

P6. 4-1

(a)  $a=2$   $b=2$   $f(n)=n^4$

$$n^{\log_b a} = n^{\log_2 2} = n \quad \frac{f(n)}{n} = n^3$$

情况3  $T(n) = \Theta(n^4)$

(b)  $a=7$   $b=10$   $f(n)=n$

$$n^{\log_{10} 7} \quad \frac{f(n)}{n} = \frac{n}{n^{\log_{10} 7}} \quad \text{情况1}$$

情况3

$$T(n) = \Theta(n)$$

(c)  $a=16$   $b=4$   $f(n)=n^2$

$$n^{\log_4 16} = n^2 \quad \frac{n^2}{n^2} = 1 \quad \text{情况2}$$

$$T(n) = \Theta(n^2 \lg n)$$

(d)  $a=7$   $b=3$   $f(n)=n^2$

$$n^{\log_3 7} = n^{\log_3 7} \quad \frac{f(n)}{n^{\log_3 7}} = \frac{n^2}{n^{\log_3 7}} \quad \text{情况3}$$

$$T(n) = \Theta(n^2)$$

(e)  $a=7$   $b=2$   $f(n)=n^2$

$$n^{\log_2 7} = n^{\log_2 7} \quad \frac{f(n)}{n^{\log_2 7}} = \frac{n^2}{n^{\log_2 7}} \quad \text{情况1}$$

$$T(n) = \Theta(n^{\log_2 7})$$

(f)  $a=2$   $b=4$   $f(n)=\sqrt{n}$

$$n^{\log_4 2} = n^{\log_4 2} \quad \frac{\sqrt{n}}{n^{\log_4 2}} = 1 \quad \text{情况2}$$

$$T(n) = \Theta(\sqrt{n} \lg n)$$



$$g: T(n) = T(n-4) + (n-2)^2 + n^2 = T(n-6) + (n-4)^2 + (n-2)^2 + n^2$$

$$= T(n-8) + (n-6)^2 + (n-4)^2 + (n-2)^2 + n^2$$

$$\therefore T(2) = T(0) + 2^2$$

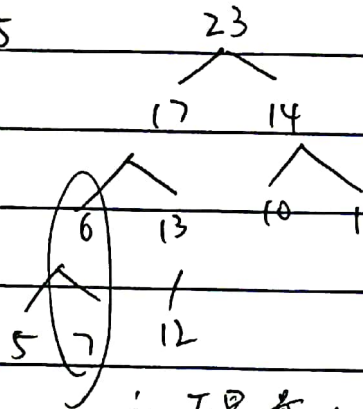
$$= n^2 + (n-2)^2 + (n-4)^2 + \dots + T(2)$$

