

luwa-ul Package Documentation

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Version 1.0.1 (2025/10/26)

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1 設置 (Installation)

インストール方法は、適切な箇所に `luwa-ul.sty` を配置し、`\usepackage{luwa-ul}` と書き込むだけで完了です。オプションはありません。(Place `luwa-ul.sty` in a directory where LaTeX can find it.)

依存性についてです。(Dependencies:)

- `luacolor`, `xcolor`
- `lua-ul`
- `calc`, `tikz`

を内部的に仕様しています。(This package uses them internally.)

2 注意 (Caution)

このパッケージはその実装の上で Lua 言語を仕様しているので、LuaLaTeX の上でのみ仕様できるパッケージとなっています。(This package internally uses Lua, so it can be compiled only by LuaLaTeX.)

3 提供されるコマンド (Commands)

提供されるコマンドは以下の通りです。要望に応じて追加されることもありえます。(The provided commands are as follows. I would add some more commands upon requests.)

- `\underLineKK`, `\overLineKK`
- `\niyusen`, `\keshiniyusen`
- `\thinHighLight`, `\thickHighLight`
- `\tenKK`, `\dashKK`, `\namiKK`
- `\LineNumbering`

3.1 `\underLineKK`

このコマンドは、`lua-ul` パッケージによって提供される `\underLine` コマンドに対し、

- 縦書き時のずれの解消
- ルビがあった際の挙動の変化

の2点において調整を施したものとなっています。

(This command is basically made out of `\underLine` command, which is provided by `lua-ul` package. I added some adjustments on it in order to

- eliminate the misalignment in vertical writing mode.
- change its behavior when the argument includes phonetic guides.

)

使い方は以下のようになります。(You can use it as follows:)

Input

```
1 \underlineKK[color=色, bottom=下線最下部の位置のずれ, height=下線の太さ (bottom
  の位置からの距離で計算)]{引数}
2
3 \underlineKK[color=red]{ああああああああ}
4 \underlineKK[bottom=.1em]{ああああああああ}
5
6 \parbox<t>[c][6cm][c]{3cm}{%
7   \underlineKK{ああ\ruby{あ}{あ}ああああ}
8 }
```

Output

横書き：

ああああ^aああああああああああああああああ

縦書き：

あ	あ	
あ	あ	
あ	あ	あ
あ	あ	
	あ	
	あ	
	あ	
	あ	
	あ	
	あ	

a あ

3.2 \overLineKK

このコマンドは`\underlineKK` を使用しても作成が可能ですが、ショートカットとして用意しておきました。このコマンドは縦書き環境においては通常の`\underlineKK` につけてあったルビ補正を抜いています。(This command can also be created using `\underlineKK`, but it has been provided as a shortcut. In a vertical writing environment, this command omits the ruby adjustment that was included in the standard `\underlineKK`.)

Input

```

1 \overLineKK[color=色]{引数}
2
3 \overLineKK[color=red]{ああああああああ}
4
5 \parbox<t>[c][6cm][c]{3cm}{%
6   \overLineKK{ああ\ruby{あ}{あ}ああああ}
7 }

```

Output

横書き：
ああああああああ

縦書き：

あ
あ
あ^あ
あ
あ
あ
あ

3.3 \nijyusen, \keshinijyusen

これらのコマンドは`\underLineKK` を入れ子にすることでも作成が可能ですが、`keshinijyusen` に関してはルビの有無による補正をなくしてあります。(These commands can also be created by nesting `\underLineKK`, but for `keshinijyusen`, the adjustment for the presence or absence of ruby has been removed.)

Input

```

1 \nijyusen[color=色, bottom=下線最下部の位置のずれ]{引数}
2 \keshinijyusen[color=色]{引数}
3
4 \nijyusen[color=red]{ああああああああ}
5 \keshinijyusen{ああああああああ}
6
7 \parbox<t>[c][6cm][c]{3cm}{%
8   \nijyusen[color=red]{ああ\ruby{あ}{あ}ああああ}
9   \keshinijyusen{ああ\ruby{あ}{あ}ああああ}

```

Output

縦書き：

6

Output

横書き：

ああああああああああああああああああああああああああああ

縦書き：

[illegible]

3.5 \namiKK

このコマンドは波線を引くコマンドを提供します。ルビに対する挙動は`\underLineKK`のそれと同じです。(This command provides a wavy underline. Its behavior with respect to ruby is the same as that of `\underLineKK`.)

```

1 \namikK[bottom=下線最下部の位置のずれ]{引数}
2
3 \namikK[bottom=.3em]{ああああああああ}
4
5 \parbox<t>[c][6cm][c]{3cm}{%
6   \namikK{あああ\ruby{あ}-{あ}ああああ}
7   \namikK[bottom=.3em]{ああああああああ}
8 }
```

Output

横書き：

ああああああああああああああああああああああああ

縦書き：

3.6 \tenKK, \dashKK

これらはそれぞれ、点線、破線を提供します。ルビに対する挙動は\underLineKK のそれと同じです。(These commands provide dotted and dashed underlines, respectively. Their behavior toward ruby text is the same as that of \underLineKK.)

