4.栈与队列

（c4）栈应用：中缀表达式求值

邓俊辉

deng@tsinghua.edu.cn

知实而不知名，知名而不知实，皆不知也

实例

1

$

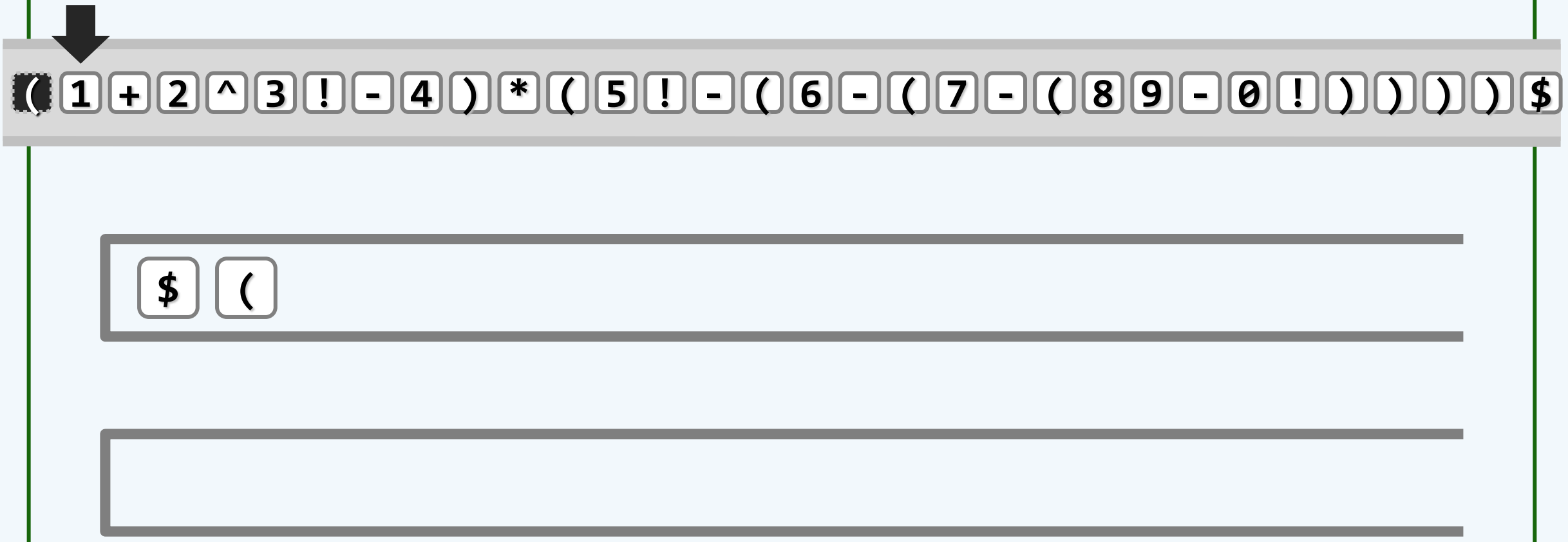
实例

```
pri['$']['(']  =  '<'
```

(1 + 2 ^ 3 ! - 4) * (5 ! - (6 - (7 - (8 9 - 0 !)))) $

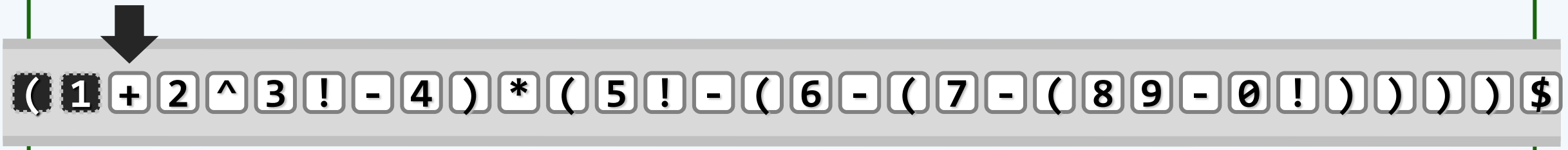
$

实例



实例

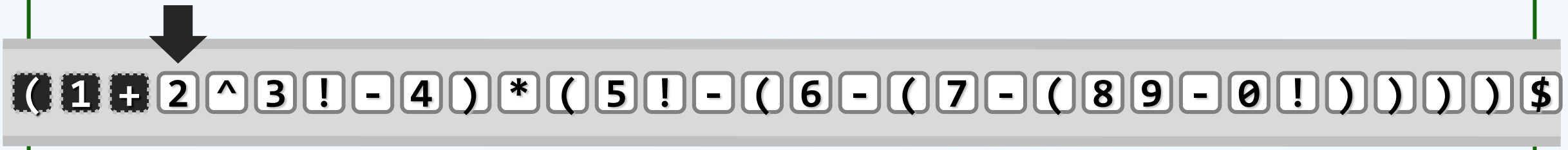
```
pri['(']['+']  =  '<'
```

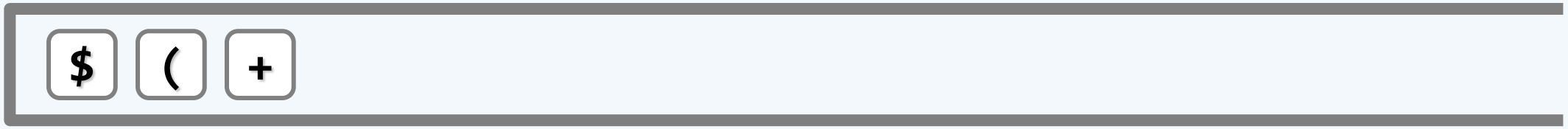


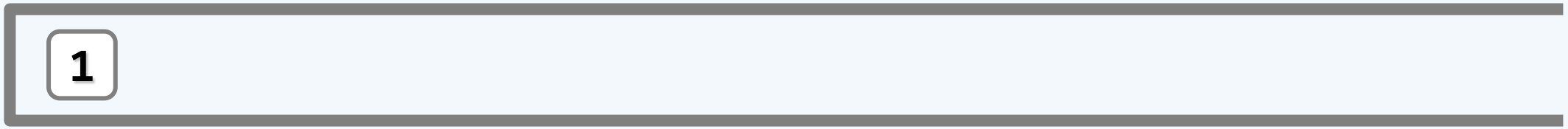
$ (

1

实例

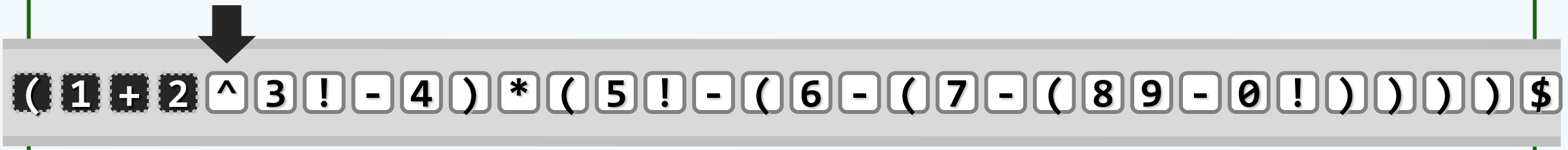


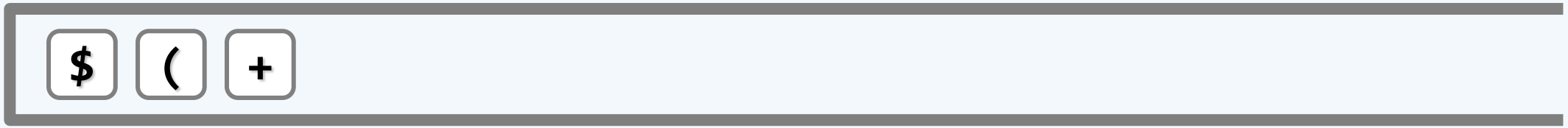


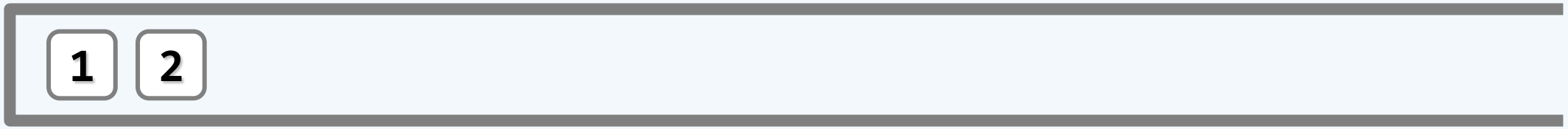


实例

