

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对

☐ 答错

以最后一次提交作为判分依据

1. Arunning process may be switched to release CPU, when one of following events occurs EXCEPT:

回答错误

单选题 (3 分) 0分

- A. The process issues an I/O request
- B. An interrupt occurred
- C. The process creates a sub-process and waits for its termination
- D. The process calls a subroutine

正确答案: D

2. Consider the following program ,uses the Pthreads API. What would be the output from the program at LINE C and LINE P?

```
#include<pthread.h>
#include<stdio.h>
#include<unistd.h>
#include<wait.h>
#include<sys/types.h>

int value = 0;
void*runner(void *param); /* the thread */
int main(int argc, char *argv[]){
    pid_t pid;
    pthread_t tid;
    pthread_attr_t attr;
    pid = fork();
    if (pid == 0) { /* child process */
        pthread_attr_init(&attr);
        pthread_create(&tid,&attr,runner,NULL);
        pthread_join(tid,NULL);
        printf("CHILD: value = %d",value); /*LINE C */
    }
    else if (pid > 0) { /* parent process */
        wait(NULL);
        printf("PARENT: value = %d",value); /*LINE P */
    }
}

void*runner(void *param) {
    value = 10;
    pthread_exit(0);
}
```

Answer:

LINE C: CHILD: value = ①

LINE P: PARENT: value = ②

请把数值依次填入下方框内:

填空题 (8 分) 8 分 (请按题目中的空缺顺序依次填写答案)

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对 ☐ 答错

①

10

②

0

正确答案:

① 10

② 0

3. Which of the following item should not bein the PCB (Process Control Block)?

单选题 (3 分) 3分

- A. code section
- B. memory-management information
- C. process state
- D. CPU-scheduling information

正确答案: A

4. Threads belonging to the same process share the ____ .

单选题 (3 分) 3分

- A. stack
- B. thread ID
- C. register set
- D. data section

正确答案: D

5. Using the program shown in following, explain what will be output at Line A.

```
#include <stdio.h>
#include <unistd.h>
#include <sys/types.h>
int value=8;
int main()
{
    pid_t pid;
    /*fork a child process */
    pid= fork();
    if (pid == 0) { /* child process */
        value+=15;
    }
    else{ /* parent process */
        /*parent will wait for the child to complete */
        wait(NULL);
        printf("Parent :value= %d\n",value);/*LINE A*/
        exit(0);
    }
}
```

请把数值填入下面方框内:

Answer: Parent:value= ①

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对

☐ 答错

填空题 (8 分) 8 分 (请按题目中的空缺顺序依次填写答案)

8

正确答案:

① 8

6. Which of the following statement about processes is incorrect?

单选题 (3 分) 3分

- A. A process is a set of instructions
- B. Multiple processes may execute concurrently
- C. A process is dynamic
- D. A process has a lifetime

正确答案: A

7. When a process is waken up, it means that_____ .

单选题 (3 分) 3分

- A. the process is provided with CPU again
- B. its state is changed into ready state
- C. its PCB is moved to the head of ready queue
- D. its priority is becoming the highest

正确答案: B

8. 下面哪一种情况不会引起进程之间的切换?

单选题 (3 分) 3分

- A. 进程调用本程序中定义的sinx函数进行数学计算
- B. 进程创建了子进程并等待子进程结束
- C. 进程处理I/O请求
- D. 产生中断

正确答案: A

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对 ☐ 答错

9. Consider the following code segment:

```
pid_t pid;  
pid = fork();  
if (pid == 0) { /* childprocess */  
    fork();  
    thread_create(. . .);  
}  
fork();
```

- a. How many unique processes are created? ① (包括第一次运行该程序的进程)
- b. How many unique threads are created? ② (没有主线程)

请把数值依次填入下面方框内:

填空题 (8 分) 0 分 (请按题目中的空缺顺序依次填写答案)

①	<input type="text" value="5"/>	回答错误
②	<input type="text" value="1"/>	回答错误

正确答案:

- ① 6
② 2

10. 操作系统中提供了一种进程间的通信机制, 把一个进程的标准输出与另一个进程的标准输入连接起来, 这种机制称为__。

单选题 (3 分) 3分

- A. socket
- B. 管道
- C. 共享内存
- D. 重定向

正确答案: B

11. 下列哪种方法不能实现进程之间的通信?