Input

```

1 \tenKK[bottom=下線最下部の位置のずれ, radius=ドットの半径, distance=ドット間距離
  ]{引数}
2 % デフォルト : radius=.1ex, distance=.4ex
3 \dashKK[bottom=下線最下部の位置のずれ, width=破線の太さ, distance=破線間距離,
  length=破線の長さ]{引数}
4 % デフォルト : width=.2pt, distance=.3ex, length=.4ex
5
6 \tenKK{あああああああ}
7 \tenKK[radius=.05ex, distance=.3ex]{あああああああ}
8 \dashKK{あああああああ}
9 \dashKK[length=.01ex, distance=.1ex]{あああああああ}
10
11 \parbox<t>[c][6cm][c]{3cm}{%
12   \tenKK{ああああ\ruby{あ}{あ}あ}
13   \tenKK[radius=.05ex, distance=.3ex]{あああああああ}
14   \dashKK{ああああ\ruby{あ}{あ}あ}
15   \dashKK[length=.01ex, distance=.1ex]{あああああああ}
16 }
```


Output

横書き：

ああああああああああああああああああああああああああああああ

縦書き：

あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ
あ	あ	あ	あ

3.7 \LineNumbering

下線に番号を振るためのコマンドです。これは私が作成した `KKsymbols` パッケージ (TeX Live に収録済み) との併用をお勧めしています。スターオプションを付与すると、縦書きの時には引数の中身が回転します¹⁾。(This command assigns numbers to underlines. It is recommended to use it together with my `KKsymbols` package (already included in TeX Live). When the starred option is given, the contents of the argument are rotated in vertical writing²⁾.)

Input

```

1 \LineNumbering{\kakko{1}}\underLineKK{あああああああ}
2
3 \parbox<t>[c][6cm][c]{3cm}{%
4   \LineNumbering{\kakko{1}}\underLineKK{あああああああ}
5   \LineNumbering*{ア}\underLineKK{あああああああ}
6 }
```

Output

横書き：

あああああああ

⁽¹⁾

縦書き：

1) 横書きの時には出力に変化はありません。
2) In horizontal writing, the output remains unchanged.

あ あ あ あ あ あ あ あ あ あ あ

4 ライセンス (License)

Released under the LaTeX Project Public License (LPPL) 1.3c.

5 Version History

- v1.0.1 (2025/10/26) — Initial public release.

6 Source Code

```
\NeedsTeXFormat{LaTeX2e}

\ProvidesPackage{luwa-ul}[2025/10/29, Version 1.1.0-- now developing...]

\RequirePackage{luacolor, lua-ul, calc, tikz}
\RequirePackage[dvipsnames, svgnames, x11names]{xcolor}
\definecolor{mygray@luwa-ul}{RGB}{60, 60, 60}

\newlength{\underLine@KK@Adjust@tmp}
\newlength{\KKUL@bottom}
\newlength{\KKUL@height}

\NewDocumentCommand{\underLine@KK@Adjust@bottom}{m}{%
  \setlength{\underLine@KK@Adjust@tmp}{\f@size pt}%
  \ifnum\ltjgetparameter{direction}=3%
    \def\underLine@KK@Adjust@use@bottom{\dimexpr -#1+\underLine@KK@Adjust@tmp/2\relax}%
  \else%
    \def\underLine@KK@Adjust@use@bottom{\dimexpr #1-\underLine@KK@Adjust@tmp/7\relax}%
  \fi%
}

\NewDocumentCommand{\underLine@KK@Adjust@height}{m}{%
  \ifnum\ltjgetparameter{direction}=3%
    \def\underLine@KK@Adjust@use@height{#1}%
  \else%
```

```

\def\underLine@KK@Adjust@use@height{#1}%
\fi%
}

\define@key{KKUL}{bottom}{%
\underLine@KK@Adjust@bottom{#1}%
\setlength{\KKUL@bottom}{\underLine@KK@Adjust@use@bottom}%
}

\define@key{KKUL}{height}{%
\underLine@KK@Adjust@height{#1}%
\setlength{\KKUL@height}{\underLine@KK@Adjust@use@height}%
}

\define@key{KKUL}{color}{%
\def\KKUL@color{#1}%
}

% ルビが中に入っているときだけテキストを上昇させる
\newlength{\KKUL@rubyrise}
\directlua{
function RubyFlagKKUL(t)
if string.find(t, "\\ruby") or string.find(t, "\\kenten") or string.find(t, "\\送り") or
string.find(t, "\\振り") then
tex.print("1")
else
tex.print("0")
end
end
}

% 追記 (2025/10/29)
% Auto Depth Adjust System
\newlength{\temp@depth@kk}
\NewDocumentCommand{\getdepth@kk}{m}{%
\ifnum\ltjgetparameter{direction}=3%
\settoheight{\temp@depth@kk}{#1}%
\addtolength{\temp@depth@kk}{-.5em}%
\setlength{\temp@depth@kk}{-\temp@depth@kk}%
\else%
\settodepth{\temp@depth@kk}{#1}%
\fi%
}

\NewDocumentCommand{\underLineKK@plain}{ 0{} +m }{% 内部調整用
\underLine@KK@Adjust@bottom{-.1em}%
\underLine@KK@Adjust@height{0.3pt}%
\setlength{\KKUL@bottom}{\underLine@KK@Adjust@use@bottom}%
\setlength{\KKUL@height}{\underLine@KK@Adjust@use@height}%
\def\KKUL@color{black}%

