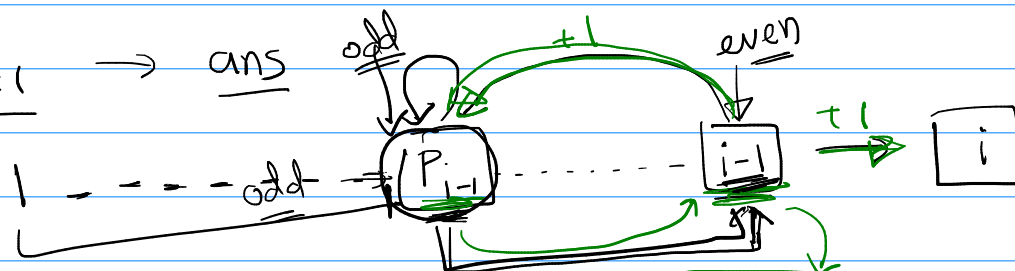


dp<sub>n+1</sub> → ans



$$dp_i = dp_{i-1} + 1 + \boxed{dp_{i-1} - dp_{p_{i-1}}} + 1$$

$$dp_i = 2 dp_{i-1} - dp_{p_{i-1}} + 2$$

$$\underline{dp_1 = 0} \quad \checkmark$$

$dp_{n+1} \rightarrow \underline{\text{ans}}$

$$\frac{1}{3} = 0.\overline{33333}$$

$$2 \times 10^0 + 5 \times 10^{-1}$$

$\frac{5}{2} = \frac{1}{2} + \frac{1}{4} + \frac{3}{4} \rightarrow 2$

$\xrightarrow{\text{max}} [x^a \cdot y^b \cdot z^c] \Rightarrow \log(x^a \cdot y^b \cdot z^c)$   
 $\uparrow \quad \uparrow \quad \uparrow$   
 $\left[ \begin{array}{l} x \rightarrow [0, 10^3] \\ y \rightarrow [0, 10^3] \\ z = s - x - y \end{array} \right]$   
 $\text{floating} \rightarrow$   
 $\left[ \begin{array}{l} a \log(x) \\ + b \log(y) \\ + c \log(z) \end{array} \right] \geq 0$

$\underline{x} \leftrightarrow \underline{\log(x)}$   
 $\downarrow \text{maximize this}$   
 $\underline{a \log(x)} + \underline{b \log(y)} + \underline{c \log(z)}$   
 $\uparrow \quad \uparrow \quad \uparrow$   
 $c \geq b$   
 $\downarrow \text{maximize}$   
 $x + y + z = s$

$\xrightarrow{\text{max}} f(x, y) = a \log(x) + b \log(y) + c \log(s - x - y)$   
 $c > a$

2 Partial Derivative

$$\frac{\partial f}{\partial x} = \frac{a}{x} + 0 + c \cdot \frac{1}{s-x-y} \cdot (-1) = 0$$

$$\frac{a}{x} = \frac{c}{s-x-y} \quad a(s-x-y) = cx$$

$$\frac{\partial f}{\partial y} = \left( \frac{b}{y} + \frac{c}{s-x-y} (-1) \right) = 0$$

$$x(a+c) = as - ay$$

$$\frac{b}{y} = \frac{c}{s-x-y}$$

$$x = \frac{as - ay}{a+c}$$

$$bs - by - bx = cy$$

$$bs - \frac{bas}{a+c} + \frac{aby}{a+c} = y(b+c)$$

$$bs - bx = y(b+c)$$

$$b \cdot s - b \cdot \frac{as - ay}{a+c} = y(b+c)$$

$$bs - \frac{abs}{a+c} = y \left[ b+c + \frac{ab}{a+c} \right]$$

✓✓

$$y =$$

$$\frac{bs - \frac{abs}{a+c}}{b+c + \frac{ab}{a+c}}$$

$$\boxed{\frac{x+y}{y} \leq s}$$

$$\boxed{x > 0}$$

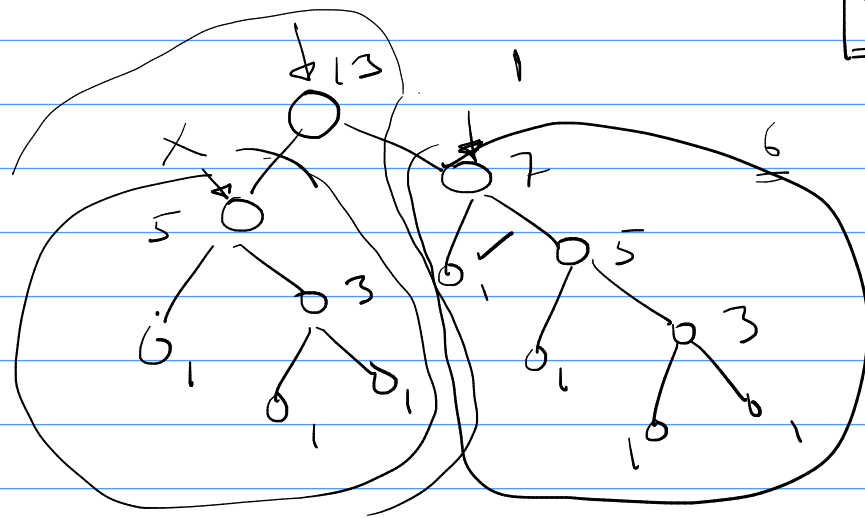
$$\boxed{y > 0}$$

↓ 1, 2, 3, 4, 5, 6, 7, 1, 2, 4, 5

↓ 1, 2, 4, 5, 7 (X)

Ordered Set

↑  
ordered set



7

0  
↓  
1, 2, 3, ~~4~~, 5, 6, 7  
↓  
1, 2, 3, 5, 6, 7  
0 + 3  
      

k = 3  
1

pos = 0

pos = 3

pos + 3 = 6 % 6 = 0

2, 3, 5, ~~4~~, 7  
↑

pos = 0 + 3 = 3

2, 3, ~~5~~, 7  
↓ ↓  
X ↑

pos = 6 % 4 = 2