

1. Consider a logical address space of 256pages 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?

Answer:

- a. Logical address: ① bits
- b. Physical address: ② bits

填空题 (14 分) 14 分 (请按题目中的空缺顺序依次填写答案)

① 20

② 18

正确答案:

- ① 20
- ② 18

2. Considering thesegment table, what are the physical addresses for the following logicaladdresses?

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses? (Physical addresses = Segment Base Address + Offset)

请在下面空中依次填写十进制数值答案，如果是无效地址，请填写：invalid。

- a. 0,430 Answer: ①
- b. 1,10 Answer: ②
- c. 2,500 Answer: ③
- d. 3,400 Answer: ④
- e. 4,112 Answer: ⑤

填空题 (20 分) 20 分 (请按题目中的空缺顺序依次填写答案)

① 649

② 2310

③ invalid

④ 1727

⑤ invalid

正确答案:

- ① 649
- ② 2310
- ③ invalid
- ④ 1727
- ⑤ invalid

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

请在下面空中依次填写十进制数值答案

- a. 3085 page numbers: ① , offsets: ②
b. 42095 page numbers: ③ , offsets: ④
c. 215201 page numbers: ⑤ , offsets: ⑥

填空题 (18 分) 18 分 (请按题目中的空缺顺序依次填写答案)

①	3
②	13
③	41
④	111
⑤	210
⑥	161

正确答案:

- ① 3
② 13
③ 41
④ 111
⑤ 210
⑥ 161

4. Consider a paging system with the page table stored in memory.

- a. If a memory reference takes 50 nanoseconds, how long does a paged memory reference take?
b. If we add TLBs, and if 75 percent of all page-table references are found in the TLBs, what is the effective memory reference time? (Assume that finding a page-table entry in the TLBs takes 2 nanoseconds, if the entry is present.)

Answer:

- a. ① ns
b. ② ns

填空题 (14 分) 14 分 (请按题目中的空缺顺序依次填写答案)

①	100
②	64.5

正确答案:

- ① 100
② 64.5

5. Given six memory partitions of 100 MB, 170 MB, 40 MB, 205 MB, 300 MB, and 185 MB (in order), how would the **first-fit, best-fit, and worst-fit** algorithms place processes of size 200 MB, 15 MB, 185 MB, 75 MB, 175 MB, and 80 MB (in order)?
请在下面空中依次填写答案。如果某进程能放入到空闲分区中，填写该分区的数字，如：100；如果某进程无法放入到空闲分区中，则填写：
must wait

- First-fit:**
- a. 200M process put in ① M partition
 - b. 15M process put in ② M partition
 - c. 185M process put in ③ M partition
 - d. 75M process put in ④ M partition
 - e. 175M process must ⑤ M partition
 - f. 80M process put in ⑥ M partition

- Best-fit:**
- a. 200M process put in ⑦ M partition
 - b. 15M process put in ⑧ M partition
 - c. 185M process put in ⑨ M partition
 - d. 75M process put in ⑩ M partition
 - e. 175M process put in ⑪ M partition
 - f. 80M process put in ⑫ M partition

- Worst-fit:**
- a. 200M process put in ⑬ M partition
 - b. 15M process put in ⑭ M partition
 - c. 185M process put in ⑮ M partition
 - d. 75M process put in ⑯ M partition
 - e. 175M process ⑰ M partition
 - f. 80M process put in ⑱ M partition

填空题 (18 分) 18 分 (请按题目中的空缺顺序依次填写答案)

①

205

②

100

③

300

④

100

⑤

185

⑥

170

⑦

205

⑧

40

⑨

185

⑩

100

⑪

300

⑫

300

- ⑬ 300
- ⑭ 205
- ⑮ 205
- ⑯ 185
- ⑰ must wait
- ⑱ 170

正确答案:

- ① 205
- ② 100
- ③ 300
- ④ 100
- ⑤ 185
- ⑥ 170
- ⑦ 205
- ⑧ 40
- ⑨ 185
- ⑩ 100
- ⑪ 300
- ⑫ 300
- ⑬ 300
- ⑭ 205
- ⑮ 205
- ⑯ 185
- ⑰ must wait
- ⑱ 170

6. The BTV operating system has a 21-bit virtual address, yet on certain embedded devices, it has only a 16-bit physical address. It also has a 2-KB page size. How many entries are there in each of the following?
- a. A conventional, single-level page table . Answer: ① (填写10进制数)
- b. An inverted page table. Answer: ② (填写10进制数)

填空题 (16 分) 16 分 (请按题目中的空缺顺序依次填写答案)

- ① 1024
- ② 32

正确答案:

- ① 1024
- ② 32