```

```

\def\underLineKK@test@contents{#2}%
\setkeys{KKUL}{#1}%
\underLine[bottom=\KKUL@bottom, height=\KKUL@height, color=\KKUL@color]{#2}%
}

% ルビ以外のはみだしを許容する（見出しなどで見た目を損なわないためなど）
\NewDocumentCommand{\underLineKK}{ O{} +m }{%
  \underLine@KK@Adjust@bottom{-.1em}%
  \underLine@KK@Adjust@height{0.3pt}%
  \setlength{\KKUL@bottom}{\underLine@KK@Adjust@use@bottom}%
  \setlength{\KKUL@height}{\underLine@KK@Adjust@use@height}%
  \def\KKUL@color{black}%
  \def\underLineKK@test@contents{#2}%
  \setkeys{KKUL}{#1}%
  \edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL("\luaescapestring{\unexpanded\expandafter
    {\underLineKK@test@contents}}")}\relax}%
  \ifnum\ltjgetparameter{direction}=3%
    \ifnum\UL@rubyflag=1%
      \setlength{\KKUL@rubyrise}{.5em}%
    \else%
      \setlength{\KKUL@rubyrise}{0em}%
    \fi%
  \else%
    \setlength{\KKUL@rubyrise}{0em}%
  \fi%
  \underLine[bottom=\KKUL@bottom+\KKUL@rubyrise, height=\KKUL@height, color=\KKUL@color]{#2}%
}

% 深さに応じて変わるタイプ
\NewDocumentCommand{\underLineKKAUTO@make}{ O{} +m }{%
  \underLine@KK@Adjust@bottom{-.1em}%
  \underLine@KK@Adjust@height{0.3pt}%
  \setlength{\temp@depth@kk}{0pt}%
  \setlength{\KKUL@bottom}{\underLine@KK@Adjust@use@bottom}%
  \setlength{\KKUL@height}{\underLine@KK@Adjust@use@height}%
  \def\KKUL@color{black}%
  \def\underLineKK@test@contents{#2}%
  \setkeys{KKUL}{#1}%
  \getdepth@kk{\underLineKK@test@contents}%
  \underLine[bottom=\KKUL@bottom-\temp@depth@kk, height=\KKUL@height, color=\KKUL@color]{#2}%
}

\NewDocumentCommand{\underLineKKAUTO}{ O{} +m }{%
  \ifmmode
    \mathchoice
      {\mbox{\underLineKKAUTO@make[#1]{\displaystyle #2}}} % displaystyle
      {\mbox{\underLineKKAUTO@make[#1]{\textstyle #2}}} % textstyle (inline)
      {\mbox{\underLineKKAUTO@make[#1]{\scriptstyle #2}}} % scriptstyle
      {\mbox{\underLineKKAUTO@make[#1]{\scriptscriptstyle #2}}} % scriptscriptstyle
    \else

```

```

\underLineKKAuto@make[#1]{#2}% テキストモードではそのまま出力 (mboxで包まない)
\fi
}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%lua-ulで作ったnamiKK (元の名称はsnamiftだが、変更) %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\newlength{\snamift@bottom}\setlength{\snamift@bottom}{0ex}
\define@key{snamift}{bottom}{%
  \setlength{\snamift@bottom}{#1}%
}

% 名称変更用のカウンター (グローバル変数)
\newcount\snamift@id

\NewDocumentCommand{\namiKK}{ 0 } +m {%
  % 1 : キーを先にセットして \snamift@bottom を更新
  \setlength{\snamift@bottom}{0ex}%
  \def\snamift@test@contents{#2}%
  \setkeys{snamift}{#1}%
  \edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL("\luaescapestring{\unexpanded\expandafter
    {\snamift@test@contents}}")}\relax}%
  \ifnum\ltjgetparameter{direction}=3%
    \ifnum\UL@rubyflag=1%
      \addtolength{\snamift@bottom}{.5em}%
    \fi%
  \fi%
  % 2 : IDを進める
  \global\advance\snamift@id by 1\relax%
  % 3 : ユニーク名で下線タイプを定義 (正しく展開されるように \expandafter と \number を使用)
  \expandafter\newunderlinetype\csname beginUnderWavyS\number\snamift@id\endcsname{%
    \cleaders\hbox{%
      \begin{tikzpicture}[xscale=.8,baseline=\f@size/4 pt,
        x=\f@size/12 pt,y=\f@size/25 pt]
        \clip[yshift=\snamift@bottom] (1,\f@size/8 pt) rectangle (5,-\f@size/8 pt);
        \draw[line width=\f@size/24 pt,yshift=\snamift@bottom]
          (0,0) sin (1,1) cos (2,0) sin (3,-1) cos (4,0)
          sin (5,1) cos (6,0);
        \end{tikzpicture}%
      }%
    }%
  }%
  \expandafter\newunderlinetype\csname beginUnderWavyState\number\snamift@id\endcsname{%
    \cleaders\hbox{%
      \begin{tikzpicture}[xscale=.8,baseline=\f@size/4 pt,
        x=\f@size/12 pt,y=\f@size/25 pt]
        \begin{scope}[yshift=\f@size/1.2 pt]
          \clip[yshift=\snamift@bottom] (1,\f@size/8 pt) rectangle (5,-\f@size/8 pt);
          \draw[line width=\f@size/24 pt,yshift=\snamift@bottom]
            (0,0) sin (1,1) cos (2,0) sin (3,-1) cos (4,0)
            sin (5,1) cos (6,0);
        \end{scope}
      }%
    }%
  }%
}

