xpiano — An extension of piano.sty (originally written by Émile Daneault)*

Enrico Gregorio†

Released 2015/05/23

Abstract

The package provides macros for typesetting virtual keyboards limited to two octaves, for showing notes represented by a colored circle. Optionally the number used for pitch analysis can be shown.

Contents

*This file describes v1.0, last revised 2015/05/23.

†Email: `enrico DOT gregorio AT univr DOT it`

1 Introduction

Simple keyboard representations can be useful for people involved in music. This package builds upon piano.sty by Émile Daneault (available on CTAN), adding several features:

- the number of notes is arbitrary;
- the color of the circles is customizable;
- the number used for pitch analysis can be shown;
- the width of the keys and the length of the black keys are customizable;
- it's possible to show one or two octaves, optionally adding a trailing C;

The package provides the commands

- `\keyboard[`⟨*options*⟩`]{`⟨*notes*⟩`}`
- `\keyboardsetup{`⟨*options*⟩`}`
- `\Keyboard` with up to seven optional arguments

The last command is intended for users of piano.sty who can recycle their diagrams by just changing the lowercase `\keyboard` into `\Keyboard` with no other change.

2 Usage

The basic command is `\keyboard`, which takes as mandatory argument the list of notes to mark. The notes can be expressed in different ways:

- the convention of piano.sty where they are
  `Co Cso Do Dso Eo Fo Fso Go Gso Ao Aso Bo`
  `Ct Cst Dt Dst Et Ft Fst Gt Gst At Ast Bt`
- the German names
  `C Ciss D Diss E F Fiss G Giss A Aiss B`
  `C' Ciss' D' Diss' E' F' Fiss' G' Giss' A' Aiss' B'`
- the English names
  `C Cs D Ds E F Fs G Gs A As B`
  `C' Cs' D' Ds' E' F' Fs' G' Gs' A' As' B'`
- the "pitch analysis" convention
  `0 1 2 3 4 5 6 7 8 9 10 11`
  `0' 1' 2' 3' 4' 5' 6' 7' 8' 9' 10' 11'`

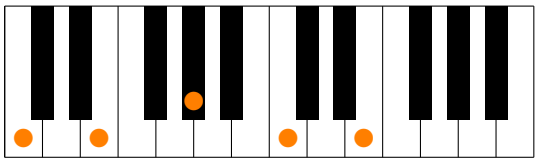
In the lists above, the lines denote the first and second octaves, respectively. For the German style names, the enharmonic equivalents are also available, `Dess Ess Gess Ass Bess` (with the primed correspondents).

The example in the documentation of piano.sty can so be input in any of the following equivalent forms

`\keyboard`
`\Keyboard`

```
\Keyboard[Co][Eo][Gso][Ct][Et]
\keyboard{Co,Eo,Gso,Ct,Et}
\keyboard{C,E,Giss,C',E'}
\keyboard{C,E,Gs,C',E'}
\keyboard{0,4,8,0',4'}
```

producing the following diagram



Each `\keyboard` command can receive an optional argument, where options for drawing the keyboard are set with a key-value syntax. The keys are listed in table 1. As usual, the boolean valued keys can be simply specified by name, the `=true` value is implicit. The default `pianodefault` color is defined as in piano.sty by `\definecolor{pianodefault}{RGB}{255,127,0}`.

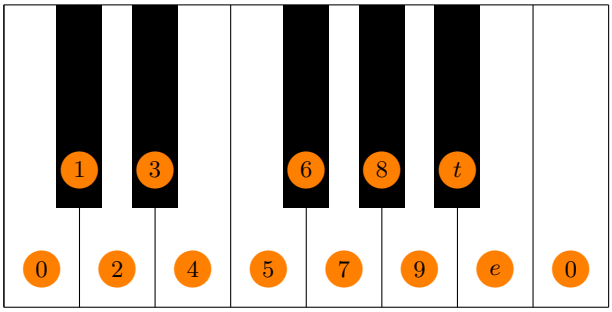
Table 1: The keys for setup

Key	Type	Default	Explanation
`color`	Literal	`pianodefault`	The color of the note markers
`single`	Boolean	`false`	Draw just one octave
`ext`	Boolean	`false`	Add a trailing C
`size`	Dimension	`0.5cm`	The width of a white key
`height`	Numeric	`4`	The ratio between height and width of white keys
`ratio`	Numeric	`0.75`	The ratio between the height of the black and the white keys
`numbers`	Boolean	`false`	Show the pitch analysis number
`font`	Literal	`\tiny`	The font specification for the number
`numbercolor`	Literal	`black`	The color of the numbers
`10`	Literal	`10`	The representation of the number 10
`11`	Literal	`11`	The representation of the number 11