$$= T(2) + \sum_{i=0}^{n/2-1} (n-2i)^2 \sim n^3$$

↓  
C

$$= \theta(n^3)$$

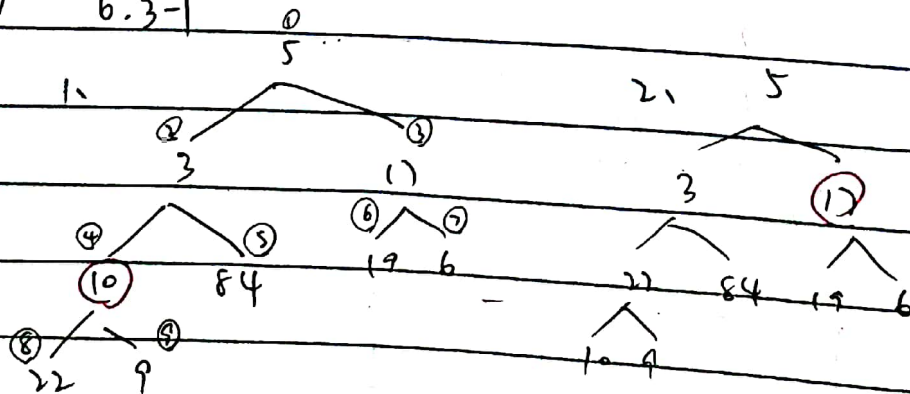
P85

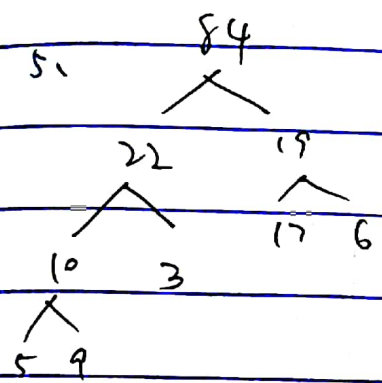
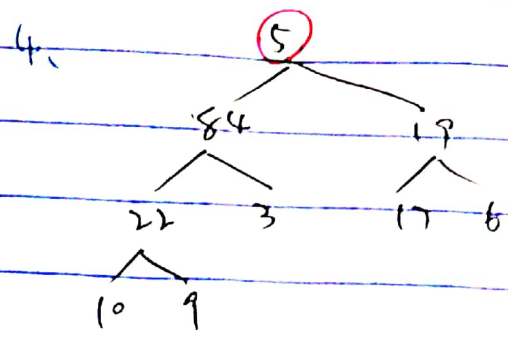
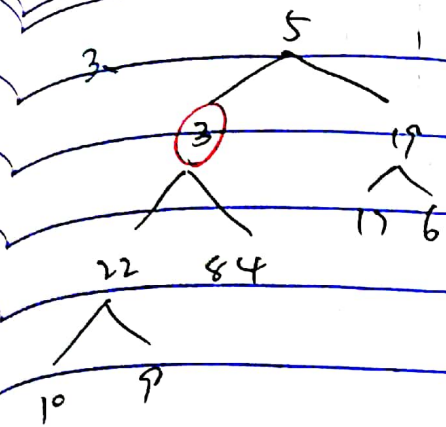


∴ 不是最大堆

P89

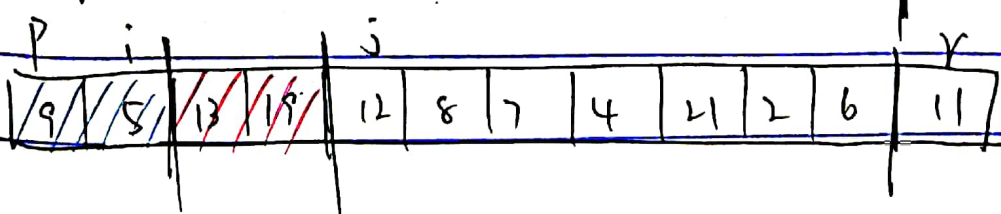
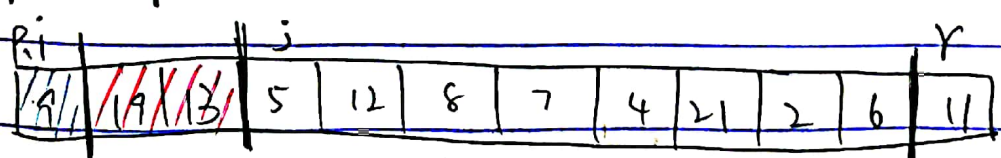
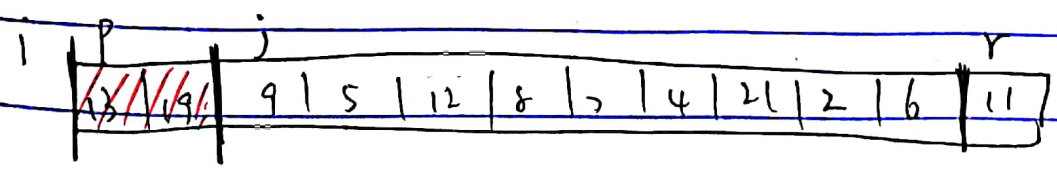
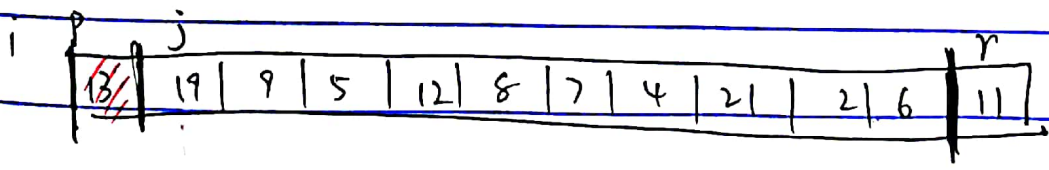
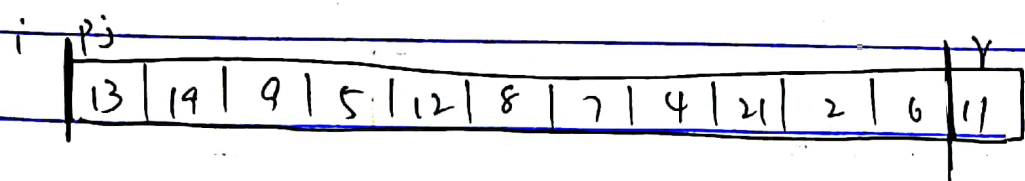
6.3-1