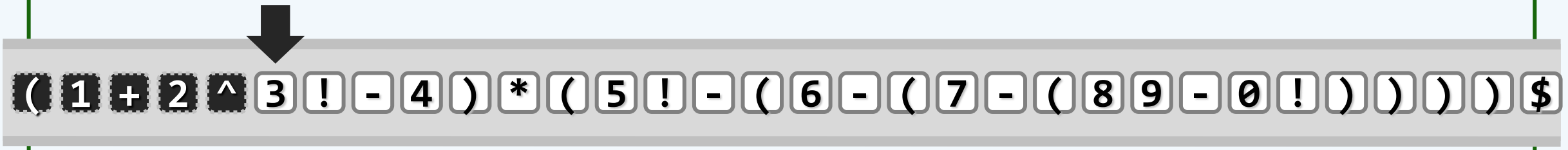
```
pri['+']['^']  =  '<'
```

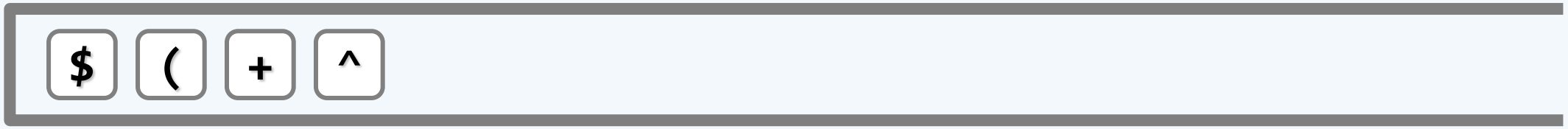


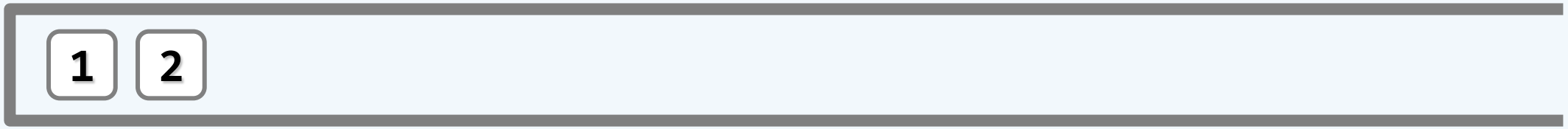




实例

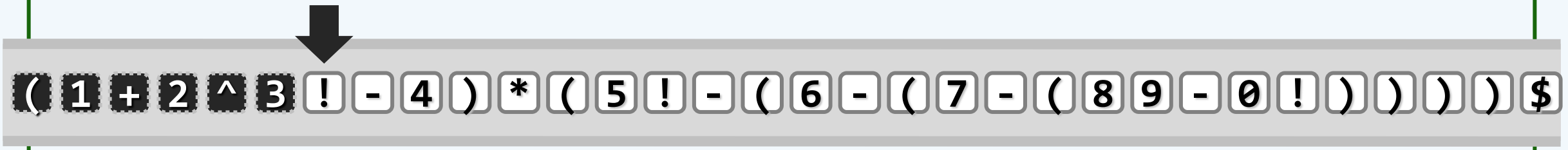


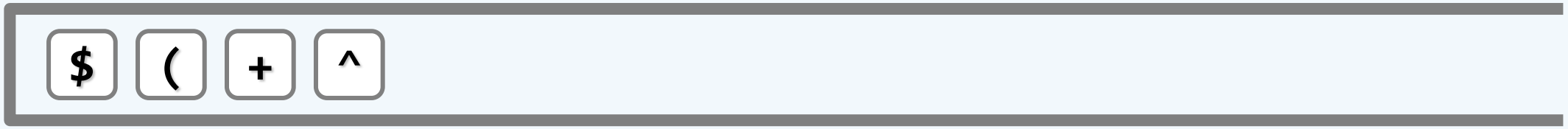


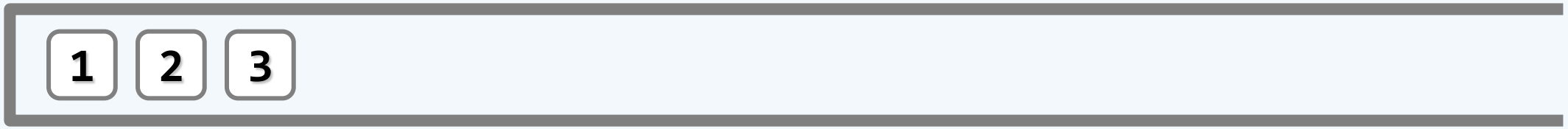


实例

```
pri['^']['!']  =  '<'
```

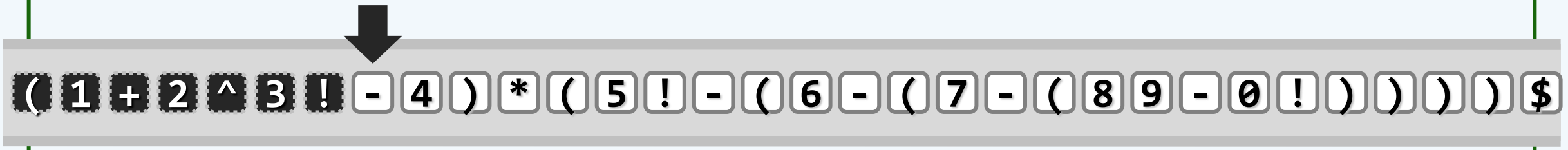






实例

```
pri['!']['-']  =  '>'
```



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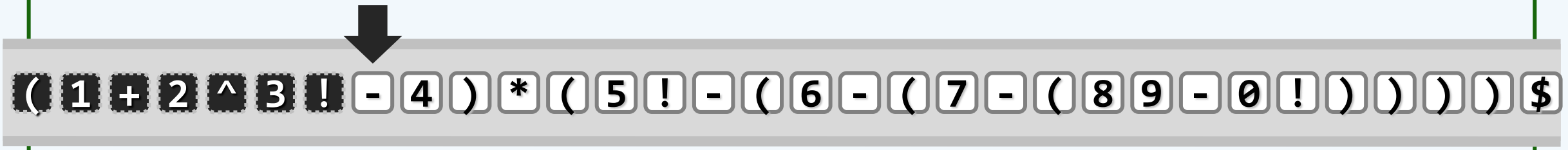
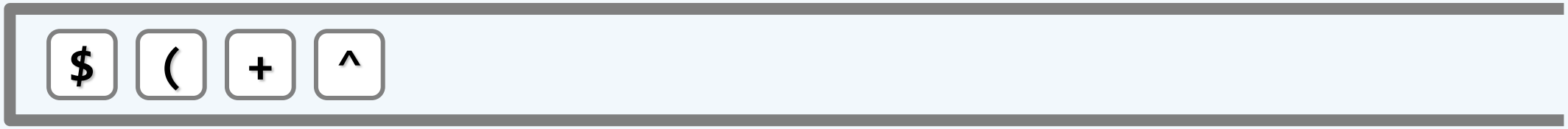
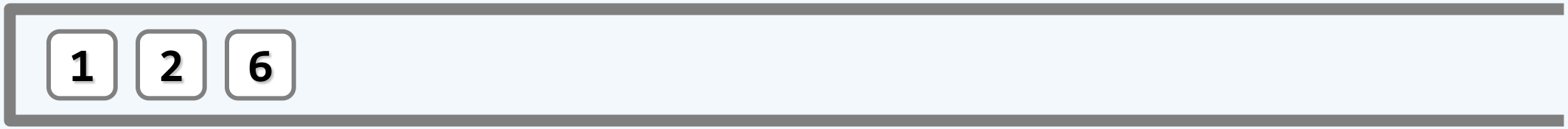
1 2 3