The settings to the key in the optional argument to `\keyboard` is local to the diagram being drawn. For instance, the following input will mark all possible notes in one octave with t and e for ten and eleven as numbers:

```
\keyboard[
  single,
  ext,
  size=1cm,
  font=\small,
  numbers,
```

```
  ratio=0.67,
  10=$t$, 11=$e$,
]{C,Cs,D,Ds,E,F,Fs,G,Gs,A,As,B,C'}
```



`\keyboardsetup` The `\keyboardsetup` command can be used to set the options from one point on; the best place is of course the preamble, so the choice will affect all diagrams. However this command obeys the usual scoping rules. For instance, if you want most of your diagrams to have the pitch numbers and be larger than the standard ones, you can say in the preamble

```
\keyboardsetup{
  numbers,
  size=0.8cm,
  ratio=0.67,
  font=\small,
  10=$t$, 11=$e$,
}
```

and specify `numbers=false` in the optional argument to `\keyboard` for the occasional diagram which you don't want to be numbered.

3 Cautions

The `color` key accepts any color in the syntax of the xcolor package. Note that the package is loaded without options, so if you want to load it with some options (or load a package that does so), you must do it before loading xpiano.

4 Implementation

1 ⟨*package⟩

2 ⟨@@=xpiano⟩

4.1 Preliminaries

The usual preliminaries, with the declaration of the package and the guard against too old versions of LaTeX3 packages.

```
\ProvidesExplPackage {xpiano} {2015/05/23} {1.0}
  {An extension of piano.sty by \'Emile Daneault}
\@ifpackagelater { expl3 } { 2015/03/01 }
  { }
  {
    \PackageError { xpiano } { Support~package~expl3~too~old }
      {
        You~need~to~update~your~installation~of~the~bundles~'l3kernel'~and~
        'l3packages'.\MessageBreak
        Loading~xpiano~will~abort!
      }
    \tex_endinput:D
  }
```

The support package and the definition of the default color

```
\RequirePackage{xcolor}
\definecolor{pianodefault}{RGB}{255,127,0}
```

4.2 The user level commands

\keyboard
\keyboardsetup
\Keyboard
\xpiano_keyboard:nn

Nothing really complicated: just pass control to inner functions.

```
\NewDocumentCommand{\keyboard}{ O{}m }
 {
  \xpiano_keyboard:nn { #1 } { #2 }
 }
\NewDocumentCommand{\keyboardsetup}{ m }
 {
  \keys_set:nn { piano } { #1 }
 }
% compatibility with piano.sty (just change \keyboard to \Keyboard)
\NewDocumentCommand{\Keyboard}{O{}O{}O{}O{}O{}}
 {
  \keyboard{#1,#2,#3,#4,#5}
 }
```

(*End definition for* `\keyboard` *and others. These functions are documented on page* **??**.)

4.3 The key-value interface

\l__xpiano_font_tl
\l__xpiano_single_bool
\l__xpiano_ext_bool
\l__xpiano_size_dim
\l__xpiano_height_tl
\l__xpiano_numbers_bool
\l__xpiano_color_tl
\l__xpiano_numbercolor_tl
\l__xpiano_ten
\l__xpiano_eleven_tl
\l__xpiano_ratio_fp
\l__xpiano_width_tl
\l__xpiano_blacknote_height_tl

```
\keys_define:nn { piano }
 {
  font        .tl_set:N   = \l__xpiano_font_tl,
  single      .bool_set:N = \l__xpiano_single_bool,
  ext         .bool_set:N = \l__xpiano_ext_bool,
  size        .dim_set:N  = \l__xpiano_size_dim,
  height      .tl_set:N   = \l__xpiano_height_tl,
  numbers     .bool_set:N = \l__xpiano_numbers_bool,
  color       .tl_set:N   = \l__xpiano_color_tl,
```

```
  numbercolor .tl_set:N   = \l__xpiano_numbercolor_tl,
  10          .tl_set:N   = \l__xpiano_ten_tl,
  11          .tl_set:N   = \l__xpiano_eleven_tl,
  ratio       .fp_set:N   = \l__xpiano_ratio_fp,
  font        .initial:n  = \tiny,
  single      .initial:n  = false,
  single      .default:n  = true,
  ext         .initial:n  = false,
  ext         .default:n  = true,
  size        .initial:n  = 0.5cm,
  height      .initial:n  = 4,
  numbers     .initial:n  = false,
  numbers     .default:n  = true,
  color       .initial:n  = {pianodefault},
  numbercolor .initial:n  = black,
  10          .initial:n  = 10,
  11          .initial:n  = 11,
  ratio       .initial:n  = 0.75,
 }
\tl_new:N \l__xpiano_width_tl
\tl_new:N \l__xpiano_blacknote_height_tl
```

