsize }
      \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_from_user: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_xiipn: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_xipt: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 )
        }
    }
  }
}
\l_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:nnen { fontscale } { key-font-scale-out-of-bounds }
    { \fp_eval:n { \use:c { l__fontscale_#1_scale_tl } } } {#1}
    \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_from_user: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:nnvn { fontscale } { key-font-size-out-of-bounds }
      { l_fontscale_#1_size_dim } {#1}
      \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_from_user: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 { fontsize } { 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 { fontsize } { 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 { fontsize } { 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 { fontsize } { 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
}
\normalize

\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 { fontsize } { 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 } { }
\l_map_inline:nn
{
  \fontscasesetup
  \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 }

```