

The package TooYoung

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Abstract

The short package TooYoung (no more than 150 lines) provides an easy way to draw Young tableaux. This passage is to present all the functions of this package.

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1 Boxes

One can make Young tableaux by `\Young` as following.

`\Young{1&2&3&4\\5&6&7\\8&9}`

1	2	3	4
5	6	7	
8	9		

One can convert it into French convention by using `\FYoung`.

`\FYoung{1&2&3&4\\5&6&7\\8&9}`

8	9		
5	6	7	
1	2	3	4

If one suddenly wants to convert all young diagrams in his article, use `\Frenchstyletrue` globally.

One can make spaces by using square brackets as following.

`\Young{[]&2&3&4\\5&6&[7]\\8&9}`

	2	3	4
5	6	7	
8	9		

Exercise 1 Type this Robinson Schensted Knuth Algorithm

1	2	2	3	←	2
2	3	5	5		
4	4	6			
5	6				

One can also input Young diagrams by its type through `\yng` and `\Yng`.

`\yng(3,2,1,1)` `\Yng(3,2,1,1)`

So are `\fyng` and `\FYng`.

`\fyng(3,2,1,1)` `\FYng(3,2,1,1)`

2 Options

The size of boxes and the thickness of lines are customizable.

`\Youngwidth 1pc`
`\Youngheight 1pc`
`\Youngvline 0.2pt`
`\Younghline 0.2pt`

Exercise 2 Type this Young tabloid.

1	2	3	4
5	6	7	
8	9		

The font in the box can be easily changed by redefining `\Fontinbox`.

`\def\Fontinbox#1{\sf#1}`
`\Young{a&b\\c}`

a	b
c	

Exercise 3 Type this periodic table.

H							He
Li	B	Be	C	N	O	F	Ne
Na	Mg	Al	Si	P	S	Cl	Ar
K	Ca						

Exercise 4 How to adjust this ugly tableaux?

`\Young{\displaystyle \frac{1}{2}}`

1
2

The commands `\Young` and `\FYoung` are protected in the environment `array`, so it adds satisfactory space and adjusts to suitable depth. Sometimes, use more original `\young` and `\fyoung` may be helpful.

Exercise 5 *Type the following 1415 puzzle.*

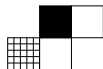
Figure 1 shows four 4x4 grids illustrating different ways to place numbers 1 through 15. The grids are labeled 1, 2, 3, and 4.

- Grid 1: Numbers 1 through 15 are placed in row-major order, filling the grid from top-left to bottom-right. The last cell (bottom-right) is empty.
- Grid 2: Numbers 1 through 15 are placed in row-major order, filling the grid from top-left to bottom-right. The last cell (bottom-right) is empty.
- Grid 3: Numbers 1 through 15 are placed in row-major order, filling the grid from top-left to bottom-right. The last cell (bottom-right) is empty.
- Grid 4: Numbers 1 through 15 are placed in row-major order, filling the grid from top-left to bottom-right. The last cell (bottom-right) is empty.

Exercise 6 *Type the following peg solitaire.*

3 Effects

The package provides two effects `\hole` and `\shadow`.

$$\$ \backslash \text{Young} \{ [] \& \backslash \text{hole} \& \backslash \backslash \text{shadow} \& \} \$$$


Exercise 7 *Thanks for reading and type this*

THANKS





It also provides `\hook` to draw hooks.

$$\$ \backslash \text{Young} \{ \backslash \text{hook} [\text{rd}] \& \backslash \backslash \backslash \text{hook} [\text{c}] \} \$$$


The thickness is parameterized by

<code>\Youngvhook</code>	1.6pt
<code>\Younghhook</code>	1.6pt

Exercise 8 *Type this hook length formula.*

4 Answers

Exercise 1

$$\mathbb{S} \backslash \text{Young}\{1\&2\&2\&3\&[\backslash\text{leftarrow}]\&2\backslash\backslash 2\&3\&5\&5\backslash\backslash 4\&4\&6\backslash\backslash 5\&6\}\mathbb{S}$$

Exercise 2

$$\text{\textbackslash setlength\Youngvline\{0pt\}\Young\{1\&2\&3\&4\}\{5\&6\&7\}\{8\&9\}}{\text{\textbackslash}}{\text{\textbackslash}}$$

Exercise 3

$$\begin{array}{c} \text{\scriptsize $\setlength\Youngwidth{1.5pc}\setlength\Youngheight{1.5pc}$}\\ \text{\scriptsize $\setlength\Younghline{2pt}\setlength\Youngvline{2pt}$}\\ \text{\scriptsize $\Young\{H[\square\square\square\square]&He\\ Li&Be&C&N&O&F&Ne\\ Na&Mg&Al&Si&P&S&Cl&Ar\\ K&Ca\}$}} \end{array}$$

Exercise 5

$$\begin{aligned} & \$\fbox{\young{1&2&3&4\5&6&7&8\9&10&11&12\13&14&15}} \\ & \quad \fbox{\young{1&2&3&4\5&6&7&8\9&10&11&12\13&14\ []&}} \\ & \quad \fbox{\young{1&2&3&4\5&6&7&8\9&10\ []&12\13&14&11&}} \\ & \quad \fbox{\young{1&2&3&4\5&6&7&8\9&10&12\ []\13&14&11&}} \\ & \$\$ \end{aligned}$$

Exercise 6

```

$$$fbox{\young{[]&[]& \bullet&\bullet&\bullet\\
[]&[]& \bullet&\bullet&\bullet\\
\bullet&\bullet&\bullet&\bullet&\bullet&\bullet&\bullet&\bullet\\
\bullet&\bullet&\bullet&\bullet&\bullet&\bullet&\bullet\\
\bullet&\bullet&\bullet&\bullet&\bullet&\bullet&\bullet\\
[]&[]& \bullet&\bullet&\bullet\\
[]&[]& \bullet&\bullet&\bullet
}}$$$

```

Exercise 7

[illegible]

Exercise 8

$$\begin{aligned} & \text{\$}\setlength{\Youngwidth}{2pc}\setlength{\Youngheight}{2pc} \\ & \def\Fontinbox#1{\setlength{\Youngwidth}{0.5pc}\setlength{\Youngheight}{0.5pc} \\ & \young{\young{\hook[dr]\&\hook[lr]\&\hook[l]\&\&\hook[u]\&} \\ & \young{\&\hook[r]\&\hook[l]\&\&} \\ & \young{\&\&\hook[c]\&\&\&} \\ & \young{\&\&\&\&\hook[c]\&} \\ & \text{\$}\end{aligned}$$

5 Comments

In the package, I used a lot of “dirty technique” in coding. If you know some references providing the T_EX way which is not dirty, please inform me.

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Comments and criticisms

are welcome!