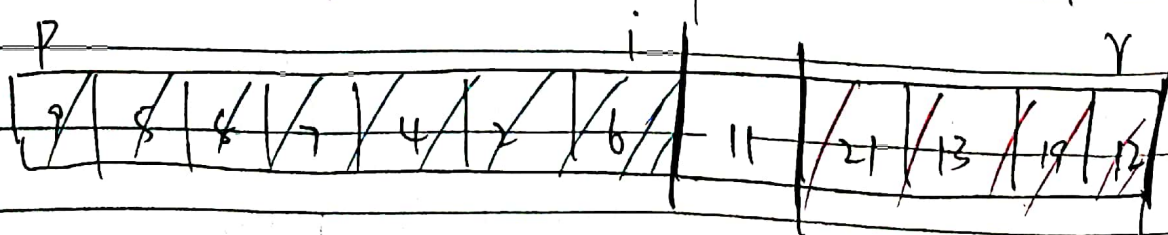
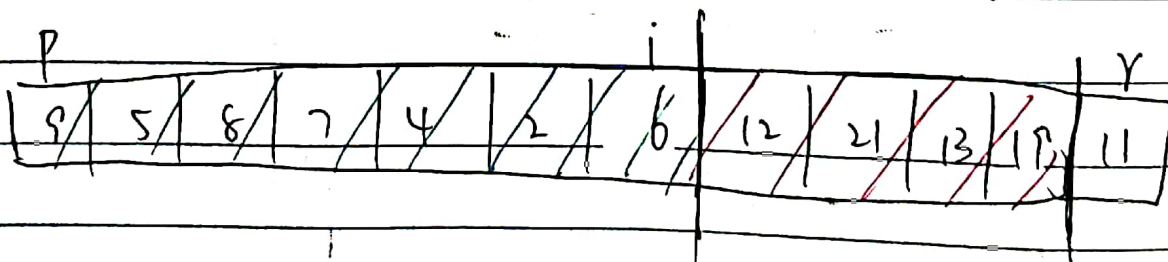
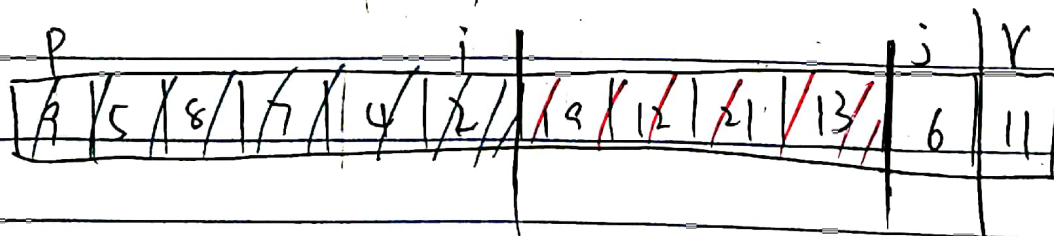
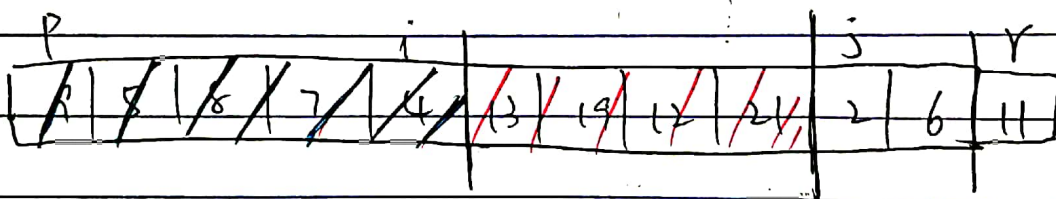
