作业3

答题版本 2023.11.05 15:45　　试卷得分 100

1. The physical address of a logical address <2,66> is _____, given the segment table as the following:
   segment base address length
   0 120k 40k
   1 760k 30k
   2 480k 20k
   3 370k 20k

单选题 (10 分)　10分

A. 120K+2

B. 480K+66

C. 30K+66

D. 480K+2

正确答案: B

2. Consider a two level paging scheme with a TLB. Assume no page fault occurs. It takes 20 ns to search the TLB and 100 ns to access the physical memory. If TLB hit ratio is 80%, the effective memory access time is ① ns.

填空题 (10 分)　10 分　(请按题目中的空缺顺序依次填写答案)

160

正确答案:
① 160

3. Assume that the probability of page fault is 0.2%, memory access time is 100ns, and the average page fault service time is 25ms, then the effective access time is:

单选题 (10 分)　10分

A. 25us

B. 50us

C. 150us

D. 200us

正确答案: B

4. In a demanding paging system, the size of a page is 4KB. A process access the logical address 13000 will _____ if the page table is as the following:

Page #	Frame #	Validity
0	3	V
1	4	V
2	2	V
3	—	I

单选题 (10 分)　10分

A. Access physical address 4*4096+712.

B. Access physical address 3*4096+712.

C. Access physical address 2*4096+712.

D. Cause a page fault interruption.

正确答案: D

5. In a computer system, a Best-Fit dynamic storage allocation strategy is used. The initial free main memory is 64MB. In case there is following allocation and release sequence: allocate 16MB, allocate 32MB, release 16MB, allocate 8MB, allocate 12MB. Now the largest size of free block in main memory is _____.

单选题 (10 分)　10分

A. 4MB

B. 8MB

C. 12MB

D. 16MB

正确答案: B

6. For a 32-bit Linux, which of the following statements about virtual memory is correct?

单选题 (10 分)　10分

A. Kernel can directly access all 4G virtual memory.

B. Kernel space uses 1G virtual memory, while all the other user processes share 3G virtual memory.

C. Kernel space uses 1G virtual memory, while each of the user processes has its own 3G virtual memory.

D. All user processes share the 4G virtual memory.

正确答案: C

7. A 32 bit address system, uses a paged virtual memory; the page size is 2 KBytes. What is the virtual page and the offset in the page for the virtual address 0x00030f40?

The virtual page number is : ①
The offset is : ②

填空题 (20 分)　20 分　(请按题目中的空缺顺序依次填写答案)

① 0x61

② 0x740

正确答案:
① 0x61
97
② 0x740
1856

8. Consider the page table for a system with 12-bit virtual and physical addresses and 256-byte pages.

Page	Page Frame
0	–
1	2
2	C
3	A
4	–
5	4
6	3
7	–
8	B
9	0

The list of free page frames is *D*, *E*, *F* (that is, *D* is at the head of the list, *E* is second, and *F* is last). A dash for a page frame indicates that the page is not in memory.

Convert the following virtual addresses to their equivalent physical addresses in hexadecimal. All numbers are given in hexadecimal.

- 9EF: ①
- 111: ②
- 700: ③
- 0FF: ④

填空题 (20 分)　20 分　(请按题目中的空缺顺序依次填写答案)

① 0EF

② 211

③ D00

④ EFF

正确答案:
① 0EF

2 211
3 D00
4 EFF