```

```

\end{scope}
\end{tikzpicture}%
}%
}%
% 4 : 使用 (縦横の分岐; 直接 csname を呼ぶ)
{\ifnum\ltjgetparameter{direction}=3 %
\csname beginUnderWavyState\number\snamift@id\endcsname{#2}%
\else%
\csname beginUnderWavyS\number\snamift@id\endcsname{#2}%
\fi}%
}

\NewDocumentCommand{\namiKKAuto@make}{ 0{} +m }{%
\setlength{\snamift@bottom}{0ex}%
\def\snamift@test@contents{#2}%
\setkeys{snamift}{#1}%
\setlength{\temp@depth@kk}{0pt}%
\getdepth@kk{\snamift@test@contents}%
\global\advance\snamift@id by 1\relax%
\expandafter\newunderlinetype\csname beginUnderWavyS\number\snamift@id\endcsname{%
\cleaders\hbox{%
\begin{tikzpicture}[xscale=.8,baseline=\f@size/4 pt,x=\f@size/12 pt,y=\f@size/25 pt]
\begin{scope}[yshift=-\temp@depth@kk]
\clip[yshift=\snamift@bottom] (1,\f@size/8 pt) rectangle (5,-\f@size/8 pt);
\draw[line width=\f@size/24 pt,yshift=\snamift@bottom]
(0,0) sin (1,1) cos (2,0) sin (3,-1) cos (4,0)
sin (5,1) cos (6,0);
\end{scope}
\end{tikzpicture}%
}%
}%
\expandafter\newunderlinetype\csname beginUnderWavyState\number\snamift@id\endcsname{%
\cleaders\hbox{%
\begin{tikzpicture}[xscale=.8,baseline=\f@size/4 pt,
x=\f@size/12 pt,y=\f@size/25 pt]
\begin{scope}[yshift=\f@size/1.2 pt-\temp@depth@kk]
\clip[yshift=\snamift@bottom] (1,\f@size/8 pt) rectangle (5,-\f@size/8 pt);
\draw[line width=\f@size/24 pt,yshift=\snamift@bottom]
(0,0) sin (1,1) cos (2,0) sin (3,-1) cos (4,0)
sin (5,1) cos (6,0);
\end{scope}
\end{tikzpicture}%
}%
}%
{\ifnum\ltjgetparameter{direction}=3 %
\csname beginUnderWavyState\number\snamift@id\endcsname{#2}%
\else%
\csname beginUnderWavyS\number\snamift@id\endcsname{#2}%
\fi}%
}

```

```

\NewDocumentCommand{\namiKKAuto}{ O{} +m }{%
  \ifmmode
    \mathchoice
      {\mbox{\namiKKAuto@make[#1]{\displaystyle #2$}}}% displaystyle
      {\mbox{\namiKKAuto@make[#1]{\scriptstyle #2$}}}% textstyle (inline)
      {\mbox{\namiKKAuto@make[#1]{\scriptstyle #2$}}}% scriptstyle
      {\mbox{\namiKKAuto@make[#1]{\scriptscriptstyle #2$}}}% scriptscriptstyle
    \else
      \namiKKAuto@make[#1]{#2}% テキストモードではそのまま出力 (mboxで包まない)
    \fi
  }
}

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%lua-ulで作ったtenKK,dashKK (元の名称はstengthとsdashgthだが、変更) %%%%%%%%%%%%%%%
\newlength{\stength@radius}
\newlength{\stength@distance}
\newlength{\stength@bottom}

\define@key{stength}{radius}{\setlength{\stength@radius}{#1}}
\define@key{stength}{distance}{\setlength{\stength@distance}{#1}}
\define@key{stength}{bottom}{\setlength{\stength@bottom}{#1}}

\newcount\stength@id

\NewDocumentCommand{\tenKK}{ O{} +m }{%
  \setlength{\stength@radius}{.1ex}%
  \setlength{\stength@distance}{.4ex}%
  \setlength{\stength@bottom}{0ex}%
  \def\stength@test@contents{#2}%
  \setkeys{stength}{#1}%
  \edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL("\luaescapestring{\unexpanded\expandafter
    {\stength@test@contents}}")}}\relax}%
  \ifnum\ltjgetparameter{direction}=3
    \ifnum\UL@rubyflag=1
      \addtolength{\stength@bottom}{.5em}%
    \fi
  \fi%
  \global\advance\stength@id by 1\relax%
  \expandafter\newunderlinetype\csname beginUnderDot\number\stength@id\endcsname{%
    \xleaders\hbox{%
      \begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
        \fill[mygray!luwa-ul,yshift=\stength@bottom] (0.3,0) circle (\stength@radius);
        \path[use as bounding box,yshift=\stength@bottom] (0,0) rectangle (\stength@distance,0);%.8
      \end{tikzpicture}%
    }%
  }%
  \expandafter\newunderlinetype\csname beginUnderDottate\number\stength@id\endcsname{%
    \xleaders\hbox{%
      \begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%

