The package TooYoung

Xiong Rui

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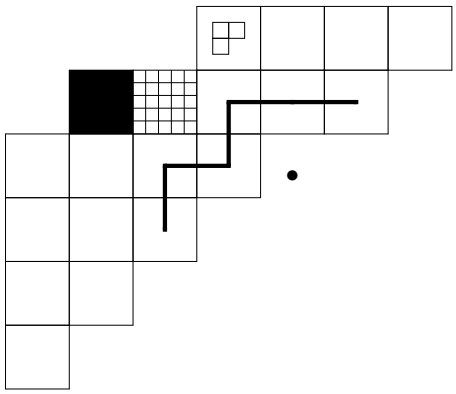


Abstract

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.

Contents

Comments

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

Xiong Rui
Email:
XiongRui_Math@126.com

Comments and criticisms are welcome!

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		

Warning: if there is certain commend with `[...]` inside `[...]`, please use `{...}` to protect them.

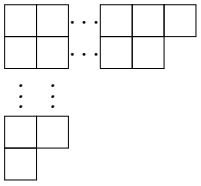
```
$\Young{1&[{\sqrt[3]{2}}]&2}$
```

1	$\sqrt[3]{2}$	2

Exercise 1 *Type this Robinson Schensted Knuth Algorithm*

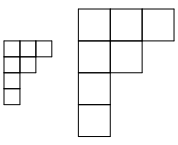
1	2	2	3	←	2
2	3	5	5		
4	4	6			
5	6				

Exercise 2 *Type this big Young diagram.*



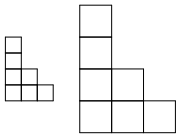
One can also input Young diagrams by its type through `\yng` and `\Yng`.

```
$\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 3 *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`.

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

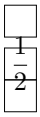
a	b
c	

Exercise 4 *Type this periodic table.*

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

Warning: there is no automatical adjustment in the package, so please avoid ugly situations as following.

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



The commends `\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.*

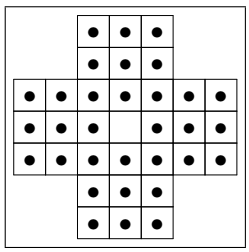
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	

1	2	3	4
5	6	7	8
9	10	11	12
13	14		15

1	2	3	4
5	6	7	8
9	10		12
13	14	11	15

1	2	3	4
5	6	7	8
9	10	12	
13	14	11	15

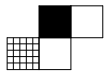
Exercise 6 *Type the following peg solitaire.*



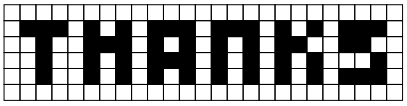
3 Effects

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

```
$\Young{[]&\hole&\\\shadow&}$
```



Exercise 7 *Thanks for reading and type this*



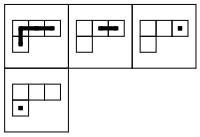
It also provides `\hook` to draw hooks.

```
$\Young{\hook[rd]&\\\hook[c]}$
```

The thickness is parameterized by

```
\Youngvhook  1.6pt
\Younghhook  1.6pt
```

Exercise 8 *Type this hook length formula.*



4 Answers

Exercise 1

```
$$\Young{1&2&2&3&[\leftarrow]&2\\2&3&5&5\\4&4&6\\5&6}$$
```

Exercise 2

```
$$\Young{&&[\,\cdots]&&&\\
&&[\,\cdots]&&\\
[\vdots]&[\vdots]\\
&\\}$$
```

Exercise 3

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

Exercise 4

```
$$\setlength\Youngwidth{1.5pc}\setlength\Youngheight{1.5pc}\def\Fontinbox#1{\rm{#1}}
\setlength\Younghline{2pt}\setlength\Youngvline{2pt}
\Young{H&[]&[]&[]&[]&[]&[]&He\\
Li&B&Be&C&N&O&F&Ne\\Na&Mg&Al&Si&P&S&Cl&Ar\\
K&Ca}$$
```

Exercise 5

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

Exercise 6

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

Exercise 7

```
$$\setlength\Youngwidth{0.5pc}\setlength\Youngheight{0.5pc}\Young{&&&&&&&&&&&&&&&&&&&&&&&&&&\\%
&\hole&\hole&\hole&&\hole&&\hole&&\hole&\hole&\hole&&\hole&\hole&\hole&&\hole&&\hole&&\hole&\hole&\hole&\\
&&\hole&&&\hole&\hole&\hole&\hole&&\hole&&\hole&&\hole&&\hole&\hole&&&\hole&\hole&&\\%
&&\hole&&&\hole&&\hole&&\hole&\hole&\hole&&\hole&&\hole&&\hole&&\hole&&\hole&&&&\hole&\\%
&&\hole&&&\hole&&\hole&&\hole&&\hole&&\hole&&\hole&&\hole&&\hole&&\hole &&\hole&\hole&\hole&\\%
&&&&&&&&&&&&&&&&&&&&&&&&&&}$$
```

Exercise 8

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