(*End definition for* `\l__xpiano_font_tl` *and others. These functions are documented on page* **??**.)

4.4 The note names

We want to allow for several input conventions, so each possible note name is converted into an internal numeric representation. Using a property list variable is the best strategy.

`\g__xpiano_notes_prop`

```
\prop_new:N \g__xpiano_notes_prop
% Daneault convention
\prop_gput:Nnn \g__xpiano_notes_prop { Co }  { 0 }
\prop_gput:Nnn \g__xpiano_notes_prop { Cso } { 1 }
\prop_gput:Nnn \g__xpiano_notes_prop { Do }  { 2 }
\prop_gput:Nnn \g__xpiano_notes_prop { Dso } { 3 }
\prop_gput:Nnn \g__xpiano_notes_prop { Eo }  { 4 }
\prop_gput:Nnn \g__xpiano_notes_prop { Fo }  { 5 }
\prop_gput:Nnn \g__xpiano_notes_prop { Fso } { 6 }
\prop_gput:Nnn \g__xpiano_notes_prop { Go }  { 7 }
\prop_gput:Nnn \g__xpiano_notes_prop { Gso } { 8 }
\prop_gput:Nnn \g__xpiano_notes_prop { Ao }  { 9 }
\prop_gput:Nnn \g__xpiano_notes_prop { Aso } { 10 }
\prop_gput:Nnn \g__xpiano_notes_prop { Bo }  { 11 }
\prop_gput:Nnn \g__xpiano_notes_prop { Ct }  { 0' }
\prop_gput:Nnn \g__xpiano_notes_prop { Cst } { 1' }
\prop_gput:Nnn \g__xpiano_notes_prop { Dt }  { 2' }
\prop_gput:Nnn \g__xpiano_notes_prop { Dst } { 3' }
\prop_gput:Nnn \g__xpiano_notes_prop { Et }  { 4' }
\prop_gput:Nnn \g__xpiano_notes_prop { Ft }  { 5' }
```

```
\prop_gput:Nnn \g__xpiano_notes_prop { Fst } { 6' }
\prop_gput:Nnn \g__xpiano_notes_prop { Gt }  { 7' }
\prop_gput:Nnn \g__xpiano_notes_prop { Gst } { 8' }
\prop_gput:Nnn \g__xpiano_notes_prop { At }  { 9' }
\prop_gput:Nnn \g__xpiano_notes_prop { Ast } { 10' }
\prop_gput:Nnn \g__xpiano_notes_prop { Bt }  { 11' }
% German (?) convention
\prop_gput:Nnn \g__xpiano_notes_prop { C }    { 0 }
\prop_gput:Nnn \g__xpiano_notes_prop { Ciss }  { 1 }
\prop_gput:Nnn \g__xpiano_notes_prop { Dess }  { 1 }
\prop_gput:Nnn \g__xpiano_notes_prop { D }    { 2 }
\prop_gput:Nnn \g__xpiano_notes_prop { Diss }  { 3 }
\prop_gput:Nnn \g__xpiano_notes_prop { Ess }   { 3 }
\prop_gput:Nnn \g__xpiano_notes_prop { E }    { 4 }
\prop_gput:Nnn \g__xpiano_notes_prop { F }    { 5 }
\prop_gput:Nnn \g__xpiano_notes_prop { Fiss }  { 6 }
\prop_gput:Nnn \g__xpiano_notes_prop { Gess }  { 6 }
\prop_gput:Nnn \g__xpiano_notes_prop { G }    { 7 }
\prop_gput:Nnn \g__xpiano_notes_prop { Giss }  { 8 }
\prop_gput:Nnn \g__xpiano_notes_prop { Ass }   { 8 }
\prop_gput:Nnn \g__xpiano_notes_prop { A }    { 9 }
\prop_gput:Nnn \g__xpiano_notes_prop { Aiss }  { 10 }
\prop_gput:Nnn \g__xpiano_notes_prop { Bess }  { 10 }
\prop_gput:Nnn \g__xpiano_notes_prop { B }    { 11 }
\prop_gput:Nnn \g__xpiano_notes_prop { C' }    { 0' }
\prop_gput:Nnn \g__xpiano_notes_prop { Ciss' } { 1' }
\prop_gput:Nnn \g__xpiano_notes_prop { Dess' } { 1' }
\prop_gput:Nnn \g__xpiano_notes_prop { D' }    { 2' }
\prop_gput:Nnn \g__xpiano_notes_prop { Diss' } { 3' }
\prop_gput:Nnn \g__xpiano_notes_prop { Ess' }  { 3' }
\prop_gput:Nnn \g__xpiano_notes_prop { E' }    { 4' }
\prop_gput:Nnn \g__xpiano_notes_prop { F' }    { 5' }