```

```

\begin{scope}[yshift=\f@size/1.1 pt]
\fill[mygray@luwa-ul,yshift=\stength@bottom] (0.3,0) circle (\stength@radius);
\path[use as bounding box,yshift=\stength@bottom] (0,0) rectangle (\stength@distance,0);
\end{scope}
\end{tikzpicture}%
}%
}%
{\ifnum\ltjgetparameter{direction}=3 %
\csname beginUnderDottate\number\stength@id\endcsname{#2}%
}else%
\csname beginUnderDot\number\stength@id\endcsname{#2}%
\fi}%
}
\NewDocumentCommand{\tenKKAuto}{ 0{} +m }{%
\ifmmode
\mathchoice
{\mbox{\tenKKAuto@make[#1]{\displaystyle #2$}}} % displaystyle
{\mbox{\tenKKAuto@make[#1]{\textstyle #2$}}} % textstyle (inline)
{\mbox{\tenKKAuto@make[#1]{\scriptstyle #2$}}} % scriptstyle
{\mbox{\tenKKAuto@make[#1]{\scriptscriptstyle #2$}}} % scriptscriptstyle
}else
\tenKKAuto@make[#1]{#2}% テキストモードではそのまま出力 (mboxで包まない)
\fi
}

\NewDocumentCommand{\tenKKAuto@make}{ 0{} +m }{%
\setlength{\stength@radius}{.1ex}%
\setlength{\stength@distance}{.4ex}%
\setlength{\stength@bottom}{0ex}%
\def\stength@test@contents{#2}%
\setkeys{stength}{#1}%
\setlength{\temp@depth@kk}{0pt}%
\getdepth@kk{\stength@test@contents}%
\global\advance\stength@id by 1\relax%
\expandafter\newunderlinetype\csname beginUnderDot\number\stength@id\endcsname{%
\leaders\hbox{%
\begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
\begin{scope}[yshift=-\temp@depth@kk]
\fill[mygray@luwa-ul,yshift=\stength@bottom] (0.3,0) circle (\stength@radius);
\path[use as bounding box,yshift=\stength@bottom] (0,0) rectangle (\stength@distance
,0);%.8
\end{scope}
\end{tikzpicture}%
}%
}%
\expandafter\newunderlinetype\csname beginUnderDottate\number\stength@id\endcsname{%
\leaders\hbox{%
\begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
\begin{scope}[yshift=\f@size/1.1 pt-\temp@depth@kk]
\fill[mygray@luwa-ul,yshift=\stength@bottom] (0.3,0) circle (\stength@radius);

```



```

\path[use as bounding box,yshift=\stength@bottom] (0,0) rectangle (\stength@distance,0);
\end{scope}
\end{tikzpicture}%
}%
}%
{\ifnum\ltjgetparameter{direction}=3 %
\csname beginUnderDottate\number\stength@id\endcsname{#2}%
\else%
\csname beginUnderDot\number\stength@id\endcsname{#2}%
\fi}%
}

\newlength{\underdash@length}
\newlength{\underdash@distance}
\newlength{\underdash@width}
\newlength{\underdash@bottom}

\define@key{underdashgth}{length}{\setlength{\underdash@length}{#1}}
\define@key{underdashgth}{distance}{\setlength{\underdash@distance}{#1}}
\define@key{underdashgth}{width}{\setlength{\underdash@width}{#1}}
\define@key{underdashgth}{bottom}{\setlength{\underdash@bottom}{#1}}

\newcount\underdash@id

\NewDocumentCommand{\dashKK}{ 0{} +m }{%
\setlength{\underdash@length}{.4ex}%
\setlength{\underdash@distance}{.3ex}%
\setlength{\underdash@width}{.2pt}%
\setlength{\underdash@bottom}{0ex}%
\def\sdashgth@test@contents{#2}%
\setkeys{underdashgth}{#1}%
\edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL("\luaescapestring{\unexpanded\expandafter
\sdashgth@test@contents})"}\relax}%
\ifnum\ltjgetparameter{direction}=3
\ifnum\UL@rubyflag=1
\addtolength{\underdash@bottom}{.5em}%
\fi
\fi%
\global\advance\underdash@id by 1\relax%
\expandafter\newunderlinetype\csname beginUnderDash\number\underdash@id\endcsname{%
\leaders\hbox{%
\begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
\draw[black,line width=\underdash@width,xshift=.25ex,yshift=\underdash@bottom] (0,0) --
(\underdash@length,0);%
\path[use as bounding box,yshift=\underdash@bottom] (0,0) rectangle (\underdash@length
+\underdash@distance,0);%
\end{tikzpicture}%
}%
}%
}

