四川大学期末考试试题（闭卷）

（2017~2018 学年第 2 学期）　　B 卷

课程号：311006040　课程名称：操作系统　任课教师：＿＿＿＿

适用专业年级：软件工程 2016 级　学号：＿＿＿＿＿＿　姓名：＿＿＿＿＿＿

考生承诺

我已认真阅读并知晓《四川大学考场规则》和《四川大学本科学生考试违纪作弊处分规定（修订）》，郑重承诺：

1、已按要求将考试禁止携带的文具用品或与考试有关的物品放置在指定地点；

2、不带手机进入考场；

3、考试期间遵守以上两项规定，若有违规行为，同意按照有关条款接受处理。

考生签名：

题　号	一(22%)	二(44%)		三(30%)
得　分				
卷面总分		阅卷时间		

注意事项：1. 请务必将本人所在学院、姓名、学号、任课教师姓名等信息准确填写在试题纸和添卷纸上；

2. **请将答案全部填写在本试题纸上；**

3. 考试结束，请将试题纸、添卷纸和草稿纸一并交给监考老师。

评阅教师	得分

一、单项选择题（本大题共 11 小题，每小题 2 分，共 22 分）

提示：在每小题列出的四个备选项中只有一个是符合题目要求的，请将其代码填写在下表中。错选、多选或未选均无分

1	2	3	4	5	6	7	8	9	10	11

1. The four main structural elements of a computer system are:（ ）

(A) Processor, Registers, Main Memory & System Bus

(B) Processor, Registers, I/O Modules & Main Memory

(C) Processor, Main Memory, I/O Modules & System Bus

(D) None of the above

2. The operating system provides many types of services to end-users, programmers and system designers, including:（ ）

(A) Built-in user applications

(B) Error detection and response

(C) Relational database capabilities with the internal file system

(D) All of the above

3. There are a number of conditions that can lead to process termination, including: （ ）

(A) Parent termination

(B) Bounds violation

(C) Normal completion

(D) All of the above

4. One of the disadvantages of User-Level Threads (ULTs) compared to Kernel-Level Threads (KLTs) is （ ）

(A) Scheduling is application specific

(B) Thread switching does not require kernel mode privileges

(C) When a ULT executes a system call, all threads in the process are blocked

(D) All of the above

5. The following requirement must be met by any facility or capability that is to provide support for mutual exclusion:（ ）

(A) No assumptions can be made about relative process speeds

(B) A process remains in its critical code section for a finite time only

(C) Only one process at a time can be allowed into a critical code section

(D)All of the above

6. A resource that can be created and destroyed is called a: （ ）

(A) Consumable resource

(B) Reusable resource

(C) Producible resource

(D) None of the above

7. The page table for each process maintains:（ ）

(A) The frame location for each page of the process

(B) The physical memory location of the process

(C) The page location for each frame of the process

(D) None of the above

8. The situation where the processor spends most of its time swapping process pieces rather than executing instructions is called（）

(A) Paging

(B) The Principle of Locality

(C)Thrashing

(D) None of the above

9. The type of scheduling that involves the decision to add a process to those that are at least partially in main memory and therefore available for execution is referred to as（ ）

(A) Medium-term scheduling

(B) Long-term scheduling

(C) I/O scheduling

(D) None of the above

10. In a hierarchical structure for managing I/O on a secondary storage device that supports a file system, the layer that is closest to the hardware is the: （ ）

(A) Physical organization layer

(B) Device I/O layer

(C) Directory management layer

(D) None of the above

11. The data structure that maintains information on available disk space is called the: （ ）

a. Disk Allocation Table

b. Bit Table

c. None of the above

d. File Allocation Table (FAT)

评阅教师	得分

三、简答题（本大题共7小题，共44分）。

1. What is batch multi-programming OS? What is Time sharing OS? And please describe their difference.? (6 分)

2. What is process? What is Thread? Describe the relationship between Process and Thread. (6 分)

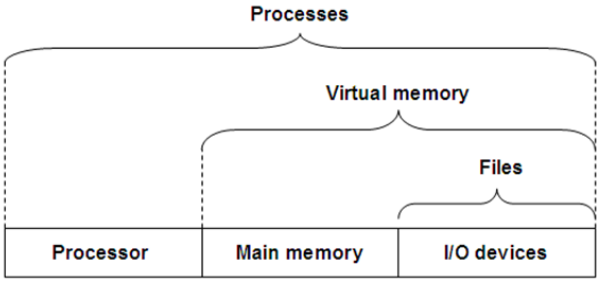
3. Describe the four important issues that must be considered when concurrency is used. Please give a short description of them. (8 分)

4. What is fixed partitioning? What is simple paging? And please describe the similarities and differences between fixed partitioning and simple paging. (8 分)

5. How the logical address is translated from logical address to physical address, when the MM is implemented by using virtual segment and page method. (Notes: drawing a photo is suggested.) (6 分)

6. List and briefly define the three file allocation methods. (Notes: drawing some photos is suggested.) (6 分)

7. Based on what you have learned on this course, please give description on the following photo.（4 分）



评阅教师	得分

四、问答题（本大题共3小题，共34分）。

1.（共12分）Assume there are 3 processes: Read, Move and Print. They share 2 buffers: B1 and B2. Process Read reads a record and put it in buffer B1. Process Move reads the data from buffer B1, processes it and put the result into buffer B2. Process Print read the data from buffer B2, and prints it. Please fill the following blanks by wait and signal operation of semaphore.

Initialize		
Semaphore S0 = 1; Semaphore S1 = 0; Semaphore S2 = _____;(1) Semaphore S3 = _____;(2)		
Read Process	**Move Process**	**Print Process**

char x;
while (true)
{
Read a record to x;
_____;(3)
B1 = x;
_____;(4)
}
	char x, y;
	while (true)
	{
	_____;(5)
	x = B1;
	_____;(6)
	Process x,
	store the result to y;
	_____;(7)
	B2 = y;
	_____;(8)
	}
		char x;
		while (true)
		{
		_____;(9)
		x = B2;
		_____;(10)
		Print x;
		}

2.（共 12 分）Suppose that the following processes arrive for execution at the times indicated, each process will run the listed amount of time.

Process	Arrival Time	Service Time
P1	0	8
P2	2	12
P3	5	5

(A) Draw Gantt charts that illustrate the execution of these processes using FIFO (First-In-FirstOut), SPN(Shortest Process Next).

(B) What is the average turnaround time of each scheduling algorithm?

3.（共 10 分）A system receives a series of page references in the following order: 1, 1, 3, 5, 2, 2, 6, 8, 7, 6, 2, 1, 5, 5, 5, 1, 4, 9, 7, 7. The system has **four** page frames. If all of the frames are initially empty, calculate the number of page faults using each of these algorithms. (Notes: the code miss should not be included, as shown in the example of our text book.)

(A) LRU replacement

(B) FIFO replacement