\prop_gput:Nnn \g__xpiano_notes_prop { Fiss' } { 6' }
\prop_gput:Nnn \g__xpiano_notes_prop { Gess' } { 6' }
\prop_gput:Nnn \g__xpiano_notes_prop { G' }    { 7' }
\prop_gput:Nnn \g__xpiano_notes_prop { Giss' } { 8' }
\prop_gput:Nnn \g__xpiano_notes_prop { Ass' }  { 8' }
\prop_gput:Nnn \g__xpiano_notes_prop { A' }    { 9' }
\prop_gput:Nnn \g__xpiano_notes_prop { Aiss' } { 10' }
\prop_gput:Nnn \g__xpiano_notes_prop { Bess' } { 10' }
\prop_gput:Nnn \g__xpiano_notes_prop { B' }    { 11' }
% English (?) convention
\prop_gput:Nnn \g__xpiano_notes_prop { C }   { 0 }
\prop_gput:Nnn \g__xpiano_notes_prop { Cs }  { 1 }
\prop_gput:Nnn \g__xpiano_notes_prop { D }   { 2 }
\prop_gput:Nnn \g__xpiano_notes_prop { Ds }  { 3 }
\prop_gput:Nnn \g__xpiano_notes_prop { E }   { 4 }
\prop_gput:Nnn \g__xpiano_notes_prop { F }   { 5 }
\prop_gput:Nnn \g__xpiano_notes_prop { Fs }  { 6 }
\prop_gput:Nnn \g__xpiano_notes_prop { G }   { 7 }
```

```
\prop_gput:Nnn \g__xpiano_notes_prop { Gs }  { 8 }
\prop_gput:Nnn \g__xpiano_notes_prop { A }   { 9 }
\prop_gput:Nnn \g__xpiano_notes_prop { As }  { 10 }
\prop_gput:Nnn \g__xpiano_notes_prop { B }   { 11 }
\prop_gput:Nnn \g__xpiano_notes_prop { C' }  { 0' }
\prop_gput:Nnn \g__xpiano_notes_prop { Cs' } { 1' }
\prop_gput:Nnn \g__xpiano_notes_prop { D' }  { 2' }
\prop_gput:Nnn \g__xpiano_notes_prop { Ds' } { 3' }
\prop_gput:Nnn \g__xpiano_notes_prop { E' }  { 4' }
\prop_gput:Nnn \g__xpiano_notes_prop { F' }  { 5' }
\prop_gput:Nnn \g__xpiano_notes_prop { Fs' } { 6' }
\prop_gput:Nnn \g__xpiano_notes_prop { G' }  { 7' }
\prop_gput:Nnn \g__xpiano_notes_prop { Gs' } { 8' }
\prop_gput:Nnn \g__xpiano_notes_prop { A' }  { 9' }
\prop_gput:Nnn \g__xpiano_notes_prop { As' } { 10' }
\prop_gput:Nnn \g__xpiano_notes_prop { B' }  { 11' }
% Pitch analysis convention
\prop_gput:Nnn \g__xpiano_notes_prop { 0 }   { 0 }
\prop_gput:Nnn \g__xpiano_notes_prop { 1 }   { 1 }
\prop_gput:Nnn \g__xpiano_notes_prop { 2 }   { 2 }
\prop_gput:Nnn \g__xpiano_notes_prop { 3 }   { 3 }
\prop_gput:Nnn \g__xpiano_notes_prop { 4 }   { 4 }
\prop_gput:Nnn \g__xpiano_notes_prop { 5 }   { 5 }
\prop_gput:Nnn \g__xpiano_notes_prop { 6 }   { 6 }
\prop_gput:Nnn \g__xpiano_notes_prop { 7 }   { 7 }
\prop_gput:Nnn \g__xpiano_notes_prop { 8 }   { 8 }
\prop_gput:Nnn \g__xpiano_notes_prop { 9 }   { 9 }
\prop_gput:Nnn \g__xpiano_notes_prop { 10 }  { 10 }
\prop_gput:Nnn \g__xpiano_notes_prop { 11 }  { 11 }
\prop_gput:Nnn \g__xpiano_notes_prop { 0' }  { 0' }
\prop_gput:Nnn \g__xpiano_notes_prop { 1' }  { 1' }
\prop_gput:Nnn \g__xpiano_notes_prop { 2' }  { 2' }
\prop_gput:Nnn \g__xpiano_notes_prop { 3' }  { 3' }
\prop_gput:Nnn \g__xpiano_notes_prop { 4' }  { 4' }
\prop_gput:Nnn \g__xpiano_notes_prop { 5' }  { 5' }
\prop_gput:Nnn \g__xpiano_notes_prop { 6' }  { 6' }
\prop_gput:Nnn \g__xpiano_notes_prop { 7' }  { 7' }
\prop_gput:Nnn \g__xpiano_notes_prop { 8' }  { 8' }
\prop_gput:Nnn \g__xpiano_notes_prop { 9' }  { 9' }
\prop_gput:Nnn \g__xpiano_notes_prop { 10' } { 10' }
\prop_gput:Nnn \g__xpiano_notes_prop { 11' } { 11' }
```

