


v_i 

m_{ij} 

t_{ijk} 


$$\begin{bmatrix} i \\ m \end{bmatrix} \begin{bmatrix} j \\ u \end{bmatrix} = \begin{bmatrix} i \\ u \end{bmatrix}$$

$$\sum_j m_{ij} v_j = u_i$$

$$-\boxed{m} \boxed{v} = -\boxed{u}$$

$$^3 \begin{bmatrix} 2 \\ 2 \end{bmatrix} \begin{bmatrix} 4 \end{bmatrix}$$

$12 \rightarrow x - \boxed{4}$

$1q_2 q_1 q_0 \rightarrow$  *amplitude.*

$0,1 - \boxed{} - 0,1$

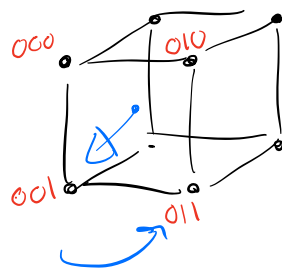
$$12 \rightarrow \begin{pmatrix} 1 \\ 1 \end{pmatrix} \begin{matrix} 8 \\ 2 \end{matrix}$$

\downarrow
0 00
1 001
...
7 111

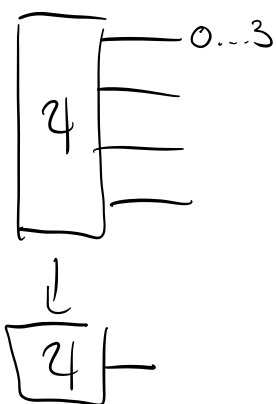
8 elements

$$12 \rightarrow \begin{pmatrix} 1 \\ 1 \end{pmatrix} \begin{matrix} 1 \\ 2 \\ 2 \end{matrix}$$

$\begin{pmatrix} 000 \\ 001 \\ 010 \\ 011 \\ 100 \\ 101 \\ 110 \\ 111 \end{pmatrix}$



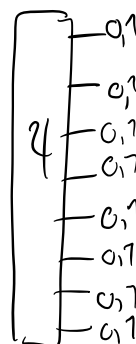
abc
 $a/a \quad g/d \quad h/b$

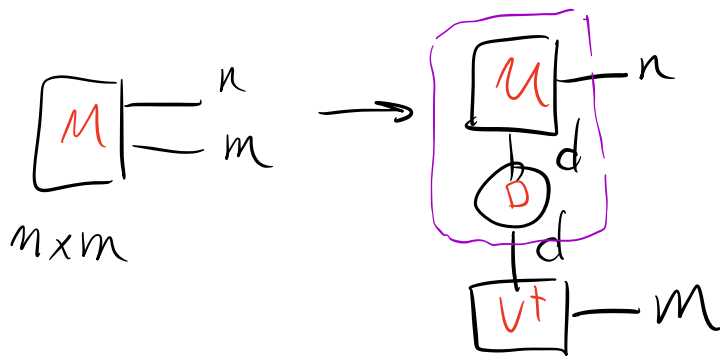


$\uparrow\uparrow \quad \uparrow\downarrow \quad \downarrow\uparrow \quad \downarrow\downarrow \quad \infty \quad 01 \quad 10 \quad 11$

$$4 \times 4 \times 4 \times 4 = 256$$

$$2^8 = 4^4$$





$$M = U D V^T$$

$$n \times m \quad m \times d + m \times d + d = (n + m + 1) \times d$$

$$8 \times 8 = 64 \quad (8 + 8 + 1) \times 2 = 34.$$

$$|q_3 q_2 \rangle \quad |q_1 q_0 \rangle$$

$$\square \rightarrow 0 \dots 3 \quad \square \rightarrow 0 \dots 3$$

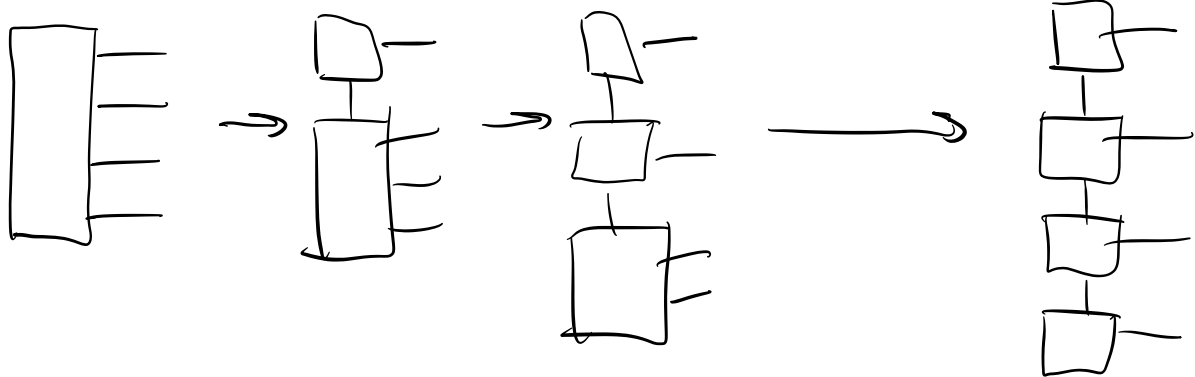
$$|4 \rangle = |q_3 q_2 \rangle \otimes |q_1 q_0 \rangle$$

$$\square \begin{matrix} \rightarrow 0 \dots 3 \\ \rightarrow 0 \dots 3 \end{matrix}$$

$$4 \times 4 = 16.$$

$$\square \rightarrow 0 \dots 3 \quad 4 + 4 = 8$$

$$\square \rightarrow 0 \dots 3$$



$$|4 \rangle = |A \rangle \otimes |B \rangle$$

État produit
≠ intrication

$$\rightarrow \sum_i |A_i \rangle \otimes |B_i \rangle$$

État intriqué.