



☆ نوشتن ماتریس با استفاده از بسته nicematrix ☆

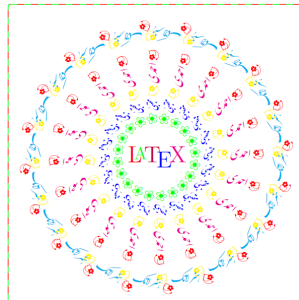


مجتبی احمدی



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۱۳ شهریور ۱۳۹۷

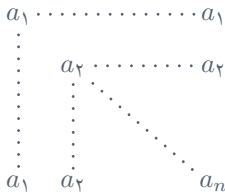




نسته nicematrix

```

1 \[
2 \begin{NiceMatrix}
3 a_1 & \Cdots & & a_1 \\
4 \Vdots & a_2 & \Cdots & a_2 \\
5 & \Vdots & \Ddots \\
6 \\
7 a_1 & a_2 & & a_n \\
8 \end{NiceMatrix}
9 \]
```





نسته nicematrix

```

1 \[
2 \begin{pNiceMatrix}
3 a_1 & \Cdots & & a_1 \\
4 \Vdots & a_2 & \Cdots & a_2 \\
5 & \Vdots & \Ddots & \\
6 \\
7 a_1 & a_2 & & a_n \\
8 \end{pNiceMatrix}
9 \]
```

$$\begin{pmatrix} a_1 & \cdots & a_1 \\ \vdots & & \\ a_1 & & \\ & a_2 & \cdots & a_2 \\ & \vdots & & \\ & a_2 & & \\ & & \ddots & \\ & & & a_n \end{pmatrix}$$



نِستِ nicematrix

```
1 \[
2 \begin{bNiceMatrix}
3 a_1 & \Cdots & & a_1 \\
4 \Vdots & a_2 & \Cdots & a_2 \\
5 & \Vdots & \Ddots \\
6 \\
7 a_1 & a_2 & & a_n \\
8 \end{bNiceMatrix}
9 \]
```

$$\begin{bmatrix} a_1 & \cdots & a_1 \\ \vdots & & \\ a_1 & & \\ & a_2 & \cdots & a_2 \\ & \vdots & \ddots & \\ & a_2 & & a_n \end{bmatrix}$$



نېسټه `nicematrix`

```

1 \[
2 \begin{BNiceMatrix}
3 a_1 & \Cdots & & a_1 \\
4 \Vdots & a_2 & \Cdots & a_2 \\
5 & \Vdots & \Ddots & \\
6 \\
7 a_1 & a_2 & & a_n \\
8 \end{BNiceMatrix}
9 \]
```

$$\left\{ \begin{array}{cccc} a_1 & \cdots & & a_1 \\ & & & \\ & & & \\ & & & \\ a_1 & & & \end{array} \right.$$



نِستِ nicematrix

```

1 \[
2 \begin{vNiceMatrix}
3 a_1 & \Cdots & & a_1 \\
4 \Vdots & a_2 & \Cdots & a_2 \\
5 & \Vdots & \Ddots \\
6 \\
7 a_1 & a_2 & & a_n \\
8 \end{vNiceMatrix}
9 \]
```

$$\left| \begin{array}{cccc} a_1 & \cdots & \cdots & a_1 \\ \vdots & & & \\ \vdots & & & \\ \vdots & & & \\ a_1 & & & \end{array} \right|$$



نستە nicematrix

```
1 \[
2 \begin{VNiceMatrix}
3 a_1 & \Cdots & & a_1 \\
4 \Vdots & a_2 & \Cdots & a_2 \\
5 & \Vdots & \Ddots \\
6 \\
7 a_1 & a_2 & & a_n \\
8 \end{VNiceMatrix}
9 \]
```

$$\left| \begin{array}{cccc} a_1 & \dots & \dots & a_1 \\ \vdots & & & \\ a_1 & & & \\ & a_2 & \dots & a_2 \\ \vdots & \vdots & \ddots & \\ a_2 & & & a_n \end{array} \right|$$



نسته nicematrix

```
1 \[  
2 \begin{bNiceMatrix}  
3 0 & \Cdots & 0 \\  
4 \Vdots & & \Vdots \\  
5 0 & \Cdots & 0 \\  
6 \end{bNiceMatrix}  
7 \]
```

$$\begin{bmatrix} \circ & \cdots & \circ \\ \vdots & & \vdots \\ \circ & \cdots & \circ \end{bmatrix}$$