回答错误

单选题 (3 分) 0分

- A. 共享文件
- B. 数据库
- C. 共享内存
- D. 全局变量

正确答案: D

12. Which of the following components of program state are shared across threads in a multithreaded process?

多选题 (6 分) 6分

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对 ☐ 答错

A. Global variables

B. Stack memory

C. Register values

D. Heap memory

正确答案: A D

13. In following descriptions of process, _____ is not proper.

单选题 (3 分) 3分

A. A kernel-level thread is like a lightweight process

B. A process is a program

C. A process includes code, data, stack, and PCB

D. A process is the basic unit in allocating resources

正确答案: B

14. A process will change its state from running to ready state when ____ .

单选题 (3 分) 3分

A. the event it has been waiting for has occurred

B. it has been selected for execution by scheduler

C. it waits for some event

D. its time slice is finished

正确答案: D

15. Including the initial parent process, how many processes are created by the program

```
#include <stdio.h>
```

```
#include <unistd.h>
```

```
int main() {
```

```
int i;
```

```
for (i = 0; i < 4; i++)
```

```
fork();
```

```
return 0;
```

```
}
```

请把数值填入下方方框内:

Answer: There are ① processes created.

填空题 (8 分) 0 分 (请按题目中的空缺顺序依次填写答案)

1

回答错误

正确答案:

① 16

16. 一个进程可以包含多个线程，各线程_____。

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对 ☐ 答错

单选题 (3 分) 3分

- A. 共享堆栈
- B. 是资源分配的独立单位
- C. 共享进程的虚拟地址空间
- D. 必须串行工作

正确答案: C

17. Using the program , identify the values of pid at lines A, B,C, and D. (Assume that the actual pids of the parent and child are 2600 and 2603, respectively.)

```
#include<sys/types.h>
#include<stdio.h>
#include<unistd.h>
#include<sys/wait.h>

int main()
{
    pid_t pid,pid1;
    /* fork a child process */
    pid = fork();
    if (pid < 0) { /* error occurred */
        fprintf(stderr, "ForkFailed");
        return 1;
    }
    else if (pid == 0) { /* child process */
        pid1 = getpid();
        printf("child: pid =%d\n",pid); /* A */
        printf("child: pid1 =%d\n",pid1); /* B */
    }
    else { /* parent process */
        pid1 = getpid();
        printf("parent: pid =%d\n",pid); /* C */
        printf("parent: pid1 =%d\n",pid1); /* D */
        wait(NULL);
    }
    return 0;
}
```

请把数值依次填入下面方框内:

Answer:

- LINE A child: pid= ①
- LINE B child: pid1= ②
- LINE C parent: pid= ③
- LINE D parent:pid1 = ④

填空题 (8 分) 6 分 (请按题目中的空缺顺序依次填写答案)

①

②

③

回答错误

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对 ☐ 答错

④ 2600

正确答案:

- ① 0
- ② 2603
- ③ 2603
- ④ 2600

18. Describe the actions taken by a kernel to context-switch between processes.

简答题 (6 分) 6分

Saving the old process's context and loading the new process's context.

(/api/uploads/14162976/blob)

答案解析:

In general, the operating system must **save the state** of the currently running process and restore the state of the process scheduled to be run next. Saving the state of a process typically includes the values of all the CPU registers in addition to memory allocation. Context switches must also perform many architecture-specific operations, including flushing data and instruction caches.

19. 一个由于等待键盘输入而不能运行的进程处于_____。

单选题 (3 分) 3分

- A. 运行状态
- B. 就绪状态
- C. 终止状态
- D. 等待状态

正确答案: D

20. Which of following descriptions about process is incorrect?

单选题 (3 分) 3分

- A. processes can run concurrently
- B. process is a set of instructions and stacks
- C. process is a dynamic concept
- D. process has life-cycle

正确答案: B

21. 以下描述中，_____并不是多线程系统的特长

单选题 (3 分) 3分

- A. 基于GUI的应用程序用不同线程处理用户的输入、计算、输出等操作
- B. 利用线程并行地执行矩阵乘法运算
- C. web服务器利用线程请求http服务

答题卡

共 23 题

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23		

☐ 答对 ☐ 答错

D. 键盘驱动程序为每一个正在运行的应用配备一个线程，用来响应相应的键盘输入

正确答案: D

22. A computer has only one CPU, however with multiprogramming operating system. At a snapshot, it is running in user mode and has 5 user processes loaded. Therefore, at most ____ user processes that are in ready status

回答错误

单选题 (3 分) 0分

- A. 4
- B. 1
- C. 5
- D. 0

正确答案: A

23. A message-passing system is ____ .

单选题 (3 分) 3分

- A. A kind of inter-process communication
- B. A kind of symmetrical communication
- C. A kind of low-level communication
- D. A kind of direct communication

正确答案: A