实例

```
pri['^']['-']  =  '>'
```

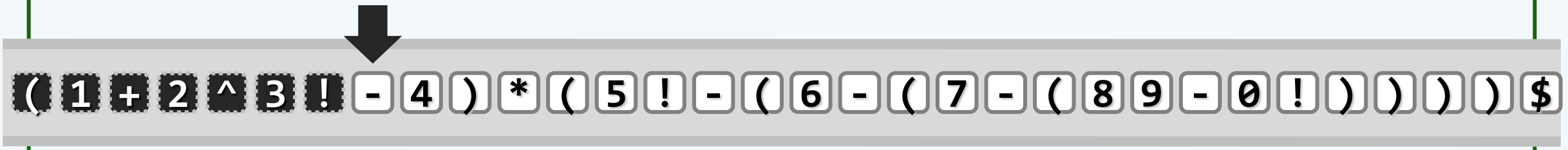






实例

```
pri['+']['-']  =  '>'
```

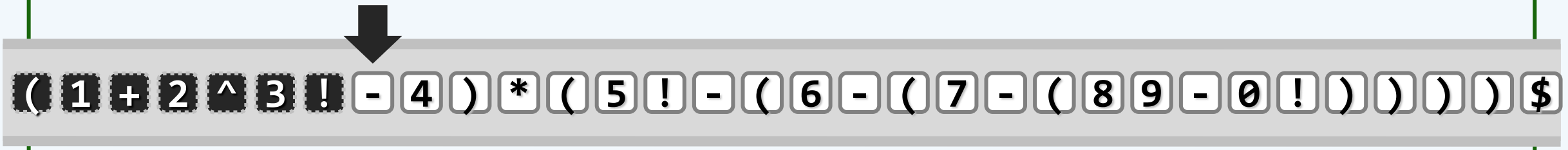


$	(	+

1	64

实例

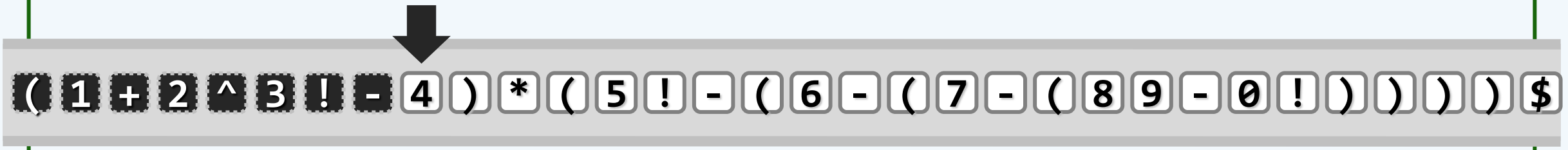
```
pri['('][')'] = '<'
```



$	(

65

实例

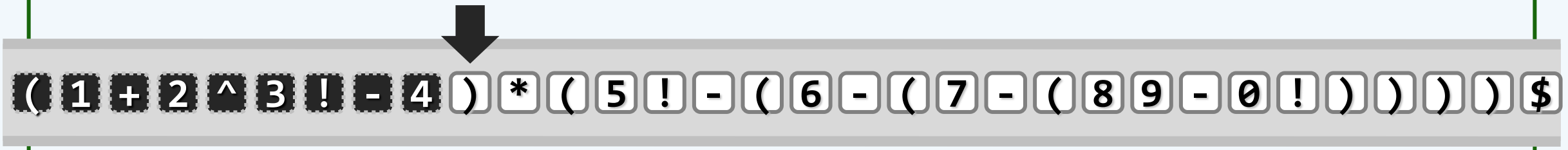


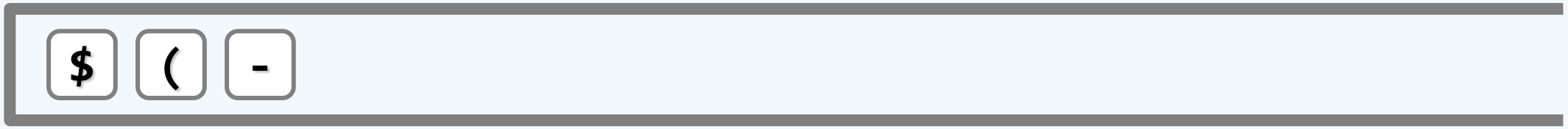
$	(	-

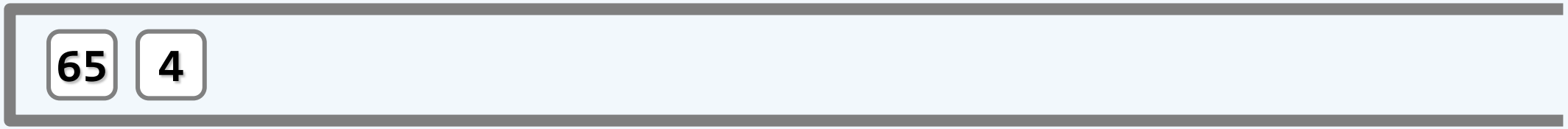
65

实例

```
pri['-'][')'] = '>'
```

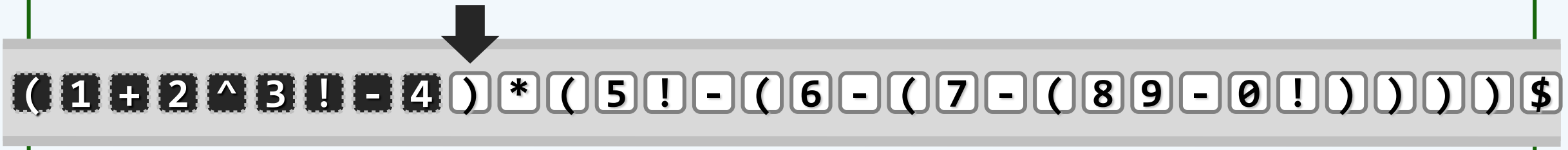






实例

```
pri['('][')'] = '='
```

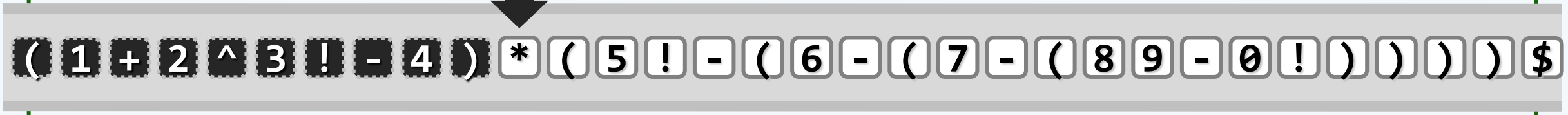


$	(

61

实例

```
pri['$']['*']  =  '<'
```

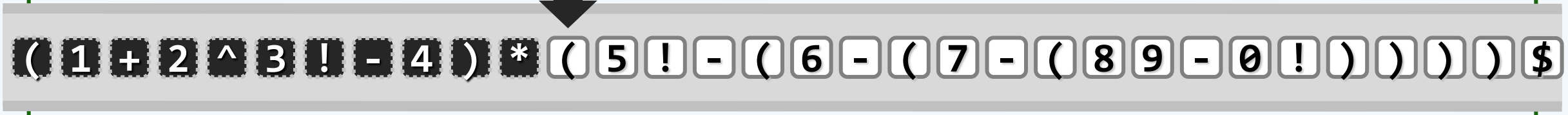


$

61

实例

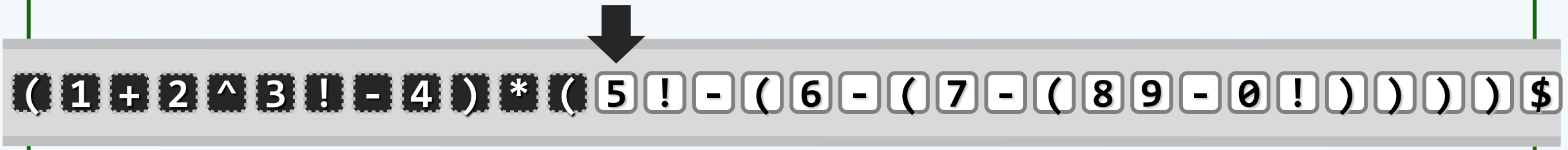
```
pri['*']['('] = '<'
```

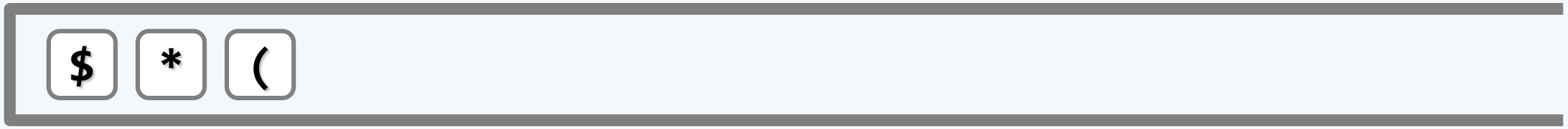


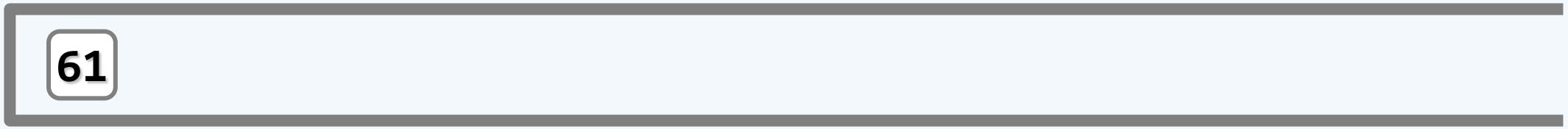
$ *

61

实例

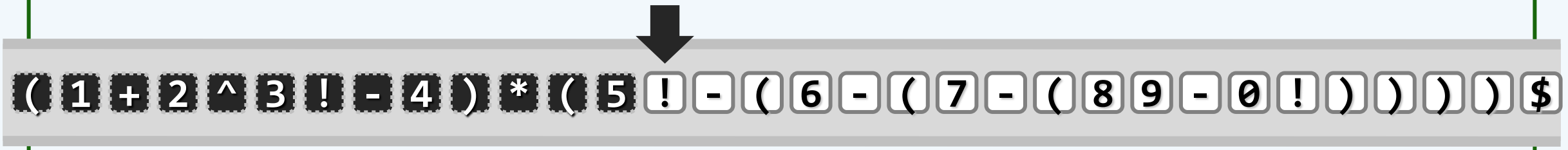


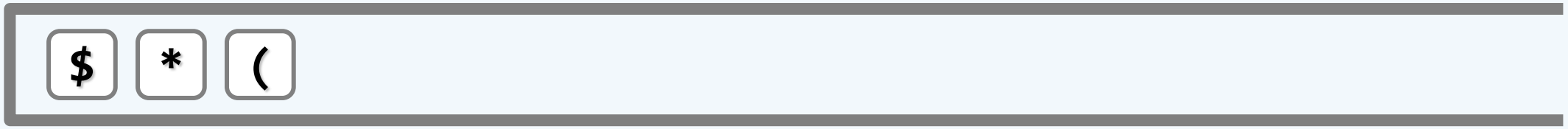


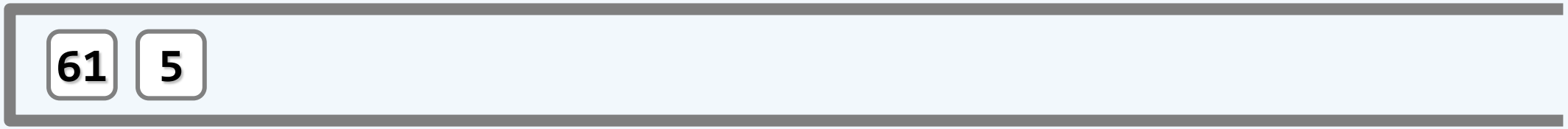


实例

```
pri['(']['!'] = '<'
```

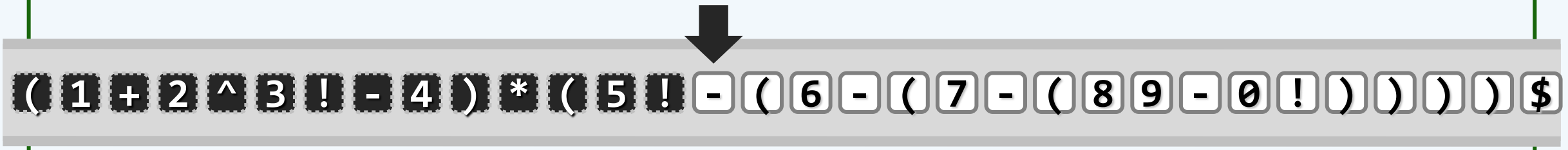






实例

```
pri['!']['-']  =  '>'
```

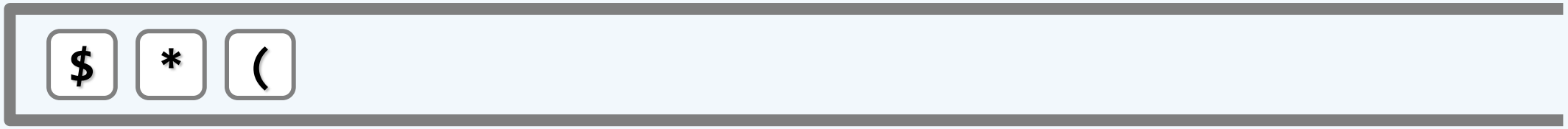


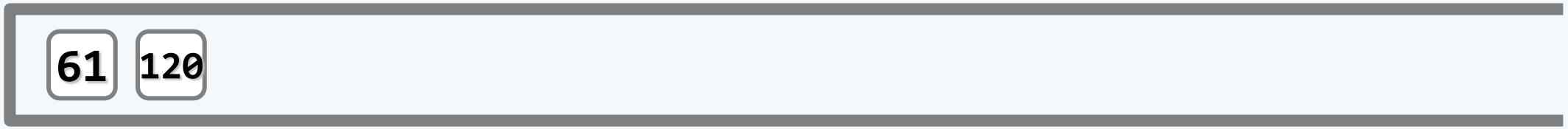
$	*	(	!

61	5

实例

```
pri['('][']'] = '<'
```





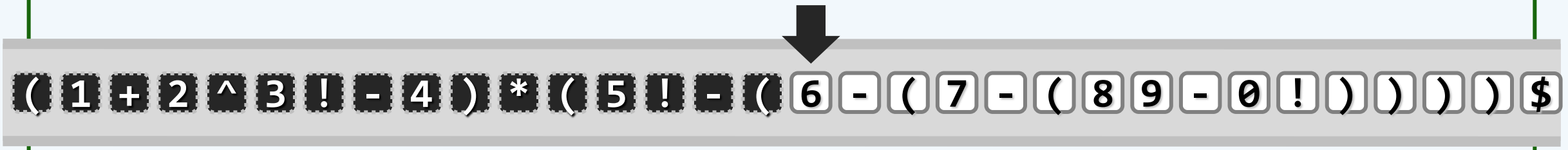
实例

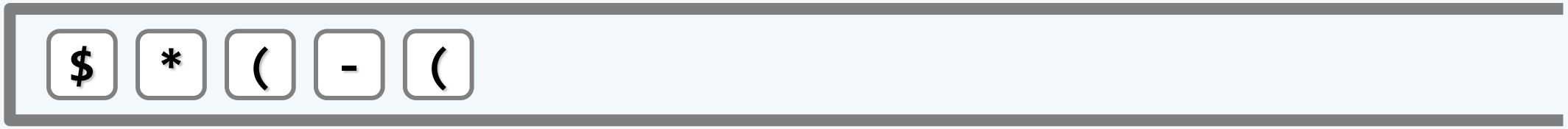
```
pri['-']['(']  =  '<'
```

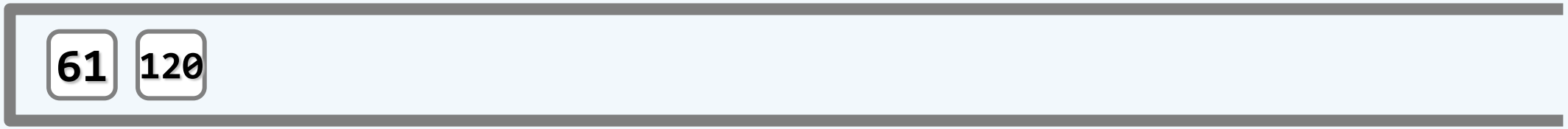
$	*	(	-

61	120

实例







实例

```
pri['('][']'] = '<'
```

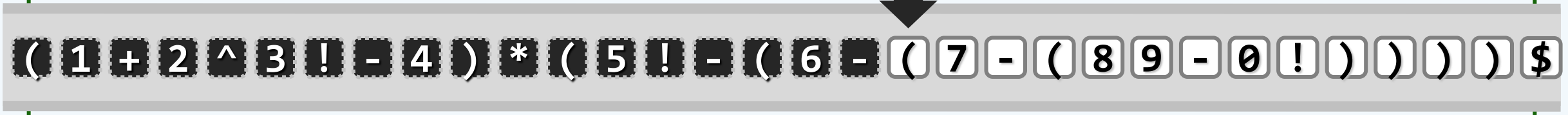
(1 + 2 ^ 3 ! - 4) * (5 ! - (6 - (7 - (8 9 - 0 !)))) $