```

```

\expandafter\newunderlinetype\csname beginUnderDashtate\number\undashed@id\endcsname{%
  \xleaders\hbox{%
    \begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
      \begin{scope}[yshift=\f@size/1.1 pt]%
        \draw[black,line width=\undashed@width,xshift=.1ex,yshift=\undashed@bottom] (0,0) --
          (\undashed@length,0);%
        \path[use as bounding box,yshift=\undashed@bottom] (0,0) rectangle (\undashed@length
          +\undashed@distance,0);%
      \end{scope}%
    \end{tikzpicture}%
  }%
}%
\ifnum\ltjgetparameter{direction}=3 %
  \csname beginUnderDashtate\number\undashed@id\endcsname{#2}%
\else%
  \csname beginUnderDash\number\undashed@id\endcsname{#2}%
\fi}%
}

\NewDocumentCommand{\dashKKAuto@make}{ O{} +m }{%
  \setlength{\undashed@length}{.4ex}%
  \setlength{\undashed@distance}{.3ex}%
  \setlength{\undashed@width}{.2pt}%
  \setlength{\undashed@bottom}{0ex}%
  \def\sdashgth@test@contents{#2}%
  \setkeys{undashedgth}{#1}%
  \setlength{\temp@depth@kk}{0pt}%
  \getdepth@kk{\sdashgth@test@contents}%
  \global\advance\undashed@id by 1\relax%
  \expandafter\newunderlinetype\csname beginUnderDash\number\undashed@id\endcsname{%
    \xleaders\hbox{%
      \begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
        \begin{scope}[yshift=-\temp@depth@kk]
          \draw[black,line width=\undashed@width,xshift=.25ex,yshift=\undashed@bottom] (0,0)
            -- (\undashed@length,0);%
          \path[use as bounding box,yshift=\undashed@bottom] (0,0) rectangle (\undashed@length
            +\undashed@distance,0);%
        \end{scope}
      \end{tikzpicture}%
    }%
  }%
}%
\expandafter\newunderlinetype\csname beginUnderDashtate\number\undashed@id\endcsname{%
  \xleaders\hbox{%
    \begin{tikzpicture}[x=0.8ex,y=.2ex,baseline=.7ex]%
      \begin{scope}[yshift=\f@size/1.1 pt-\temp@depth@kk]%
        \draw[black,line width=\undashed@width,xshift=.1ex,yshift=\undashed@bottom] (0,0) --
          (\undashed@length,0);%
        \path[use as bounding box,yshift=\undashed@bottom] (0,0) rectangle (\undashed@length
          +\undashed@distance,0);%
      \end{scope}%
    \end{tikzpicture}%
  }%
}

```

```

\end{tikzpicture}%
}%
}%
{\ifnum\ltjgetparameter{direction}=3 %
\csname beginUnderDash\number\undashed{id}\endcsname{#2}%
\else%
\csname beginUnderDash\number\undashed{id}\endcsname{#2}%
\fi}%
}
\NewDocumentCommand{\dashKKAUTO}{ O{} +m }{%
\ifmode
\mathchoice
{\mbox{\dashKKAUTO@make[#1]{\displaystyle #2}}} % displaystyle
{\mbox{\dashKKAUTO@make[#1]{\textstyle #2}}} % textstyle (inline)
{\mbox{\dashKKAUTO@make[#1]{\scriptstyle #2}}} % scriptstyle
{\mbox{\dashKKAUTO@make[#1]{\scriptscriptstyle #2}}} % scriptscriptstyle
\else
\dashKKAUTO@make[#1]{#2}% テキストモードではそのまま出力 (mboxで包まない)
\fi
}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%overLine%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\define@key{overLine}{color}{%
\def\overLineKK@color{#1}%
}

\newlength{\overLineKK@KK@Adjust}

\NewDocumentCommand{\overLineKK}{ O{} +m }{%
\setlength{\overLineKK@KK@Adjust}{\f@size pt}%
\def\overLineKK@color{black}%
\def\overLineKK@test@contents{#2}%
\setkeys{overLine}{#1}%
\edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL("\luaescapestring{\unexpanded\expandafter
{\overLineKK@test@contents}}")}\relax}%
\ifnum\ltjgetparameter{direction}=3%
\ifnum\UL@rubyflag=1%
\addtolength{\overLineKK@KK@Adjust}{.6em}%
\else%
\addtolength{\overLineKK@KK@Adjust}{.1em}%
\fi%
\else%
\ifnum\UL@rubyflag=1%
\addtolength{\overLineKK@KK@Adjust}{.6em}%
\else%
\addtolength{\overLineKK@KK@Adjust}{.1em}%
\fi%
\fi%
}

