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

a. Register values  
b. Heap memory  
c. Global variables  
d. Stack memory

B C堆内存和全局变量是被共享的，每个线程都有自己的一组寄存器值和栈内存﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿

The program shown in Figure 4.11 uses the Pthreads API. What would be output from the program at LINE C and LINE P?

#include <pthread.h>

#include <stdio.h>

int value=0;

void  \*runner(void \*param); /\* the thread \*/

int main(int argc, char \*argv[])

{

int 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);

}

C行： ﻿﻿﻿CHILD: value = 10

P行： ﻿﻿﻿﻿PARENT:﻿ value = 0﻿﻿﻿﻿﻿﻿

ch4-3 Can a multithreaded solution using multiple user-level threads achieve better performance on a multiprocessor system than on a single-processor system?

不能得到更好的效果

因为操作系统﻿﻿﻿﻿﻿只能看到一个单一的进程，处于不同处理器的不同进程的线程﻿﻿﻿不会被操作系统调度﻿﻿﻿。因此，使用多用户线程的多线程解决方案在多处理器系统并不能表现出相比单处理器的优势﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿﻿。