H2022 - I

$$A = \frac{1}{3}\begin{pmatrix} 1 & -2 & -2 \\ -2 & 1 & -2 \\ -2 & -2 & 1 \end{pmatrix}$$

(H18-1) と全く同じため
(略)

1) $|A|$

$$|A| = \frac{1}{27}\begin{vmatrix} 1 & -2 & -2 \\ -2 & 1 & -2 \\ -2 & -2 & 1 \end{vmatrix} = \frac{1}{27}\begin{vmatrix} 1 & -2 & -2 \\ 0 & -3 & -6 \\ 0 & -6 & -3 \end{vmatrix} = \frac{1}{27}\begin{vmatrix} -3 & -6 \\ -6 & -3 \end{vmatrix}$$

$$= \frac{1}{27}\{9 - 36\} = \underline{-1}$$

2)

2022-2

1) $\Sigma = \{a, b, c\}$, $L = \{a^n b^m c b^m a^n \mid n \geq 1, m > 0\}$

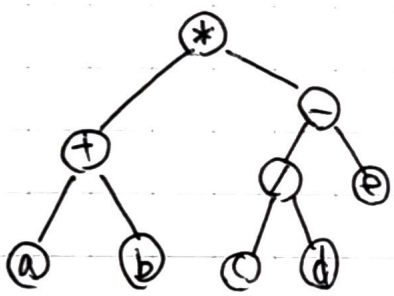
$P = \{S \to aSa, S \to aTa\}$

生成規則を2つ追加.

$T \to c$

$T \to bTb$

2)



a) 前順序

*, +, a, b, −, /, c, d, e

b) 後順序

a, b, +, c, d, /, e, −, *

3) $\neg((A \vee B) \wedge (\neg(A \vee \neg C)))$

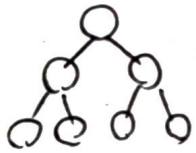
A	B	C
F	F	F
F	F	T

(H18-3) と全く同じため略.

2022-3

1) b[0... n-1]

a) Tの高さをhとする. nの最大値をhで表す.

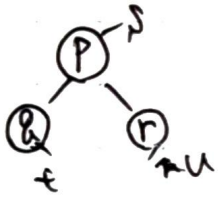


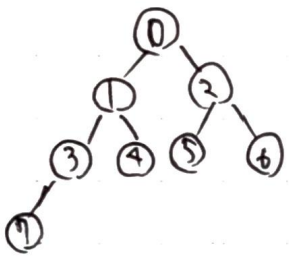
h=2 → 7

~~h=~~

$n_{max} = 2^{h+1} - 1$

b)

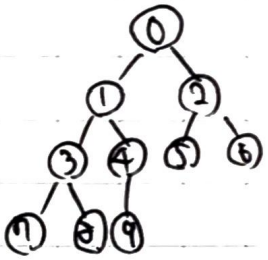




$t = 2s + 1$

$u = 2s + 2$

c) b[0... n-1] が相異なる値を持つ.



max b[u] $u = 0$

min b[w]

5~9(n-1)

~~$\frac{h}{2} \leq w \leq h-1$~~

h=10 → 5~9

h=11 → 5~10

h=12 → 6~11

$\lfloor \frac{n}{2} \rfloor \leq w \leq n-1$

2) ヒープソート

a) void funcI(int a[], int i, int j){ }

ア: 2*i+1

イ: a[k] < a[k+1]

ウ: j=k

b) void func2(int a[], int m){ }

エ ~~$i = \frac{m}{2}$~~ $\frac{m}{2}-1$

オ ~~i>=0~~ i≧0

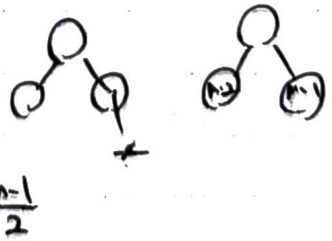
カ: m-1

c) func3

キ: func2(a, m)

ク: swap(a, 0, m-1);

ケ: 0



$\frac{m-1}{2}$