(*End definition for* `\g__xpiano_notes_prop`. *This function is documented on page* **??**.)

4.5 The main function

`\xpiano_keyboard:nn`

The main function opens a group in order not to clobber the default values for the keys; then the local settings are looked at and the number of keys to draw is set according to the request of one or two octaves and the possible trailing C. The vertical position for

the black notes is stored in a token list for efficiency.

```
\cs_new_protected:Npn \xpiano_keyboard:nn #1 #2
 {
  \group_begin:
  \keys_set:nn { piano } { #1 }
  \bool_if:NTF \l__xpiano_ext_bool
   {
    \tl_set:Nx \l__xpiano_width_tl
     {
      \bool_if:NTF \l__xpiano_single_bool { 8 } { 15 }
     }
   }
   {
    \tl_set:Nx \l__xpiano_width_tl
     {
      \bool_if:NTF \l__xpiano_single_bool { 7 } { 14 }
     }
   }
  \tl_set:Nx \l__xpiano_blacknote_height_tl
   {
    \fp_eval:n {0.5+(1-\l__xpiano_ratio_fp)*\l__xpiano_height_tl}
   }
```

After the preliminary, the unit length is set and a `picture` is started and the keys are drawn.

```
  %% Draw the keyboard
  \setlength{\unitlength}{\l__xpiano_size_dim}
  \begin{picture}(\l__xpiano_width_tl,\l__xpiano_height_tl)
  % White keys
  \multiput(0,0)(1,0){\l__xpiano_width_tl}{\line(0,1){\l__xpiano_height_tl}}

  % Boundary
  \put(0,0){\line(0,1){\l__xpiano_height_tl}}
  \put(0,0){\line(1,0){\l__xpiano_width_tl}}
  \put(\l__xpiano_width_tl,0){\line(0,1){\l__xpiano_height_tl}}
  \put(0,\l__xpiano_height_tl){\line(1,0){\l__xpiano_width_tl}}

  % Black keys
  \linethickness{.6\l__xpiano_size_dim}
  \multiput(1,\l__xpiano_height_tl)(1,0){2}
   {
    \line(0,-1){\fp_eval:n {\l__xpiano_ratio_fp*\l__xpiano_height_tl}}
   }
  \multiput(4,\l__xpiano_height_tl)(1,0){3}
   {
    \line(0,-1){\fp_eval:n {\l__xpiano_ratio_fp*\l__xpiano_height_tl}}
   }
  \bool_if:NF \l__xpiano_single_bool
   {
    \multiput(8,\l__xpiano_height_tl)(1,0){2}
```

```
    {
     \line(0,-1){\fp_eval:n {\l__xpiano_ratio_fp*\l__xpiano_height_tl}}
    }
   \multiput(11,\l__xpiano_height_tl)(1,0){3}
    {
     \line(0,-1){\fp_eval:n {\l__xpiano_ratio_fp*\l__xpiano_height_tl}}
    }
  }
```

Now the notes are drawn; the color is set to the desired one and the second argument to `\piano_keyboard:nn` is mapped as a comma separated list, passing control to an auxiliary function, for simplicity. Finally the picture is finished and the group is closed.

```
  % The notes
  \color{\l__xpiano_color_tl}