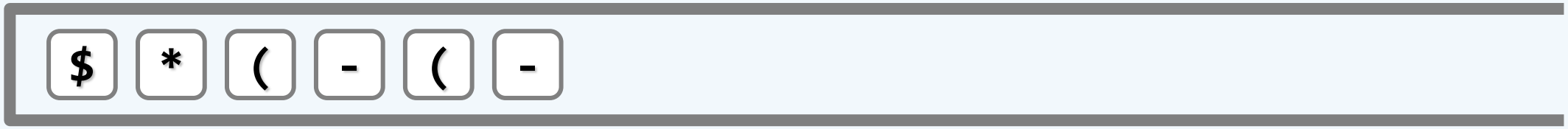
$	*	(	-	(

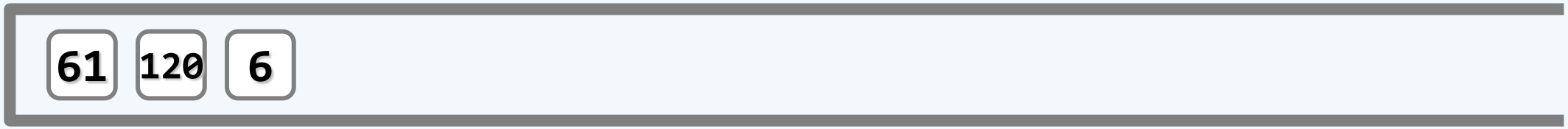
61	120	6

实例

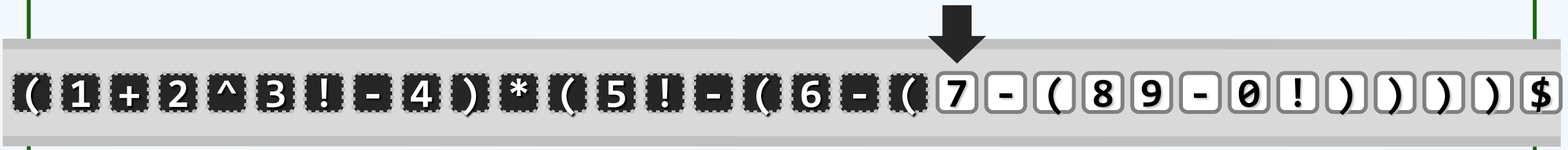
```
pri['-']['('] = '<'
```

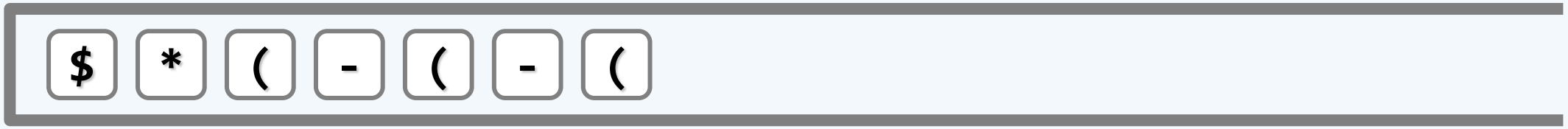


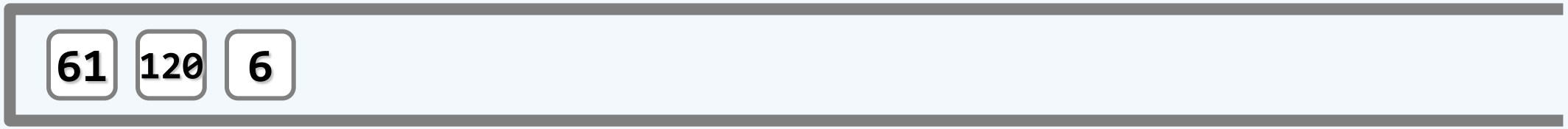




实例

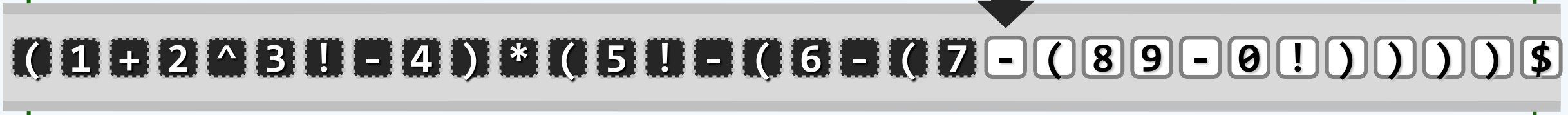


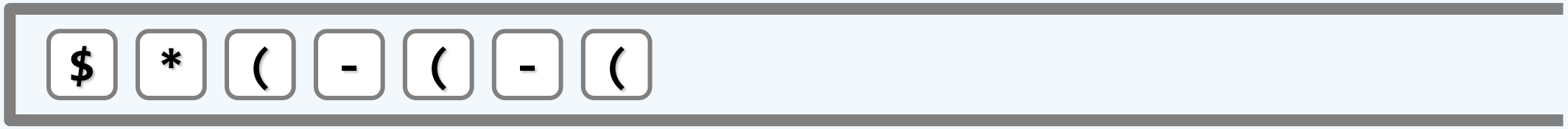


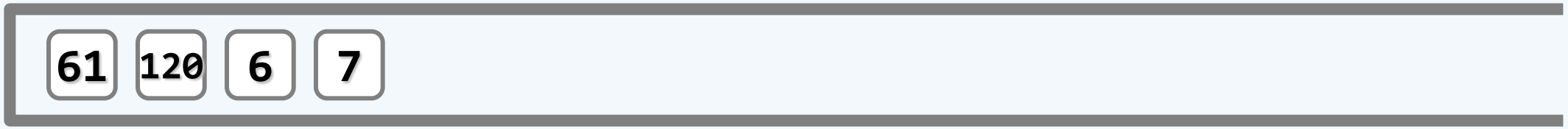


实例

```
pri['('][')'] = '<'
```

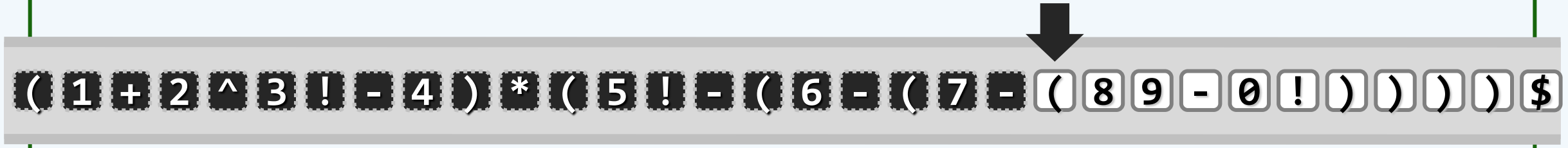


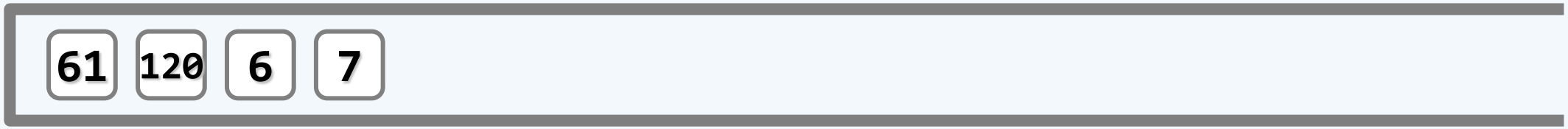




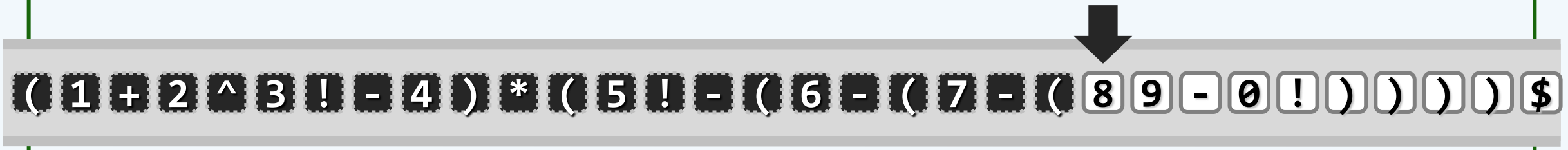
实例

