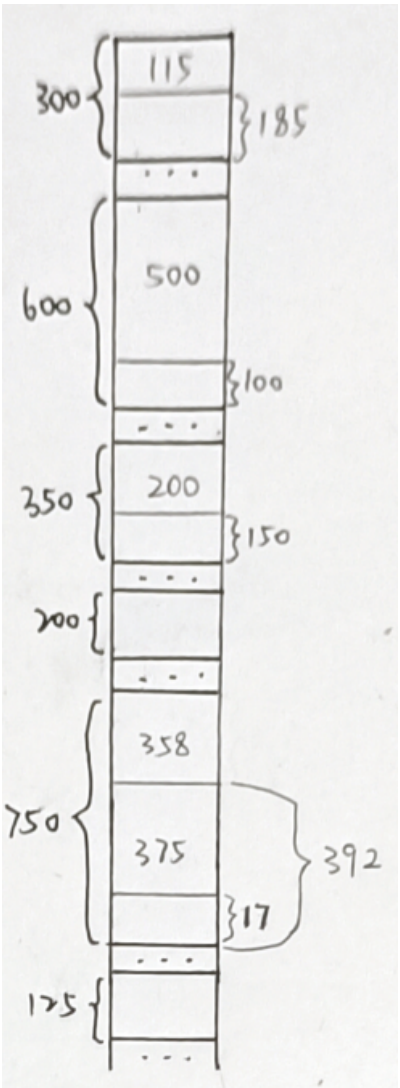
第 9 章作业

9.6

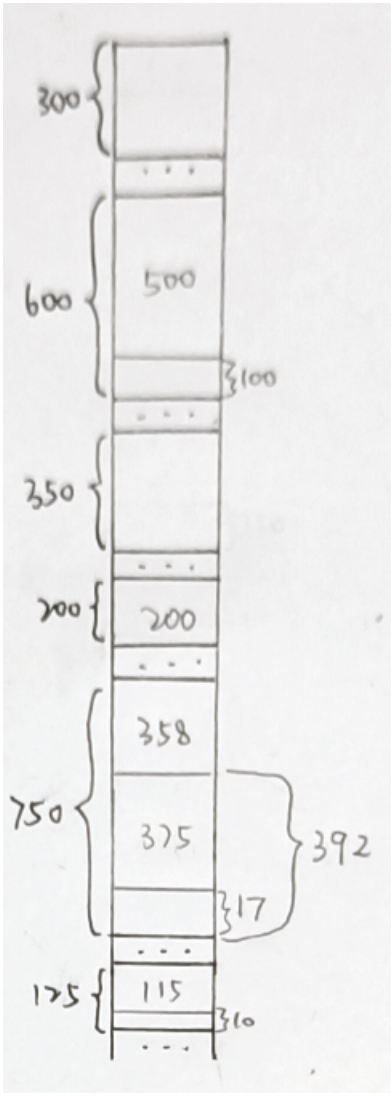
9.6 Given six memory partitions of 300 KB, 600 KB, 350 KB, 200 KB, 750 KB, and 125 KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of size 115 KB, 500 KB, 358 KB, 200 KB, and 375 KB (in order)?

答:

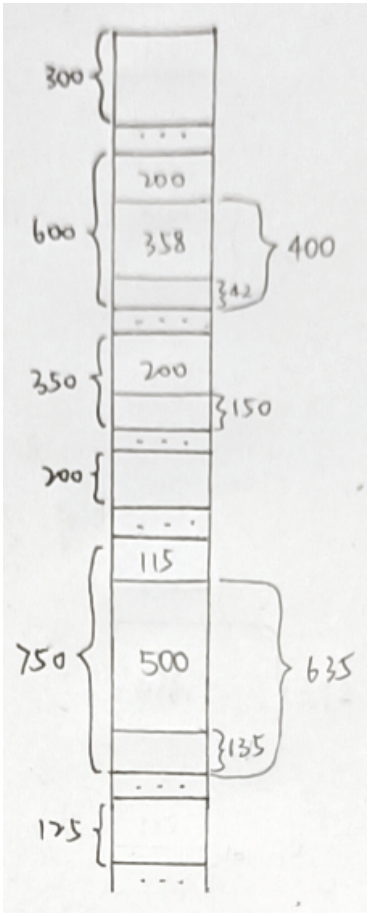
first-fit:



best-fit:



worst-fit:



The process of size 375KB can't be placed in.

9.7

9.7 Assuming a 1-KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):

a. 3085

b. 42095

c. 215201

d. 650000

e. 2000001

答:

因为页面大小为1KB，即2^10B，所以后10位为offset。

a.

3085 = 11|00 0000 1101(B)

page number = 11(B) = 3

offset = 1101(B) = 13

b.

42095 = 10 1001|00 0110 1111(B)

page number = 10 1001(B) = 41

offset = 110 1111(B) = 111

c.

215201 = 1101 0010|00 1010 0001(B)

page number = 1101 0010(B) = 210

offset = 1010 0001(B) = 161

d.

650000 = 10 0111 1010|11 0001 0000(B)

page number = 10 0111 1010(B) = 634

offset = 11 0001 0000(B) = 784

e.

2000001 = 111 1010 0001|00 1000 0001(B)

page number = 111 1010 0001(B) = 1953

offset = 1000 0001(B) = 129

9.9

9.9 Consider a logical address space of 256 pages with a 4-KB page size, mapped onto a physical memory of 64 frames.

a. How many bits are required in the logical address?

b. How many bits are required in the physical address?

答:

a.

256 = 2^8，4K = 2^12，故逻辑地址有 8 + 12 = 20 位。

b.

64 = 2^6，故物理地址有 6 + 12 = 18 位。

9.10

9.10 Consider a computer system with a 32-bit logical address and 4-KB page size. The system supports up to 512 MB of physical memory. How many entries are there in each of the following?

a. A conventional, single-level page table

b. An inverted page table

答:

a.

4K = 2^12，故 offset 为逻辑地址后12位，前20位为page number，所以页表中有 2^20 个条目。

b.

512M = 2^29，故物理地址分为 2^(29 - 12) = 2^17 帧，所以倒置页表中有 2^17 个条目。