  \clist_map_inline:nn { #2 }
   {
    \__xpiano_do_key:n { ##1 }
   }
  \end{picture}
  \group_end:
}
```

(*End definition for* `\xpiano_keyboard:nn`*. This function is documented on page* ??.)

`\__xpiano_add_note:nn`
`\__xpiano_do_key:n`

The auxiliary function mentioned before converts the input into the internal representation using `\prop_item:Nn` and doing a `\str_case:nn` test. Another auxiliary function does the actual drawing, just in order not to complicate the code in `\str_case:fn`.

```
\cs_new_protected:Npn \__xpiano_add_note:nn #1 #2
 {
  \put(#2){\circle*{0.5}}
  \bool_if:NT \l__xpiano_numbers_bool
   {
    \put(#2)
     {
      \makebox(0,0)
       {
        \normalfont\color{\l__xpiano_numbercolor_tl}\l__xpiano_font_tl #1
       }
     }
   }
 }

\cs_new_protected:Npn \__xpiano_do_key:n #1
 {
  \str_case:fn { \prop_item:Nn \g__xpiano_notes_prop {#1} }
   {
    {0}{\__xpiano_add_note:nn {0}{0.5,0.5}}
    {2}{\__xpiano_add_note:nn {2}{1.5,0.5}}
    {4}{\__xpiano_add_note:nn {4}{2.5,0.5}}
    {5}{\__xpiano_add_note:nn {5}{3.5,0.5}}
```

```
    {7}{\__xpiano_add_note:nn {7}{4.5,0.5}}
    {9}{\__xpiano_add_note:nn {9}{5.5,0.5}}
    {11}{\__xpiano_add_note:nn {\l__xpiano_eleven_tl}{6.5,0.5}}
    {0'}{\__xpiano_add_note:nn {0}{7.5,0.5}}
    {2'}{\__xpiano_add_note:nn {2}{8.5,0.5}}
    {4'}{\__xpiano_add_note:nn {4}{9.5,0.5}}
    {5'}{\__xpiano_add_note:nn {5}{10.5,0.5}}
    {7'}{\__xpiano_add_note:nn {7}{11.5,0.5}}
    {9'}{\__xpiano_add_note:nn {9}{12.5,0.5}}
    {11'}{\__xpiano_add_note:nn {\l__xpiano_eleven_tl}{13.5,0.5}}
    {1}{\__xpiano_add_note:nn {1}{1,\l__xpiano_blacknote_height_tl}}
    {3}{\__xpiano_add_note:nn {3}{2,\l__xpiano_blacknote_height_tl}}
    {6}{\__xpiano_add_note:nn {6}{4,\l__xpiano_blacknote_height_tl}}
    {8}{\__xpiano_add_note:nn {8}{5,\l__xpiano_blacknote_height_tl}}
    {10}{\__xpiano_add_note:nn {\l__xpiano_ten_tl}{6,\l__xpiano_blacknote_height_tl}}
    {1'}{\__xpiano_add_note:nn {1}{8,\l__xpiano_blacknote_height_tl}}
    {3'}{\__xpiano_add_note:nn {3}{9,\l__xpiano_blacknote_height_tl}}
    {6'}{\__xpiano_add_note:nn {6}{11,\l__xpiano_blacknote_height_tl}}
    {8'}{\__xpiano_add_note:nn {8}{12,\l__xpiano_blacknote_height_tl}}
    {10'}{\__xpiano_add_note:nn {\l__xpiano_ten_tl}{13,\l__xpiano_blacknote_height_tl}}
  }
}
```

(*End definition for* `\__xpiano_add_note:nn` *and* `\__xpiano_do_key:n`*. These functions are documented on page* ??.)

