

$$1 \quad 2 \quad 4 \quad 2$$

$$u_i \quad 2^i \quad u_n = 2^i$$

$$\boxed{} \quad w \geq \max u_i$$

$$8 \quad 8 \quad 8 \quad 2 \quad 2 \quad 2 \quad 2$$

$$\begin{matrix} 10 \\ 8 & 4 & 2 & 1 \\ 1 & 0 & 1 & 0 \end{matrix} \quad \begin{matrix} 8 & 4 & 2 \\ \downarrow \\ 2 \end{matrix}$$

$$8 * 100 \quad 4 * 100 \quad \boxed{9}$$

$$8 \quad 8 \quad 8 \quad 2 \quad 2 \quad 2$$

$$w \quad w$$

$$\boxed{1} \quad \dots \quad \boxed{4}$$

$$\rightarrow k \quad \rightarrow k$$

$$\leftarrow k-1$$

$$\begin{matrix} \leftarrow & \rightarrow \\ D_2 & D_3 \end{matrix}$$

$$\leftarrow D_2 \rightarrow D_3$$

$$\leftarrow D_2 \rightarrow D_1$$

$$F(n, k) \quad \begin{matrix} \rightarrow \\ \leftarrow \rightarrow \end{matrix}$$

$$\leq 1000 \quad \leq 1000$$

$$\dots \rightarrow_k \boxed{} \dots$$

$$\leftarrow k-1 \quad \rightarrow k$$

$$\begin{matrix} k \\ \boxed{} \end{matrix}$$

$$\begin{matrix} \rightarrow \\ \leftarrow \end{matrix}$$

$$\begin{matrix} i \\ \uparrow \\ i-1 \end{matrix}$$

$$F_{\text{plate index, power}}$$

$$\text{power} \quad 1 \leq k$$

$$\text{plate index} \quad n \dots 1$$

$$F(x, y) \rightarrow F(x+1, y)$$

$$F(x, y) \rightarrow F(x, y-1)$$

$$\rightarrow \boxed{}$$

$$\boxed{} \quad \boxed{} \quad \boxed{} \quad \boxed{} \quad \boxed{}$$

$$n=5$$

$$\leftarrow i=3$$

$$\begin{matrix} \rightarrow 2 \\ \boxed{} \end{matrix}$$

$$\begin{matrix} \rightarrow 1 & \rightarrow 1 \\ \rightarrow 2 & \rightarrow 2 \end{matrix}$$

$$\rightarrow 3 \quad 1+ \rightarrow \rightarrow 3 \quad 1+2$$

$$\begin{matrix} \rightarrow 2 \\ \leftarrow 2 \end{matrix}$$

$$\begin{matrix} \rightarrow 2 \\ \leftarrow 1 \end{matrix}$$

$$\rightarrow 2$$

$$\begin{matrix} \rightarrow 2 \\ \leftarrow 2 \end{matrix}$$

$$\begin{matrix} \rightarrow 3 \\ \rightarrow 3 \end{matrix}$$

$$\rightarrow 3$$

$$j=2 \quad i=1$$

$$\boxed{} \quad \boxed{} \quad \boxed{} \quad \boxed{}$$

$$n=4$$

$$\leftarrow i=3$$

$$\rightarrow \boxed{} \quad \boxed{}$$

$$1 \quad \dots \quad n$$

$$x_i \quad y_i$$

$$\text{op } (1) \quad \text{pick } a \in [0, y_i]$$

$$\text{repeat } a \times: k := \lceil k + x_i \rceil$$

$$\text{op } (2) \quad \text{repeat } a \times: k := \lceil k \cdot x_i \rceil$$

$$X \text{ can be a function}$$

$$\text{create exactly } j \text{ bonuses}$$

$$x_i = \frac{x_i!}{10^5}$$

$$(1) \text{ up to } 2x \quad k := \lceil k+3 \rceil$$

$$(2) \text{ up to } 2x \quad k := \lceil k \cdot 4 \rceil$$

$$(3) \text{ up to } 3x \quad k := \lceil k+10 \rceil$$

$$16 = \text{ } +3 +3 - +10$$

$$10^5$$

$$(1) \quad \rightarrow 3$$

$$\rightarrow 6$$

$$(2) \quad 0$$

$$3 \rightarrow 12$$

$$(3) \quad 0 \rightarrow 20$$

$$0 \rightarrow 10$$

$$3 \rightarrow 13$$

$$6 \rightarrow 16$$

$$12$$

$$+1$$

$$\boxed{1 \quad 2 \quad 3 \quad 4 \quad 5} \quad +1 \times \infty$$

$$\text{readable} \rightarrow$$

$$3 \rightarrow \cdot \frac{2}{3} \rightarrow 2 \cdot \frac{2}{3} \Rightarrow 2$$