

\LaTeX 3 入门

ljguo

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1 function

Function ▶ \cs_new:Npn (Nn | cn | cpn)
1

\ExplSyntaxOn
\cs_new:Npn \l_my_cmd:n#1 {i~love~#1!}
\l_my_cmd:n{fish}
\ExplSyntaxOff

i love fish!

Function ▶ \cs_new:Npx (Nx | cx | cpx)
2

\ExplSyntaxOn
\cs_new:Npx \l_my_cmdx:n#1 {i~love~#1!}
\l_my_cmdx:n{fish}
\ExplSyntaxOff

i love fish!

演示 3

Function ► \cs_set:Npn (Nn | cn | cpn)

3

```
\ExplSyntaxOn
\cs_set:Npn \foo_cmd:n #1 {i~love~#1}
\foo_cmd:n{fish}
\ExplSyntaxOff
```

i love fish

2 COLOR

Function ► \color_group_begin: \color_group_end: 4

```
\ExplSyntaxOn
\cs_meaning:N \color_group_begin: \par
\cs_meaning:N \color_group_end:
\ExplSyntaxOff
```

```
\begingroup
\endgroup
```

Function ► \color_set:nn{<name>}{<color expression>} 5

```
\ExplSyntaxOn
\color_set:nn{main}{red!30!cyan}
\color_select:n{main}
\centering
\LaTeX
\hrule
\ExplSyntaxOff
```

TeX

Function ► \int_format:n \fp_format:n 6

```
\ExplSyntaxOn
\seq_new:N \l_before_seq
\seq_new:N \l_after_seq
\cs_generate_variant:Nn \regex_extract_all:nnN {nxN}
\cs_set:Npn \int_format:n #1#2 {
  \regex_extract_all:nnN {\d{1,#2}} {#1} \l_tmpa_seq
  \seq_use:Nn \l_tmpa_seq{~}
}
\cs_set:Npn \fp_format:n #1#2 {
  \regex_split:nnN {\.} {#1} \l_tmpb_seq
  \regex_extract_all:nxN {\d{1,#2}} {\seq_item:Nn \l_tmpb_seq{1}} \l_before_seq
  \regex_extract_all:nxN {\d{1,#2}} {\seq_item:Nn \l_tmpb_seq{2}} \l_after_seq
  \seq_use:Nn \l_before_seq{~} . \seq_use:Nn \l_after_seq{~}
}
\int_format:n{123456789}{3}\par
\fp_format:n{152.354126859}{4}\par
\int_format:n{23354862}{2}\par
\fp_format:n{0.1010010001000010}{3}
\ExplSyntaxOff
```

```
123 456 789
152.3541 2685 9
23 35 48 62
```

0.101 001 000 100 001 0

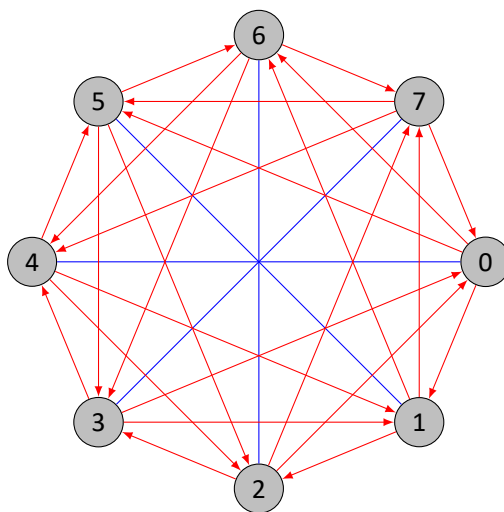
Function ► picture

7

```

\ExplSyntaxOn
\centering
\begin{tikzpicture}
\int_step_inline:nnn{0}{7}
{
  \node[circle,fill=gray!50,draw] (a#1) at (-#1*45\c_colon_str 3){#1};
  \draw[blue] (0,0) -- (a#1);
}
\int_step_inline:nnn{0}{7}
{
  \draw[-latex,red] (a#1) -- (a\int_mod:nn{#1+1}{8});
}
\int_step_inline:nnn{0}{7}
{
  \int_step_inline:nnn{#1+5}{#1+6}
  {
    \draw[-latex,red] (a#1) -- (a\int_mod:nn{##1}{8});
  }
}
\end{tikzpicture}
\ExplSyntaxOff

```



Function ► expand \d

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```

\def\aaa{
\def\b{\a\a}
\def\c{\b\b}
展开一次:
\expandafter\def\expandafter\d\expandafter{\c}
\meaning\d \par

```

展开两次:

```
\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter
\def\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter
\d\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter\expandafter
{\expandafter\expandafter\c}
\meaning\d \par
```

递归展开:

```
\edef\d{\c}
\meaning\d
```

展开一次: macro:->\b \b

展开两次: macro:->\a \a \a \a

递归展开: macro:->aaaaaaaaaaaa

Function ▶ noexpand \b

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```
\def\{a}
\def\b{b}
\def\{c}
(方法一)
\edef\d{\a\noexpand\b\c}
\meaning\d \par
(方法二)
\toks0={\b}
\edef\d{\a\the\toks0\c}
\meaning\d \par
(方法三)
\expandafter\expandafter\expandafter
\def\expandafter\expandafter\expandafter
\d\expandafter\expandafter\expandafter
{\expandafter\{a\expandafter\b\c}
\meaning\d
```