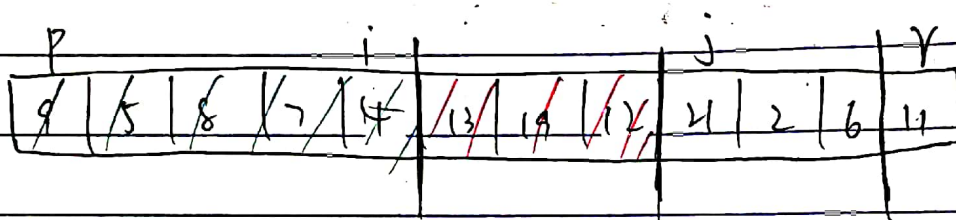
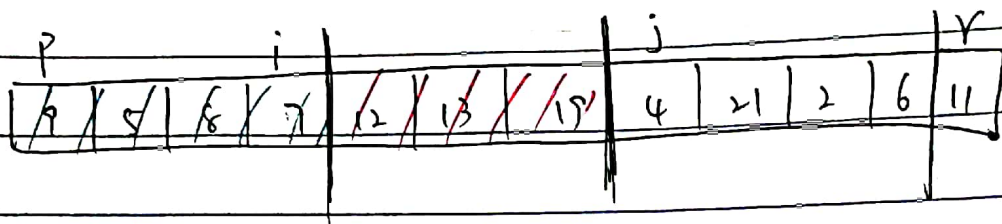
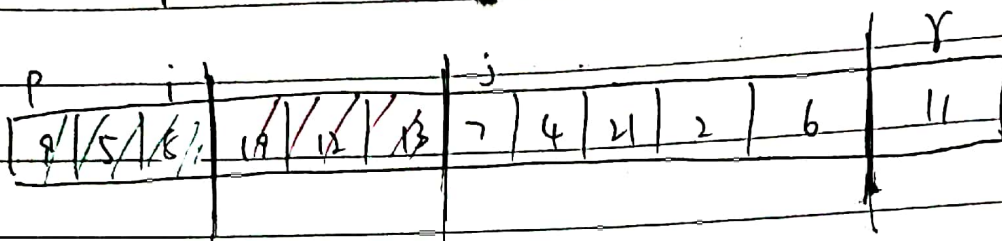
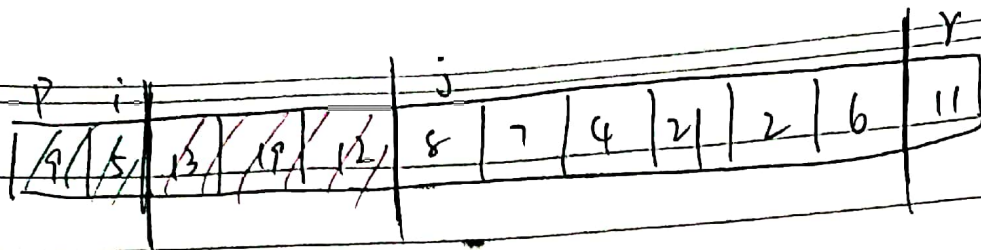


