

# 淡江大學 105 學年度碩士班招生考試試題

35-1

系別：資訊工程學系 A 組  
資訊工程學系資訊網路與多媒體碩士班

科目：作業系統

考試日期：3 月 5 日(星期六) 第 2 節

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本試題雙面印刷

1. Consider the following five processes arrive for processing at the times indicated and run the specified amount of time. Draw the Gantt chart for the three scheduling disciplines listed:

Process	Priority(e)	Arrival Time	Total service Time(t)
P1	06	0	06
P2	03	3	06
P3	02	8	06
P4	05	15	06
P5	04	18	06

- (a) SJF(non-preemptive), (b)SRTF(preemptive), and (c)RR(quantum=02). **(10% each)**

2. Paging & Segmentation

- (a) Consider the following page table (page size = 4K),

Page #	Page Frame #	Valid
0	12	1
1	2	1
2	7	0
3	5	1
4	10	1
5	4	1
6	0	0
7	0	0

What are the physical addresses for the following logical addresses (in decimal)? **(10%)**

- a. 012375  
b. 023366

- (b) Consider the following segment table:

Segment #	Base	Length
0	219	600
1	2300	124
2	90	100
3	1327	580
4	1952	96
5	2525	1008

What are the physical addresses for the following logical addresses (segment #, offset)? **(10%)**

- a. 1, 052  
b. 4, 100

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3. Consider the organization of a UNIX file as represented by the inode. Assume that there are 10 direct block pointers and a singly, doubly, and triply indirect pointers in each inode. Further, assume that the system block size and the disk sector size are both 1/2K, and the disk block pointer is 32 bits. Assume that the file inode is already in main memory, the byte in position 20160305 is at which logical data block? (20%)

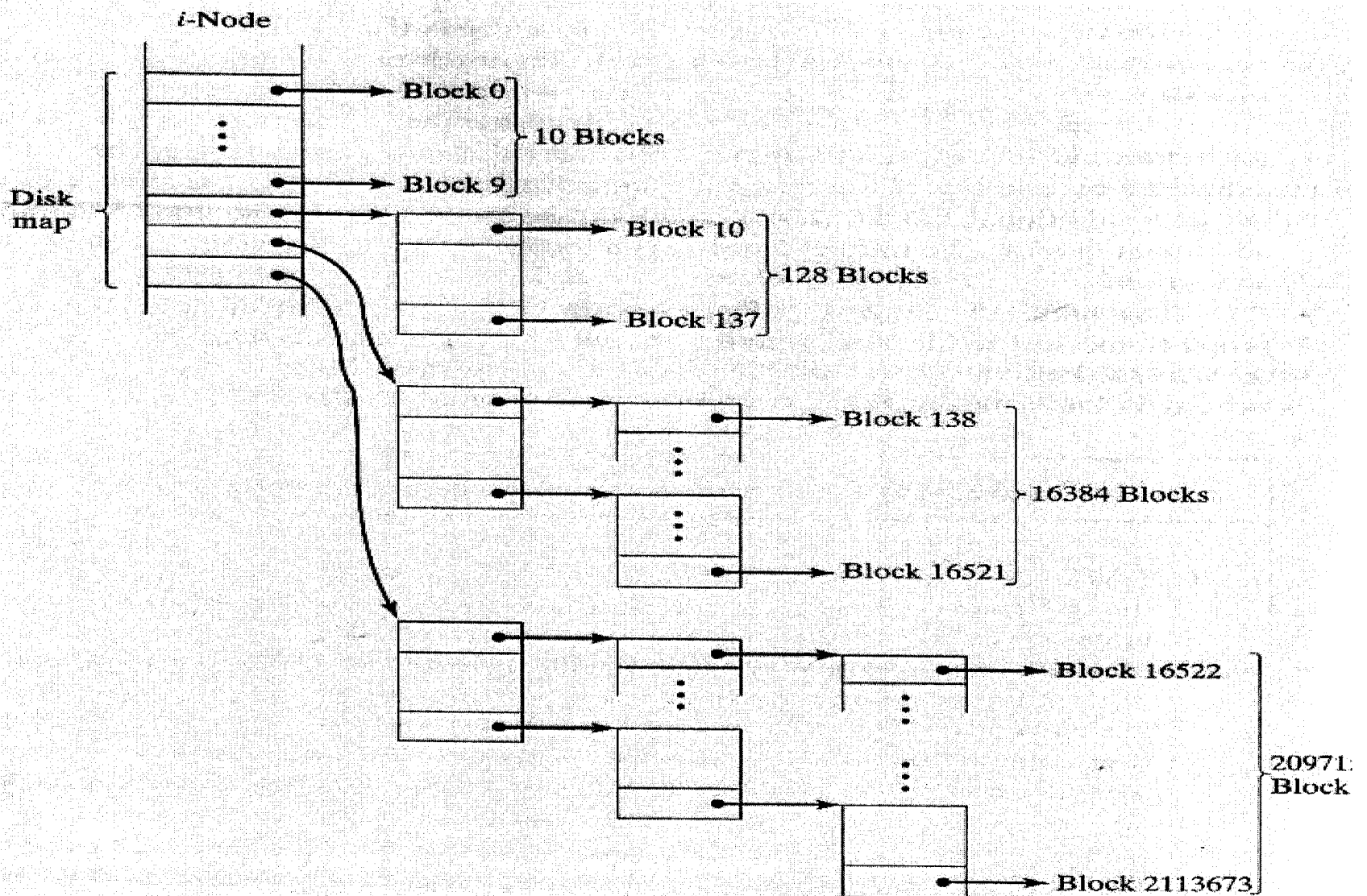


FIGURE 10-13. File mapping in UNIX.

4. Suppose that a disk drive has 1,000 cylinders, numbered 0 to 999. The drive is currently serving a request at cylinder 105, and the previous request was at cylinder 258. The queue of pending requests, in FIFO order, is 274, 500, 710.
- While cylinder 500 is reading, the requests arrive in the order: 096, 370, 613, and
  - while cylinder 370 is reading, the requests arrive in the order: 302, 450, 234, and
  - while cylinder 450 is writing, the requests arrive in the order: 100, 388.
- Starting from the current head position 105, in which order that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?
- LOOK (15%)
  - SCAN (15%)