

Korean T<sub>E</sub>X Users Group

# A Guide to How to Define Macros

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\makeatletter

....

\makeatother

\ExplSyntaxOn

....

\ExplSyntaxOff

## HZ: \def, \newcommand

```
\def\foo#1#2{... #1 ... #2}
```

```
\newcommand\foo[2]{... #1 ... #2}
```

```
\renewcommand\foo[2]{... #1 ... #2}
```

```
\newcommand*\foo[2]{... #1 ... #2}
```

```
\renewcommand*\foo[2]{... #1 ... #2}
```

## EXPL3: \cs\_new

```
\cs_new:Npn \foo:n #1 { ... #1 ... }
```

```
\cs_new:Npn \foo:nn #1 #2 { ... #1 ... #2 ... }
```

```
\NewDocumentCommand \foo { m } { ... #1 ... }
```

## HZ: Define Command

```
\newcommand*\mysymfont{%  
  \fontspec{HCR Batang LVT}%  
  \hangulfontspec{HCR Batang LVT}%  
  \hanjafontspec{HCR Batang LVT}}  
\newcommand*\mysym[1]{\{\mysymfont\char"#1}}  
\newcommand*\mysmiley{\mysym{263A}}
```

\LARGE \mysym{2639} \mysliley ☹️ 😊

## EXPL3: Define Command (1) I

```
\cs_new:Nn \my_sym_font:
{
  \fontspec { HCR Batang LVT }
  \hangulfontspec { HCR Batang LVT }
  \hanjafontspec { HCR Batang LVT }
}

\NewDocumentCommand \MySym { m }
{
  \group_begin:
    \my_sym_font:
    \char"#1
  \group_end:
}
```

## EXPL3: Define Command (2)

```
\NewDocumentCommand \MySmilie { }  
{  
  \MySym { 263A }  
}
```

\LARGE \MySym{2639} \MySmilie ☹️ 😊

## HZ: providecommand

```
\providecommand\foo[2]{... #1 ... #2}
```

```
\providecommand*\foo[2]{... #1 ... #2}
```

```
\DeclareRobustCommand\foo[2]{... #1 ... #2}
```

```
\usepackage{etoolbox}
```

```
\robustify{\TeX}
```



## EXPL3: xparse

```
\ProvideDocumentCommand \foo { m +m }  
{  
  ... #1 ... #2  
}
```

1. \DeclareDocumentCommand
2. \RenewDocumentCommand
3. \DeclareExpandableDocumentCommand

## HZ: Starred Commands

---

```
\newcommand\myemph{\@ifstar{\myemph@xii}{\myemph@xi}}
\newcommand*\myemph@xi[1]{\textcolor{blue}{\textit{#1}}}
\newcommand*\myemph@xii[1]{\textcolor{red}{\textit{#1}}}
```

`\myemph{Darth Vader}`, `\myemph*{Darth Vader}`

*Darth Vader*, *Darth Vader*

## xparse: Starred Commands

```
\NewDocumentCommand \MyEmph { s m }  
{  
  \IfBooleanTF { #1 }  
  {  
    \textcolor{red}  
  }  
  {  
    \textcolor{blue}  
  }  
  { \textit { #2 } }  
}
```

\MyEmph{Darth Vader}, \MyEmph\*{Darth Vader}  
*Darth Vader*, *Darth Vader*

## HZ: One Optional Arguments I

```
\newlength\myvert{}  
\newcommand\myraise[2][\@empty]{%  
  \ifx\@empty#1%  
    \setlength\myvert{0ex}%  
  \else  
    \setlength\myvert{#1}%  
  \fi  
  \raisebox{\myvert}{#2}}
```

`\large Darth Vader \myraise{\mysmile}` is a central character  
`\myraise[.25ex]{\mysmile}` in the Star Wars saga.

Darth Vader 😊 is a central character 😊 in the Star Wars saga.

## xparse: Optional Arguments (1)

```
\NewDocumentCommand \MyRaise { o m }  
{  
  \IfNoValueTF { #1 }  
  {  
    \dim_zero:N \l_tmpa_dim  
  }  
  {  
    \dim_set:Nn \l_tmpa_dim { #1 }  
  }  
  \raisebox { \l_tmpa_dim } { #2 }  
}
```

`\large Darth Vader \MyRaise{\MySmilie}` is a central character  
`\MyRaise[.25ex]{\MySmilie}` in the Star Wars saga.

Darth Vader 😊 is a central character 😊 in the Star Wars saga.