```

```

\underLineKK[bottom=\overLineKK@KK@Adjust,color=\overLineKK@color]{#2}%
}

\newlength{\temp@depth@kk@over}
\NewDocumentCommand{\getdepth@kk@over}{m}{%
  \ifnum\ltjgetparameter{direction}=3%
    \settodepth{\temp@depth@kk@over}{#1}%
    \addtolength{\temp@depth@kk@over}{-.45em}%
  \else%
    \settoheight{\temp@depth@kk@over}{#1}%
    \addtolength{\temp@depth@kk@over}{-.8em}%
    \setlength{\temp@depth@kk@over}{-\temp@depth@kk@over}%
  \fi%
}
\NewDocumentCommand{\overLineKKAUTO}{ 0{} +m }{%
  \setlength{\overLineKK@KK@Adjust}{\f@size pt}%
  \setlength{\temp@depth@kk@over}{0pt}%
  \def\overLineKK@color{black}%
  \def\overLineKK@test@contents{#2}%
  \getdepth@kk@over{\overLineKK@test@contents}%
  \setkeys{overLine}{#1}%
  \ifnum\ltjgetparameter{direction}=3%
    \addtolength{\overLineKK@KK@Adjust}{.1em}%
  \else%
    \addtolength{\overLineKK@KK@Adjust}{.1em}%
  \fi%
  \underLineKK@plain[bottom=\overLineKK@KK@Adjust-\temp@depth@kk@over,color=\overLineKK@color]{#2}%
}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%グレーの蛍光ペン（細くて下の方だけ塗るやつ）%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\newlength{\thinHighLight@KK@Adjust}
\newlength{\thinHighLight@KK@Adjust@ruby}
\newlength{\thinHighLight@KK@Adjust@ruby@yoko}
\newcommand{\thinHighLight@KK@Adjust@tmp}{%
  \ifnum\ltjgetparameter{direction}=3%
    \setlength{\thinHighLight@KK@Adjust}{-.3\zw}%
  \else%
    \setlength{\thinHighLight@KK@Adjust}{0ex}%
  \fi
}
\DeclareDocumentCommand{\thinHighLight}{ 0{color=gray} +m }{%
  \thinHighLight@KK@Adjust@tmp%
  \def\thinHighLight@test@contents{#2}%
  \setlength{\thinHighLight@KK@Adjust@ruby}{0em}%
  \setlength{\thinHighLight@KK@Adjust@ruby@yoko}{0em}%
  \edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL{"\luaescapestring{\unexpanded\expandafter

```

```
%{\thinHighLight@test@contents}})\relax}%
\ifnum\ltjgetparameter{direction}=3
  \ifnum\UL@rubyflag=1
    \setlength{\thinHighLight@KK@Adjust@ruby}{-.5em}%
  \fi
\fi
\newlength{\thinHighLight@KK@Adjust@tmp}
\setlength{\thinHighLight@KK@Adjust@tmp}{-.04\textwidth+.04\textwidth+\thinHighLight@KK@Adjust@ruby}
]#2}%
}

\newlength{\thickHighLight@KK@Adjust}
\newlength{\thickHighLight@KK@Adjust@ruby}
\newlength{\thickHighLight@KK@Adjust@ruby@yoko}
\newcommand{\thickHighLight@KK@Adjust@tmp}{%
  \ifnum\ltjgetparameter{direction}=3%
    \setlength{\thickHighLight@KK@Adjust}{-1.1\zw}%
  \else%
    \setlength{\thickHighLight@KK@Adjust}{0ex}%
  \fi
}
\DeclareDocumentCommand{\thickHighLight}{O{color=gray} +m }{%
  \thickHighLight@KK@Adjust@tmp%
  \def\thickHighLight@test@contents{#2}%
  \setlength{\thickHighLight@KK@Adjust@ruby}{0em}%
  \setlength{\thickHighLight@KK@Adjust@ruby@yoko}{0em}%
  \edef\UL@rubyflag{\numexpr\directlua{RubyFlagKKUL("\luaescapestring{\unexpanded\expandafter
    {\thickHighLight@test@contents}}")}\relax}%
  \ifnum\ltjgetparameter{direction}=3
    \ifnum\UL@rubyflag=1
      \setlength{\thickHighLight@KK@Adjust@ruby}{-.5em}%
    \fi
  \else
    \ifnum\UL@rubyflag=1
      \setlength{\thickHighLight@KK@Adjust@ruby}{-.5em}%
      \setlength{\thickHighLight@KK@Adjust@ruby@yoko}{.5em}%
    \fi
  \fi
  \underLineKK[#1,height=1.15\underLine@KK@Adjust@tmp-\thickHighLight@KK@Adjust@ruby,bottom
    =-.04\underLine@KK@Adjust@tmp+\thickHighLight@KK@Adjust+\thickHighLight@KK@Adjust@ruby
    +\thickHighLight@KK@Adjust@ruby@yoko]{#2}%
}

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%二重線%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\newlength{\nijiysen@bottom}
\newlength{\nijiysen@bottom@adjust}
```

