1.考虑下面的内存分配序列

(1) p1=malloc(15)

(2) p2=malloc(11)

(3) p3=malloc(51)

(4) free(p2)

(5) p4=malloc(3)

(6) free(p3)

(7) p5=malloc(7)

(8) free(p1)

(9) free(p5)

(10) free(p4)

假设采用显式分配器，隐式空闲链表，8字节对齐，首次适配，堆空间大小不超过4GB，采用边界标记的优化方法，即把前面块已分配/空闲位存放在当前块多出来的低位中，第一条指令结束后情况表示如下，一格4字节

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p1 | p1 | p1 | p1 | p1 | p1 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

回答下列问题：

(1)请画出第7条指令结束后的情况。

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

(2)计算峰值利用率Un-1

(3)如果第6条与第7条指令交换，重新回答上面两问

新的第7条指令结束后的情况：

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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峰值利用率：

答案

(1)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p1 | p1 | p1 | p1 | p1 | p1 | p4 | p4 | p5 | p5 | p5 | p5 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

(2)24+16+56=96 15+11+51=77 U=77/96=80.21%

(3)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p1 | p1 | p1 | p1 | p1 | p1 | p4 | p4 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | p5 | p5 | p5 | p5 |  |  |  |  |

24+16+56+16=112 15+11+51=77 U=77/112=68.75%

2.请根据web应用在计算机网络中的定义以及其在协议栈自上而下在软件中的实现，把以下关键字填入表格

*注：同一个关键词可能被填入多次；不是每一个关键词都必须被填入*

Streams (end to end), Datagrams, web content, IP, TCP, UDP, Kernel code, User code

|  |  |  |
| --- | --- | --- |
| 协议 | 数据包类型 | 软件实现 |
| HTTP |  |  |
|  |  |  |
|  |  |  |

答案：

|  |  |  |
| --- | --- | --- |
| 协议 | 数据包类型 | 软件实现 |
| HTTP | Web content | User code |
| TCP | Streams | Kernel code |
| IP | Datagrams | Kernel code |

3.以下关于互联网的说法中哪些是正确的？并简要说明原因

A. 在client-server模型中，server通常使用监听套接字listenfd和多个client同时通信

B. 在client-server模型中，套接字是一种文件标识符

C. 准确地说，IP地址是用于标识主机的adapter (network interface card)，并非主机

D. Web是一种互联网协议

E. 域名和IP地址是一一对应的

F. Internet是一种internet

答案：B, C, F