(方法一) macro:->a\b c

(方法二) macro:->a\b c

(方法三) macro:->a\b c

Function ▶ \items

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```
\newcount\ljguo
\ljguo = 1
{\catcode`\-=13
\catcode`\*=13
\gdef\beginitem{\par\noindent\begingroup\catcode`\-=13\catcode`\*=13
\def- {\par\noindent\the\ljguo.\advance\ljguo by 1\hskip 1pt\ignorespaces}
\def* {\par\noindent\hskip 4pt$\bullet$\hskip 3pt\ignorespaces}}
\def\enditem{\par\endgroup}
```

```
{\LARGE Markdown}  
\vskip 0.3cm  
\beginitem  
- this is item one.  
- this is item two.  
  * this is iitem one.  
  * this is iitem two.  
- this is item three.  
* this is iitem one.  
* this is iitem two.  
- this is item four.  
\enditem
```

Markdown

1. this is item one.
2. this is item two.
 - this is iitem one.
 - this is iitem two.
3. this is item three.
 - this is iitem one.
 - this is iitem two.
4. this is item four.

Function ► \getlength

```
\def\length#1{\count0=0 \getlength#1\end \number\count0}
\def\getlength#1{\ifx#1\end \let\next=\relax
\else\advance\count0 by 1\relax \let\next=\getlength\fi \next}
\length{asdasf}
```

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Function ► \tokenfill

```
\def\tokenfill#1{\leaders\hbox to 0.8em{\hss #1 \hss}\hfill}
\noindent\tokenfill{\$ \triangleright \$} \par
begin \tokenfill{\$ \cdot \$} end
```

[illegible]

Function ► \length

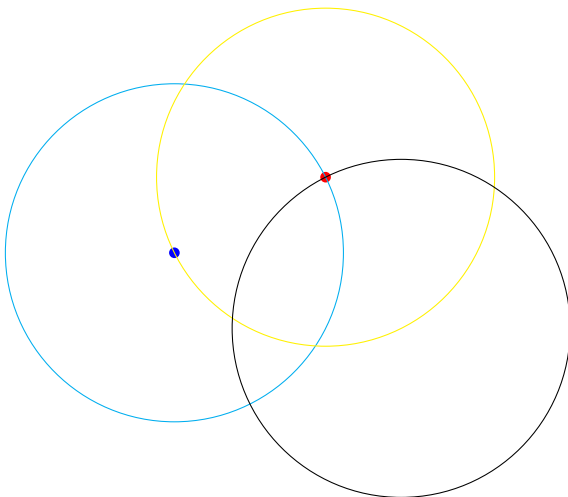
```
\ExplSyntaxOn
\makeatletter
\cs_set:Npn \pgf_length:N #1 {
```

```

\fp_set:Nn \l_tmpa_fp {\dim_to_fp:n{\pgf@x}}
\fp_set:Nn \l_tmpb_fp {\dim_to_fp:n{\pgf@y}}
\tl_set:Nx #1{
  \fp_to_dim:n{\fp_eval:n{(\l_tmpa_fp^2+\l_tmpb_fp^2)^(0.5)}}
}
}
\cs_set_eq:NN \length \pgf_length:N
\def\getlengthtomarco#1#2{
  \path #1;
  \length#2
}
\makeatother
\ExplSyntaxOff

\begin{tikzpicture}
  \fill[red] (3,2) coordinate(a) circle(2pt);
  \fill[blue] (1,1) coordinate(b) circle(2pt);
  \coordinate(c) at ($(b)-(a)$);
  \path (c);
  \length\l r = length "(b) - (a)"
  \draw[cyan] (b) circle (\l);
  \draw[yellow] (a) circle (\l);
  \getlengthtomarco{(1,2)}{\l}
  \draw[] (4,0) circle (\l);
\end{tikzpicture}

```



Function ▶ \@ifnextchar

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```

\makeatletter
\def\@cmd[#1]#2{\textcolor{red}{#1} and (#2)}
\def\cmd{
  \@ifnextchar[{\@cmd}{\@cmd[default]}
}

```



```

\cmd{aaa}\par
\cmd[bbb]{aaa}

\def\@cmd[#1]#2{\c@md{} and \textcolor{red}{#1} and (#2)}
\def\cmd#1{
  \def\c@md{#1}\@ifnextchar[{\@cmd}{\@cmd[default]}
}
\cmd{aaa}{ccc}\par
\cmd{aaa}[bbb]{ccc}
\makeatother

```

default and (aaa)
 bbb and (aaa)
 aaa and default and (ccc)
 aaa and bbb and (ccc)

Function ► \@ifstar

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```

\catcode`\@=11
\def\cmd{\@ifstar{\textcolor{red}}{\textcolor{blue}}}{\textcolor{blue}}
\cmd*{aaa}\par
\cmd{aaa}
\catcode`\@=12

```

aaa
 aaa