[illegible]

`\newlength{\nijyusen@bottom}`

`\newlength{\ni jyusen@bottom@adjust}`

```

\define@key{niyusen}{color}{\def\niyusen@KK@color{#1}}
\define@key{niyusen}{bottom}{\setlength{\niyusen@bottom}{#1}}

\NewDocumentCommand\niyusen{ O{} +m }{%
  \def\niyusen@KK@color{black}%
  \setlength{\niyusen@bottom}{0ex}%
  \setkeys{niyusen}{#1}%
  \ifnum\ltjgetparameter{direction}=3%
    \setlength{\niyusen@bottom@adjust}{-\niyusen@bottom}%
  \else%
    \setlength{\niyusen@bottom@adjust}{\niyusen@bottom}%
  \fi%
  \underLineKK[bottom=-.1\underLine@KK@Adjust@tmp+\niyusen@bottom,color=\niyusen@KK@color]{\underLineKK[bottom=\niyusen@bottom@adjust,color=\niyusen@KK@color]{#2}}%
}

\NewDocumentCommand{\niyusenAuto@make}{ O{} +m }{%
  \def\niyusen@KK@color{black}%
  \def\niyusen@test@contents{#2}%
  \setlength{\temp@depth@kk}{0pt}%
  \getdepth@kk{\niyusen@test@contents}%
  \setlength{\niyusen@bottom}{0ex}%
  \setkeys{niyusen}{#1}%
  \ifnum\ltjgetparameter{direction}=3%
    \setlength{\niyusen@bottom@adjust}{-\niyusen@bottom}%
  \else%
    \setlength{\niyusen@bottom@adjust}{\niyusen@bottom}%
  \fi%
  \underLineKK@plain[bottom=-.1\underLine@KK@Adjust@tmp+\niyusen@bottom-\temp@depth@kk,color=\niyusen@KK@color]{\underLineKK@plain[bottom=\niyusen@bottom@adjust-\temp@depth@kk,color=\niyusen@KK@color]{#2}}%
}

\NewDocumentCommand{\niyusenAuto}{ O{} +m }{%
  \ifmmode
    \mathchoice
      {\mbox{\niyusenAuto@make[#1]{\displaystyle #2}}} % displaystyle
      {\mbox{\niyusenAuto@make[#1]{\textstyle #2}}} % textstyle (inline)
      {\mbox{\niyusenAuto@make[#1]{\scriptstyle #2}}} % scriptstyle
      {\mbox{\niyusenAuto@make[#1]{\scriptscriptstyle #2}}} % scriptscriptstyle
    \else
      \niyusenAuto@make[#1]{#2}% テキストモードではそのまま出力（mboxで包まない）
    \fi
}

\newlength{\keshiniyusen@KK@Adjust}
\newcommand{\keshiniyusen@KK@Adjust@tmp}{%
  \ifnum\ltjgetparameter{direction}=3%
    \setlength{\keshiniyusen@KK@Adjust}{0ex}%
  \else%

```

```

\setlength{\keshinijyuusen@KK@Adjust}{.15ex}%
\fi
}
\define@key{keshinijyuusen}{color}{\def\keshinijyuusen@KK@color{#1}}
\NewDocumentCommand{\keshinijyuusen}{ 0{} +m }{%
\def\keshinijyuusen@KK@color{color=black}%
\def\keshinijyuusen@test@contents{#2}%
\setkeys{keshinijyuusen}{#1}%
\keshinijyuusen@KK@Adjust@tmp%
\underline{KK@plain}[bottom=.57\underline{KK@Adjust@tmp-\keshinijyuusen@KK@Adjust,#1}]{\
\underline{KK@plain}[bottom=.47\underline{KK@Adjust@tmp-\keshinijyuusen@KK@Adjust,#1}]{#2}}
}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%下線の前に番号を振る%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\newcommand{\linenumbing@luwa}[1]{\raisebox{-1ex}{\scalebox{.6}{#1}}}

\newdimen\overtline@f@size
\NewDocumentCommand{\tlinenumbing@luwa}{s m}{%
\setlength{\overtline@f@size}{\f@size pt}%
\raisebox{.6\overtline@f@size}{\IfBooleanTF{#1}{\tikz[baseline=(char.base)]{\node[inner sep
=0pt, anchor=center, scale=.6] (char) {#2};}}{\tikz[baseline=(char.base)]{\node[inner
sep=0pt, anchor=center, scale=.6, rotate=90] (char) {#2};}}%
}}\hskip.15ex}

\NewDocumentCommand{\LineNumbering}{s m 0{0ex} }{% 縦横両対応
\ifnum\ltjgetparameter{direction}=3%
\IfBooleanTF{#1}{\raisebox{#3}{\tlinenumbing@luwa*{#2}}}{\raisebox{#3}{\
tlinenumbing@luwa{#2}}}%
\else
\raisebox{#3}{\linenumbing@luwa{#2}}%
\fi
}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\endinput

```