`\str_case:fn` We also need a variant of `\str_case:nn`

```
\cs_generate_variant:Nn \str_case:nn {f}
```

(*End definition for* `\str_case:fn`*. This function is documented on page* ??.)

That's all, folks!

```
⟨/package⟩
```

Change History

v1.0

General: First public release 1

Index

The italic numbers denote the pages where the corresponding entry is described, numbers underlined point to the definition, all others indicate the places where it is used.

Symbols

B

- \begin 9
- bool commands:
  - \bool_if:NF 9
  - \bool_if:NT 10
  - \bool_if:NTF 8, 8, 8

C

- \circle 10
- clist commands:
  - \clist_map_inline:nn 9
- \color 9, 10
- cs commands:
  - \cs_generate_variant:Nn 11
  - \cs_new_protected:Npn 8, 10, 10

D

- \definecolor 4

E

- \end 9

F

- fp commands:
  - \fp_eval:n 8, 9, 9, 9, 9

G

- group commands:
  - \group_begin: 8
  - \group_end: 9

K

- \Keyboard *2*
- \Keyboard 1, 1, 2, 4, 5, 5
- \keyboard *2*
- \keyboard 1, 1, 2, 2, 2, 2, 2, 2, 2, 3, 4, 4, 4, 5, 5
- \keyboardsetup *3*
- \keyboardsetup 1, 3, 3, 4, 5
- keys commands:
  - \keys_define:nn 5
  - \keys_set:nn 5, 8

L

- \line 9, 9, 9, 9, 9, 9, 9, 9, 9
- \linethickness 9

M

- \makebox 10
- \MessageBreak 4
- \multiput 9, 9, 9, 9, 9

N

- \NewDocumentCommand 4, 5, 5
- \normalfont 10

P

- \PackageError 4
- piano commands:
  - \piano_keyboard:nn 9
- prop commands:
  - \prop_gput:Nnn 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8
  - \prop_item:Nn 9, 10
  - \prop_new:N 6
- \ProvidesExplPackage 4
- \put 9, 9, 9, 9, 10, 10

R

- \RequirePackage 4

S

- \setlength 9
- \small 3, 4
- str commands:
  - \str_case:fn 10, 10, 11
  - \str_case:nn 9, 11, 11

T

- TEX and LATEX 2ε commands:
  - \@ifpackagelater 4
- tex commands:
  - \tex_endinput:D 4
- \tiny 3, 5
- tl commands:
  - \tl_new:N 5, 5
  - \tl_set:Nx 8, 8, 8

U

- \unitlength 9

X

- xpiano commands:
  - __xpiano_add_note:nn 9, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10

\l__xpiano_blacknote_height_tl 5, 5, 8, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10
\l__xpiano_color_tl 5, 5, 9
__xpiano_do_key:n 9, 9, 10
\l__xpiano_eleven_tl 5, 5, 10, 10
\l__xpiano_ext_bool 5, 5, 8
\l__xpiano_font_tl 5, 5, 10
\l__xpiano_height_tl 5, 5, 8, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9
\xpiano_keyboard:nn 4, 5, 8, 8
\g__xpiano_notes_prop 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 10
\l__xpiano_numbercolor_tl 5, 5, 10
\l__xpiano_numbers_bool 5, 5, 10
\l__xpiano_ratio_fp 5, 5, 8, 9, 9, 9, 9
\l__xpiano_single_bool 5, 5, 8, 8, 9
\l__xpiano_size_dim 5, 5, 9, 9
\l__xpiano_ten 5
\l__xpiano_ten_tl 5, 10, 10
\l__xpiano_width_tl 5, 5, 8, 8, 9, 9, 9, 9, 9