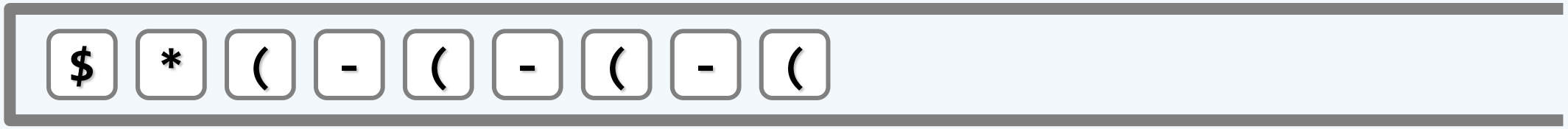
```
pri['-']['(']  =  '<'
```

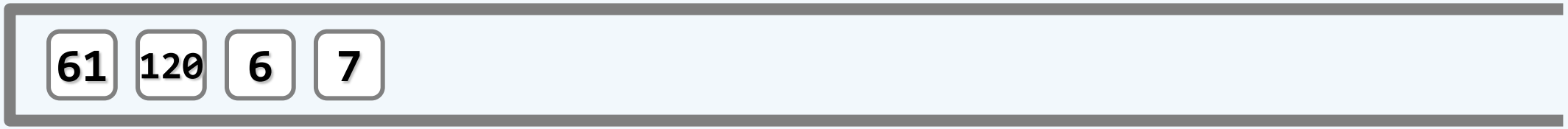




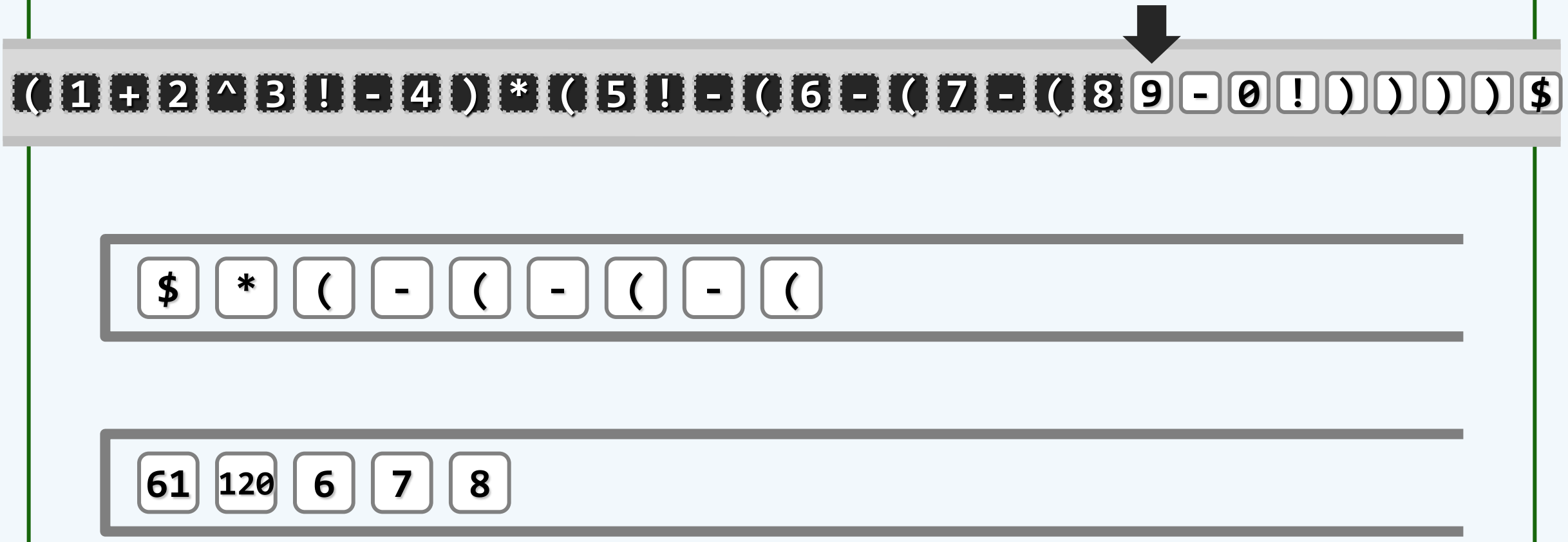
实例





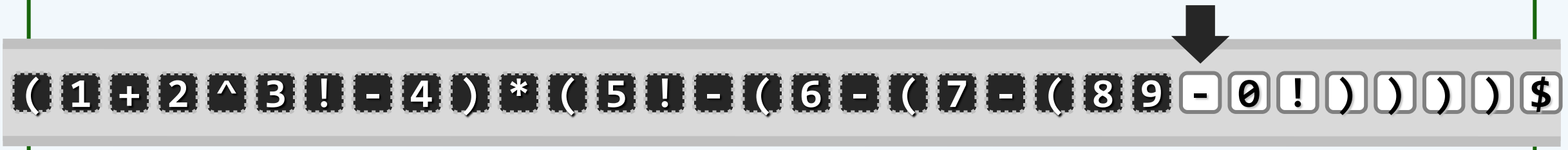


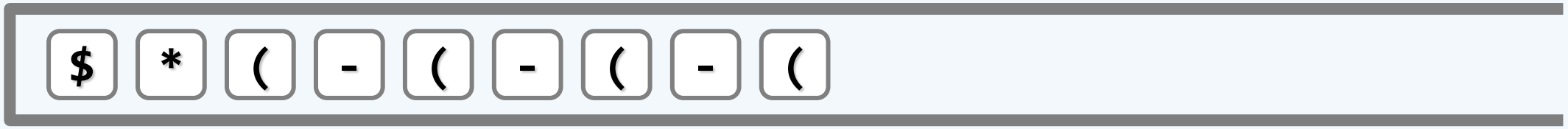
实例

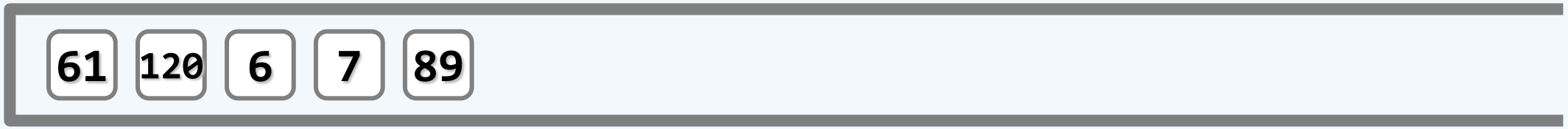


实例

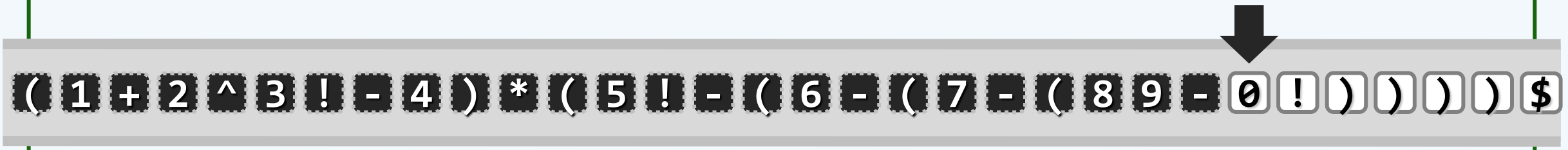
```
pri['('][']'] = '<'
```

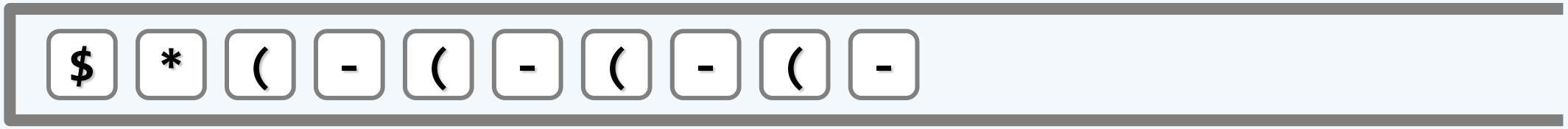


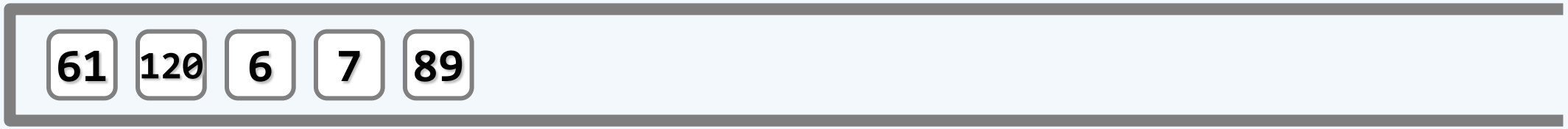




实例

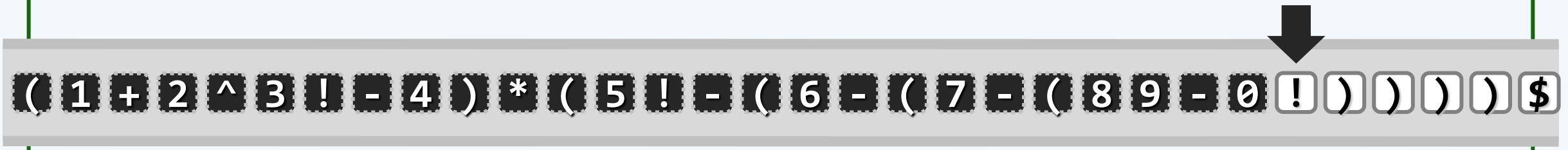






实例

```
pri['-']['!']  =  '<'
```

