**操作系统课堂作业——利用管程解决哲学家就餐问题**

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管程封装的类：

1.管程的数据管理

2.提供相应函数（临界区的访问管理）

3.对局部于管程的数据进行初始化

**// 管程**

type dining-philosophers = monitor

var state:array[0,1,2,3,4] of (‘ thinking’, ’ hungry’, ‘ eating’); // 哲学家的状态数组

self:array[0,1,2,3,4] of semaphore:=0,0,0,0,0; // 条件变量

count:array[0,1,2,3,4] of integer:=0,0,0,0,0; //条件阻塞队列的长度

// 拿筷子

procedure entry pickup(i)

begin

state[i]:= ‘hungry’;

check(i);

if state[k] ≠ ‘eating’

then k.wait;

end

// 放筷子

procedure entry putdown(i)

begin

state[i]:=’thinking’;

check((i-1) mod 5);

check((i+1) mod 5);

end

//检测当前哲学家的左右两边是否为吃饭状态

procedure entry check(i)

begin

if state[(i-1)mod5]≠‘eating’ and state[i]=‘hungry’ and state[(i+1)mod5]≠‘eating’

then

state[i] = ‘eating’;

i.signal;

end

//初始化

begin

for i:=0 to 4 do

state[i]:=’thinking’;

end

**// 哲学家**

philosophers:

begin

DP.pickup();

eating

DP.putdown();

end

// 主函数

main:

cobegin

philosophers();

coend