نسته nicematrix

```
1 \[
2 \begin{bNiceMatrix}
3 0 & \Cdots & \Cdots & 0 \\
4 \Vdots & & \Vdots \\
5 \Vdots & & \Vdots \\
6 0 & \Cdots & \Cdots & 0 \\
7 \end{bNiceMatrix}
8 \]
```

$$\begin{bmatrix} \circ & \cdots & \cdots & \cdots & \circ \\ \vdots & & & & \vdots \\ \vdots & & & & \vdots \\ \vdots & & & & \vdots \\ \vdots & & & & \vdots \\ \circ & \cdots & \cdots & \cdots & \circ \end{bmatrix}$$



بسته nicematrix

```
1 \[
2 \begin{bNiceMatrix}
3 0 & \Cdots & \Hspace*{1cm} & 0 \\
4 \Vdots & & & \Vdots \\
5 0 & \Cdots & & 0
6 \end{bNiceMatrix}
7 \]
```

$$\begin{bmatrix} \circ & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \circ \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \vdots & & & & & & & & & & \vdots \\ \circ & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \circ \end{bmatrix}$$



نسته nicematrix

```
1 \[
2 B = \begin{pmatrix}
3 a_0 & b \\
4 a_1 & \vdots \\
5 a_2 & \vdots \\
6 a_3 & \vdots \\
7 a_4 & \vdots \\
8 a_5 & b \\
9 \end{pmatrix}
10 \]
```

$$B = \begin{pmatrix} a_0 & b \\ a_1 & \vdots \\ a_2 & \vdots \\ a_3 & \vdots \\ a_4 & \vdots \\ a_5 & b \end{pmatrix}$$

M. Ahmadi



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پسته nicematrix

```
1 \[
2 C = \begin{pNiceMatrix}
3 a_0 & b \\
4 a_1 & \Vdots \\
5 a_2 & \Vdots* \\
6 a_3 & \Vdots* \\
7 a_4 & \Vdots* \\
8 a_5 & b \\
9 \end{pNiceMatrix}
10 \]
```

$$C = \begin{pmatrix} a_0 & b \\ a_1 & \vdots \\ a_2 & \vdots \\ a_3 & \vdots \\ a_4 & \vdots \\ a_5 & b \end{pmatrix}$$

M. Ahmadi



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نسته nicematrix

```
1 \[
2 \begin{pmatrix}
3 1 & \cdots & \cdots & 1 \\
4 0 & \ddots & & \vdots \\
5 \vdots & \ddots & \ddots & \vdots \\
6 0 & \cdots & 0 & 1 \\
7 \end{pmatrix}
8 \]
```

$$\begin{pmatrix} & \cdots & \cdots & \\ \circ & \ddots & & \vdots \\ \vdots & \ddots & \ddots & \vdots \\ \circ & \cdots & \circ & \end{pmatrix}$$



نسته nicematrix

```
1 \[
2 \NiceMatrixOptions{transparent}
3 \begin{pmatrix}
4 1 & \cdots & \cdots & 1 \\
5 0 & \ddots & & \vdots \\
6 \vdots & \ddots & \ddots & \vdots \\
7 0 & \cdots & 0 & 1
8 \end{pmatrix}
9 \]
```

$$\begin{pmatrix} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{pmatrix}$$



نسته nicematrix

```

1 \[
2 \left[\begin{NiceArray}{CCCC|C}
3 a_1 & ? & \Cdots & ? & ? \\
4 0 & & \Ddots & \Vdots & \Vdots \\
5 \Vdots & \Ddots & \Ddots & ? & \\
6 0 & \Cdots & 0 & a_n & ? \\
7 \end{NiceArray}\right]
8 \]
```

$$\left[\begin{array}{cccc|c} a_1 & ? & \cdots & ? & ? \\ & \circ & \ddots & \vdots & \\ & \vdots & \ddots & \vdots & \\ & \vdots & \ddots & \vdots & \\ & \circ & \cdots & \circ & a_n \end{array} \right]$$



```
1 \[
2 \left(\begin{NiceArray}{LCR}
3 a_{11} & \cdots & a_{1n} \\
4 a_{21} & & a_{2n} \\
5 \vdots & & \vdots \\
6 a_{n-1,1} & \cdots & a_{n-1,n} \\
7 \end{NiceArray}\right)
8 \]
```