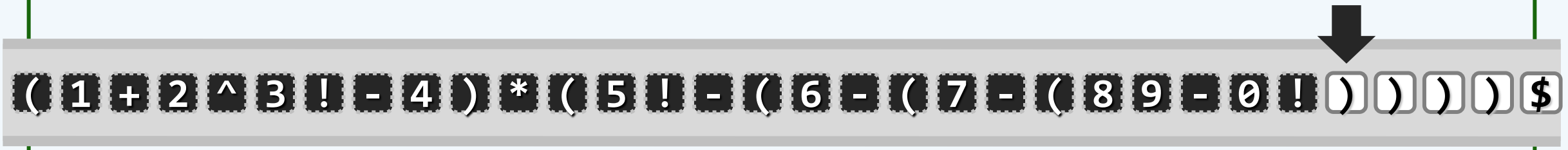


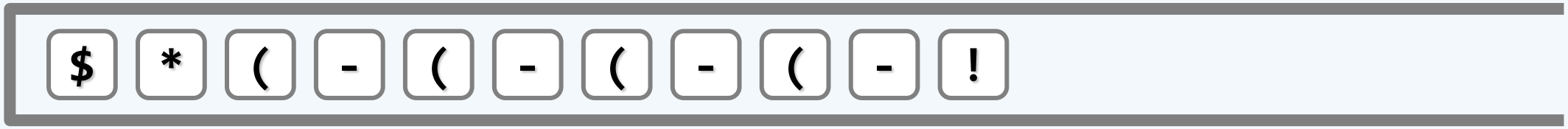
$	*	(	-	(	-	(	-	(	-

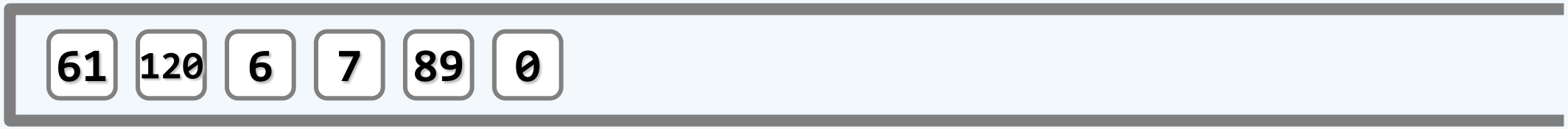
61	120	6	7	89	0

实例

pri['!'][')'] = '>'

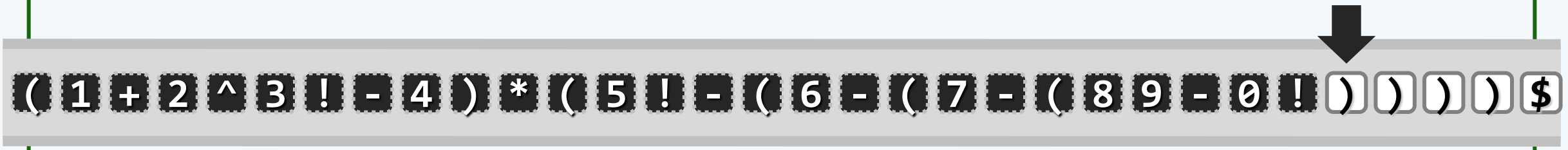


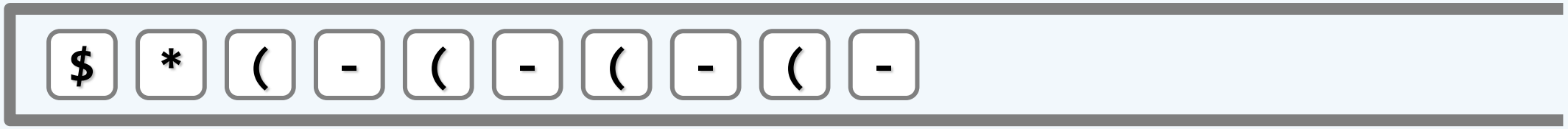


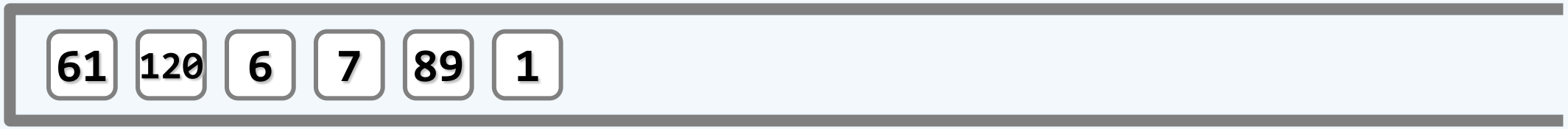


实例

```
pri['-'][')'] = '>'
```

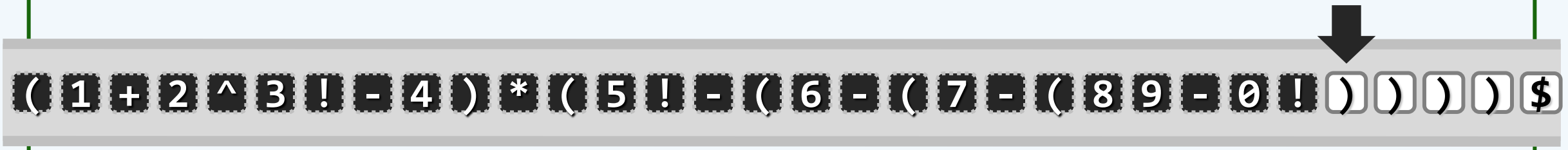


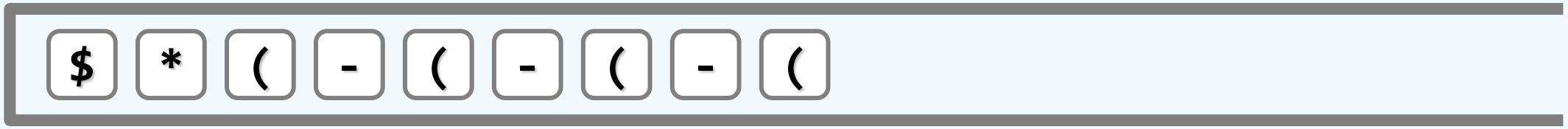


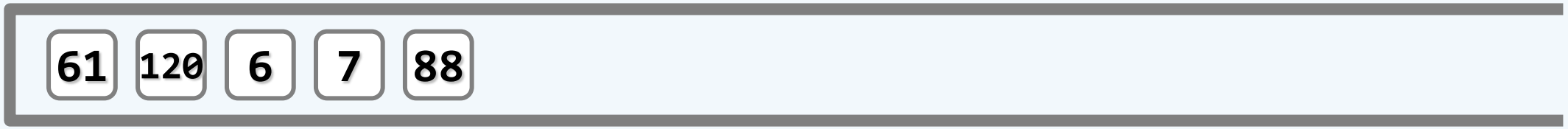


实例

```
pri['('][')'] = '='
```

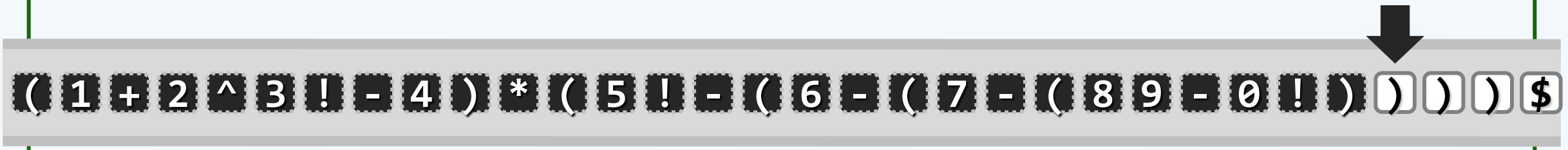






实例

pri['-'][')'] = '>'