## HZ: Two Optional Arguments I

```
\usepackage{twoopt}

\newcommand*\ui[1]{\textsf{#1}\index{#1}}
\newcommandtwoopt{\menu}[4][\@empty][\@empty]{%
  \ifx#1\@empty
    \ui{#3} > \ui{#4}%
  \else
    \ifx#2\@empty
      \ui{#1} > \ui{#3} > \ui{#4}%
    \else
      \ui{#1} > \ui{#2} > \ui{#3} > \ui{#4}%
    \fi
  \fi
}
```

## HZ: Two Optional Arguments II

---

```
\menu{File}{New} \par
```

```
\menu[Format]{Systax Coloring}{LaTeX} \par
```

```
\menu[Search][Replace]{Files}{All}
```

File > New

Format > Systax Coloring > LaTeX

Search > Replace > Files > All

## xparse: Optional Arguments (2) I

---

```
\cs_new_nopar:Npn \my_ui:n #1  
{  
  \textsf { #1 } \index { #1 }  
}
```



## xparse: Optional Arguments (2) II

```
\NewDocumentCommand \Menu { o o m m }  
{  
  \IfValueT { #1 }  
  {  
    \my_ui:n { #1 } ~>~  
  }  
  \IfValueT { #2 }  
  {  
    \my_ui:n { #2 } ~>~  
  }  
  \my_ui:n { #3 } ~>~ \my_ui:n { #4 }  
}
```

## xparse: Optional Arguments (2) III

---

```
\Menu{File}{New} \par
```

```
\Menu[Format]{Syntax Coloring}{LaTeX} \par
```

```
\Menu[Search][Replace]{Files}{All}
```

File > New

Format > Syntax Coloring > LaTeX

Search > Replace > Files > All

## HZ: key=value I

```
\usepackage{keycommand}

\newkeycommand\LineFig%
  [scale=0.1, raise=-0.5ex, bool showfilename=false][1]%
  {\raisebox{\commandkey{raise}}%
    {\includegraphics[scale=\commandkey{scale}]{#1}}%
    \ifthenelse{\equal{\commandkey{showfilename}}{1}}%
      {\tiny#1}}{}%
  }
```

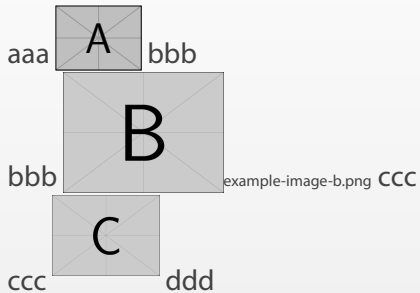
aaa \LineFig{example-image-a} bbb \par

bbb \LineFig[scale=0.15, showfilename=true]{example-image-b.png}  
ccc \par

ccc \LineFig[raise=1ex]{example-image-c.png} ddd

## HZ: key=value II

---



## EXPL3: keys datatype

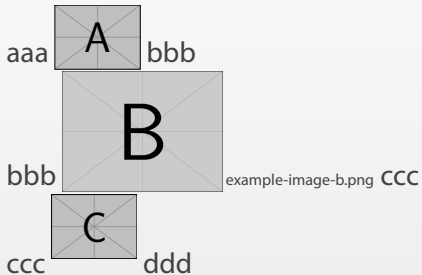
```
\keys_define:nn { mytest }  
{  
  scale    .tl_set:N = \my_scale_tl,  
  raise    .dim_set:N = \my_raise_dim,  
  showfilename .bool_set:N = \my_show_bool,  
}  
  
\cs_new:Nn \reset_mytest_keys:  
{ \keys_set:nn { mytest }  
  {  
    scale = 0.1,  
    raise = -0.5ex,  
    showfilename = false  
  }  
}
```

## expl3: keys datatype I

```
\NewDocumentCommand \lineFIG { o m }
{
  \IfNoValueTF { #1 }
  { \reset_mytest_keys: }
  {
    \reset_mytest_keys:
    \keys_set:nn { mytest } { #1 }
  }
  \raisebox { \my_raise_dim }
  { \includegraphics [ scale = \my_scale_tl ] { #2 } }
  \bool_if:NT \my_show_bool
  { \begin{tiny} ~#2 \end{tiny} }
}
```

## expl3: keys datatype II

```
aaa \lineFIG{example-image-a} bbb \par  
bbb \lineFIG[scale=0.15,showfilename=true]{example-image-b.png}  
ccc \lineFIG[raise=1ex]{example-image-c} ddd
```



## expl3의 인자지정자

- n 일반 토큰(열) 인자. {와 }로 둘러싼 표준 인자
- N 토큰 인자 한 개 (단일 매크로)
- c `\csname ...\endcsname`형 인자
- v 변수 값 인자의 `\csname`형.
- V 변수 값 인자 단일 매크로
- o 한 번 확장 (expansion once)
- x 가능한 한 확장 (exhaustive expansion)
- f 첫 번째 매크로 확장 (full expansion)
- p parameter
- w weird. 부정형 인자
- D Do not use. 내부함수이므로 일반적인 경우 사용 금지.



## xparse의 인자지정자

---

- m mandatory. 일반 인자
  - o  $\TeX$ 의 표준 옵션 인자
- d delimiter 지정 옵션 인자
- O 기본값 지정 표준 옵션 인자
- D 기본값 지정 delimiter 지정 옵션 인자
- s star. `\IfBooleanTF`로 검사
- t 기본값 지정 star형 인자. `\IfBooleanTF`로 검사.
- v verbatim 옵션 인자. 다른 명령의 인자로 사용불가.

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`http://wiki.ktug.org/wiki/wiki.php/KTUGExtDocArchive?  
action=download&value=howtomacros1.pdf`