p 97

7.1-1







P110 8-2-1

	1	2	3	4	5	6	7	8	9	10	11
A:	6	0	2	8	1	3	5	4	6	3	2

	0	1	2	3	4	5	6
	2	2	2	2	1	0	2

↓

	0	1	2	3	4	5	6
C	2	4	6	8	9	9	11

	1	2	3	4	5	6	7	8	9	10	11
	0	0	1	1	2	2	3	3	4	6	6

①		0	1	2	3	4	5	6
		2	4	5	8	9	9	11

②		0	1	2	3	4	5	6
		2	4	5	7	9	9	11

③		0	1	2	3	4	5	6
		2	3	5	7	9	9	11

④		0	1	2	3	4	5	6
		2	3	5	7	9	9	10

⑤		0	1	2	3	4	5	6
		2	3	5	7	8	9	10



⑥

0	1	2	3	4	5	6
2	3	5	6	8	9	10

⑦

0	1	2	3	4	5	6
2	2	5	6	8	9	10

⑧

0	1	2	3	4	5	6
1	2	5	6	8	9	10

⑨

0	1	2	3	4	5	6
1	2	4	6	8	9	10

⑩

0	1	2	3	4	5	6
0	2	4	6	8	9	10

⑪

0	1	2	3	4	5	6
0	2	4	6	8	9	9





P112

8.3-1

~~COW~~  
~~DIG~~  
~~SEN~~  
~~RUG~~  
~~Row~~  
~~MOB~~  
~~BOX~~  
~~TAB~~  
~~BAR~~  
~~EAR~~  
~~TER~~  
~~DIG~~  
~~BIG~~  
~~TEA~~  
~~Now~~  
~~FOX~~

~~SEN~~  
~~TEA~~  
~~MOB~~  
~~TAB~~  
~~DIG~~  
~~RUG~~  
~~DIG~~  
~~BIG~~  
~~BAR~~  
~~EAR~~  
~~TER~~  
~~COW~~  
~~Row~~  
~~Now~~  
~~BOX~~  
~~FOX~~

~~TAB~~  
~~BAR~~  
~~EAR~~  
~~TAR~~  
~~SEN~~  
~~TEA~~  
~~DIG~~  
~~BIG~~  
~~MOB~~  
~~DIG~~  
~~COW~~  
~~Row~~  
~~Now~~  
~~BOX~~  
~~FOX~~  
~~RUG~~

→ ~~BAR~~  
~~BIG~~  
~~BOX~~  
~~COW~~  
~~DIG~~  
~~BIG~~  
~~EAR~~  
~~FOX~~  
~~Now~~  
~~MOB~~  
~~Row~~  
~~RUG~~  
~~SEN~~  
~~TAB~~  
~~TAR~~  
~~TER~~

JI



P123

9.2-4

最坏情况，每次都找到最大的元素当基准

$$T(n) = T(n-1) + O(n)$$

P125

9.3-8

插入排序  $\rightarrow$  有序

判断  $x$  中数是否全小于  $y$ ，若是返回  $x[n]$

9.3-9

$x$  东西  $y$  南北  $\therefore$  最短  $\therefore d_2 = \sum_{i=1}^n |y - y_i|$

求  $y_i$  的中位数 ( $i=1, 2, \dots, n$ )

若最坏情况为线性时间，则第  $\frac{n}{2}+1$  或  $\frac{n}{2}$  小的数 (即最优位置) 可以在线性时间内被求出

① 将  $n$  个  $y_i$  为组，分成  $n/5$  组，每组有 5 个  $y_i$

② 对每组进行插入排序选出中位数

③ 对  $n/5$  组递归调用 select 找中位数 (若  $n/5$  为偶数则找小的)

④ 用中位数的中位数  $x$  对数组划分  $k = \text{rank}(x)$ ， $x$  是第  $k$  小的，有  $n-k$  个元素在高区

⑤  $i=k$  (x)

$i < k$  在低区找第  $i$  小

$i > k$  高区找  $i-k$  小的

JI