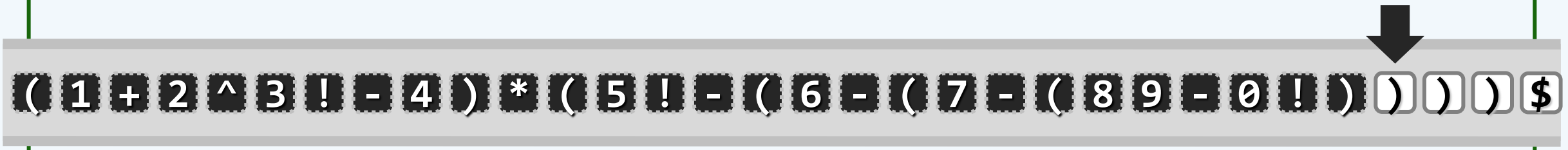


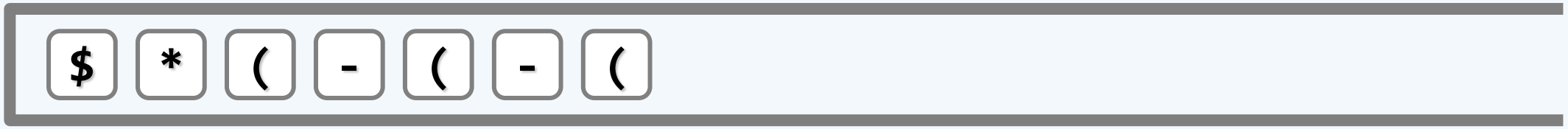
$ * (- (- (-

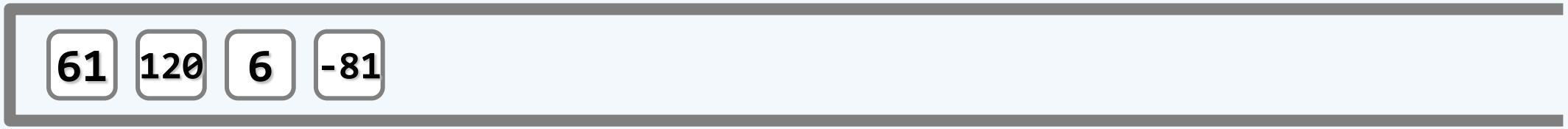
61 120 6 7 88

实例

```
pri['('][')'] = '='
```

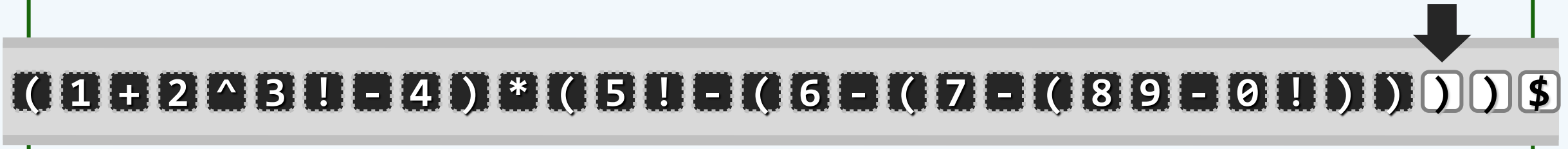






实例

pri['-'][')'] = '>'

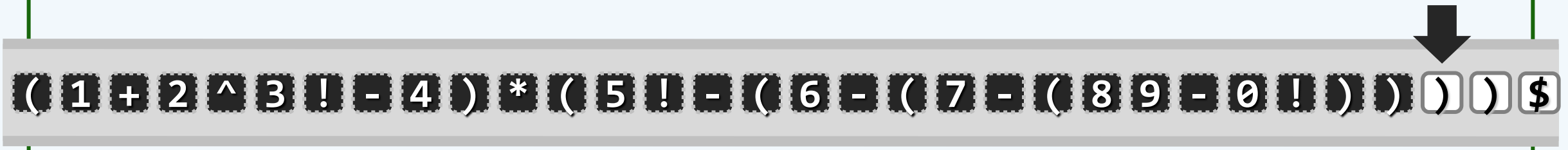


$ * (- (-

61 120 6 -81

实例

```
pri['('][')'] = '='
```

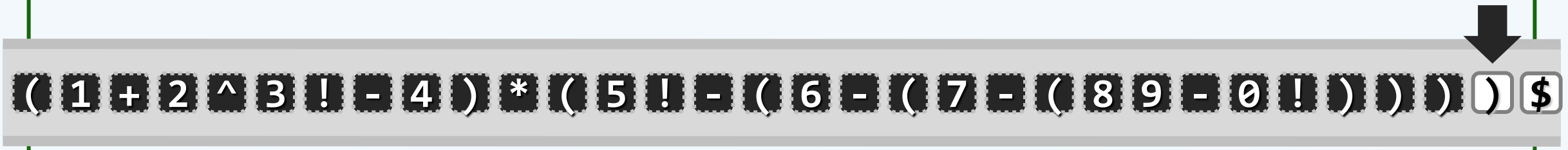


$	*	(	-	(

61	120	87

实例

```
pri['-'][')']  =  '>'
```

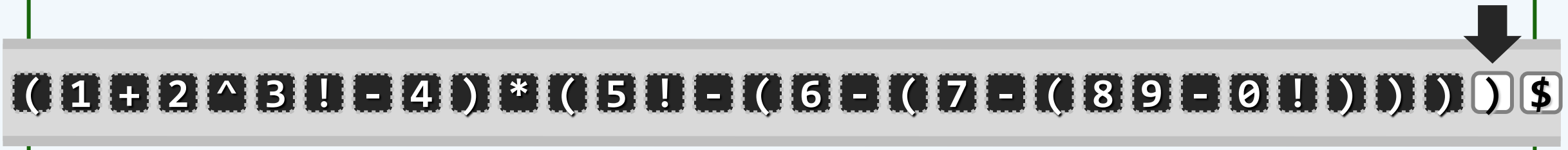


$ * (-

61 120 87

实例

```
pri['('][')'] = '='
```

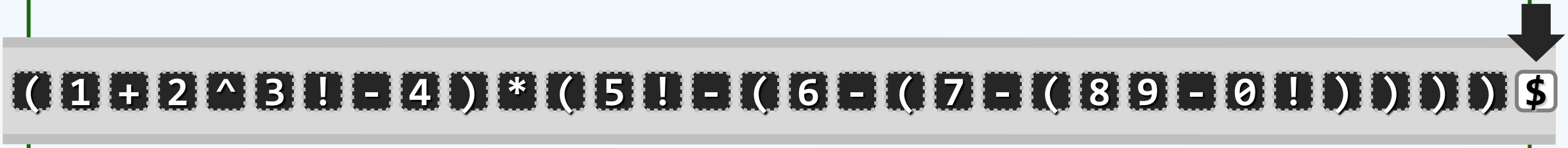


$	*	(

61	33

实例

```
pri['*']['$']  =  '>'
```



$ *

61 33

实例

```
pri['$']['$']  =  '='
```

```
( 1 + 2 ^ 3 ! - 4 ) * ( 5 ! - ( 6 - ( 7 - ( 8 9 - 0 ! ) ) ) ) $
```

$

2013

实例

```
( 1 + 2 ^ 3 ! - 4 ) * ( 5 ! - ( 6 - ( 7 - ( 8 9 - 0 ! ) ) ) ) $
```

2013