$$\begin{pmatrix} a_{11} & \cdots & a_{1n} \\ a_{21} & & a_{2n} \\ \vdots & & \vdots \\ a_{n-1,1} & \cdots & a_{n-1,n} \end{pmatrix}$$



```
1 \[ \begin{pNiceArrayC}{RRRR|R}[code-for-last-col={\small\color{blue}}]  
2 1& 2& 2& 3& -2 \\  
3 0& 0& -1& 5& -5 & L_2 \gets 2L_1-L_2 \\  
4 0& -1& -3& 3& -7 & L_3 \gets L_1-L_3  
5 \end{pNiceArrayC} \]
```

$$\left(\begin{array}{cccc|c} 1 & 2 & 2 & 3 & -2 \\ 0 & 0 & -1 & 5 & -5 \\ 0 & -1 & -3 & 3 & -7 \end{array} \right) \begin{array}{l} L_2 \leftarrow 2L_1 - L_2 \\ L_3 \leftarrow L_1 - L_3 \end{array}$$



نسته nicematrix

```

1 \[ \begin{pNiceArrayC}{*6C|O}[nullify-dots,code-for-
   last-col={\small}]
2 1 & 1 & 1 & \Cdots & & 1 & 0 & \\\
3 0 & 1 & 0 & \Cdots & & 0 & & L_2 \gets L_2-L_1 \\\
4 0 & 0 & 1 & \Ddots & & \Vdots & & L_3 \gets L_3-L_1 \\\
5 & & & \Ddots & & & \Vdots & \Vdots \\\
6 \Vdots & & & \Ddots & & 0 & & \\\
7 0 & & & \Cdots & 0 & 1 & 0 & L_n \gets L_n-L_1
8 \end{pNiceArrayC} \]

```

$$\left(\begin{array}{cccccc|c}
 \backslash & \backslash & \backslash & \dots & \dots & \dots & 0 \\
 0 & \backslash & 0 & \dots & \dots & \dots & 0 \\
 0 & 0 & \backslash & \dots & \dots & \dots & 0 \\
 \vdots & & \ddots & \ddots & \ddots & \ddots & \vdots \\
 0 & \dots & \dots & \dots & 0 & \dots & 0
 \end{array} \right) \begin{array}{l}
 L_2 \leftarrow L_2 - L_1 \\
 L_3 \leftarrow L_3 - L_1 \\
 \vdots \\
 L_n \leftarrow L_n - L_1
 \end{array}$$



نسته nicematrix

```
1 \begin{equation}
2 A = \begin{pNiceMatrix}
3 1 & \Cdots & & 1 \\
4 a+b & \Ddots & & \Vdots \\
5 \Vdots & \Ddots & & \\
6 a+b & \Cdots & a+b & 1 \\
7 \end{pNiceMatrix}
8 \end{equation}
```

$$A = \begin{pmatrix} 1 & \cdots & \cdots & \cdots & 1 \\ a+b & \ddots & & \vdots & \\ \vdots & \ddots & & & \\ a+b & \cdots & a+b & & 1 \end{pmatrix} \quad (1)$$



نسته nicematrix

```

1 \begin{equation}
2 \begin{pNiceMatrix}[nullify-dots]
3 a & b & 0 & & \Cdots & 0 \\
4 b & a & b & & \Ddots & & \Vdots \\
5 0 & b & a & & \Ddots & & \\
6 & \Ddots & & \Ddots & & \Ddots & 0 \\
7 \Vdots & & & & & & b \\
8 0 & \Cdots & & 0 & b & a \\
9 \end{pNiceMatrix}
10 \end{equation}

```

$$\begin{pmatrix} a & b & 0 & \cdots & 0 \\ b & a & b & & \\ 0 & b & a & & \\ \vdots & & & \ddots & \\ 0 & \cdots & 0 & b & a \end{pmatrix}$$

(۲)



بسته nicematrix

```

1 \begin{equation}
2 \begin{pNiceMatrix}
3 1 & \Cdots & & 1 \\
4 \Vdots & & & 0 \\
5 & \Iddots & \Iddots & \Vdots \\
6 1 & 0 & \Cdots & 0 \\
7 \end{pNiceMatrix}
8 \end{equation}

```

$$\begin{pmatrix} \vdots & & & \vdots \\ \vdots & \ddots & & \vdots \\ \vdots & & \ddots & \vdots \\ \vdots & & & \ddots \end{pmatrix}$$

(۳)



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فصل
پنجم

مورخیت

ی موفقیّت

روی موفقیّت

آرزوی موفقیت

با آرزوی موفقیت

با آرزوی موفقیت

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