我的思路：

Virtual Address 6C74:

--> pde index:0x1b pde contents:(valid 1, pfn 0x20)

--> pte index:0x3 pte contents:(valid 1, pfn 0x61)

-->Translates to Physical Address 0xc34 --> Value: 06

0x6C74 即 11011 00011 10100

直接可得pde index: 0x1b, pte index: 0x3 offset: 0x14

又value of PDBR: 0x220 即 0010001 00000

可得页目录基址为0x11, 即page 11

又由上面pde\_index 0x1b 可得 对应的目录项为 16 + 11 + 1 = 28 （注意是从0开始编址，所以计算第几个时，要加1）

得到对应的页目录项为0xa0, 即 1 010 0000

得valid = 1，映射存在，对应的页表基址为0x20

再由pte\_index为0x03，

得对应的页表项为page 20 的第3+1 = 4项即e1，即1 110 0001

得valid = 1，映射存在，对应的物理页帧号为0x61，即page 61

offset is 0x14，即第16 + 4 + 1 = 21项

物理地址即： 1100 0011 0100 即0xc34，Value is 0x06

原题：<https://chyyuu.gitbooks.io/os_course_exercises/content/all/03-2-spoc-discussion.html>

题解：<http://os.cs.tsinghua.edu.cn/oscourse/OS2015/lecture06>

#03-2-spoc-discussion.md 的问题文件有一台假想的计算机，页大小（page size）为32 Bytes，支持32KB的虚拟地址空间（virtual address space）,有4KB的物理内存空间（physical memory），采用二级页表，一个页目录项（page directory entry ，PDE）大小为1 Byte,一个页表项（page-table entries， PTEs）大小为1 Byte，1个页目录表大小为32 Bytes，1个页表大小为32 Bytes。页目录基址寄存器（page directory base register，PDBR）保存了页目录表的物理地址（按页对齐），其值为0x220（十进制为544），4KB的物理内存布局和具体值如下：

```

page 00: 7f 7f 7f 7f 7f 7f b2 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 01: 01 19 1d 11 05 1a 1e 15 0f 0b 0a 06 14 0d 06 03 14 09 0f 0a 1b 1b 00 06 0a 1e 18 0a 06 14 19 1c

page 02: ba 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 9f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f a4 7f 7f 7f 7f

page 03: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 04: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 9c

page 05: 1e 12 0c 05 0f 1e 17 10 1a 07 0f 1d 11 0e 08 10 1d 00 18 19 1b 16 19 10 11 0d 01 1a 11 06 0f 0f

page 06: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 07: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 08: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f bd 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 09: 06 17 04 06 05 0b 01 0b 12 15 1a 02 13 06 0a 11 19 14 1e 00 09 0e 01 01 0b 11 04 02 09 16 11 1e

page 0a: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 0b: 0f 1c 07 09 12 11 11 0c 01 12 08 13 0d 08 1e 09 1e 0e 10 08 05 15 0e 12 05 0f 14 17 14 0c 15 12

page 0c: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 0d: 09 08 01 00 04 0c 1c 13 07 15 08 0f 09 1d 0a 18 13 1a 12 1a 0c 15 13 10 11 10 0c 1b 13 11 01 0f

page 0e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 0f: 7f 7f 7f f1 7f 7f 7f b4 7f 7f ca c2 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 11: da f7 f2 a8 96 c5 9d 94 c8 b9 7f c4 98 e5 7f 7f d3 a1 82 8f a6 fb bf f0 7f 84 d2 **a0** 88 80 c9 92

page 12: 7f 7f dd 7f 7f 7f 7f 7f 7f 7f 7f 95 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 13: 1c 00 04 14 01 0b 04 0e 1a 1c 01 01 1a 01 08 03 02 00 13 17 15 1a 14 0c 13 1e 13 07 01 1c 12 0a

page 14: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f ad 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 15: 15 11 1c 05 0c 16 01 03 10 08 03 08 13 10 02 02 1a 13 05 1a 00 0b 1a 16 08 1b 12 1a 1b 0d 14 10

page 16: 7f 7f 7f 7f 7f d9 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 17: 15 09 1c 0d 0e 00 00 03 13 14 1d 0d 15 0a 02 0d 15 18 1d 19 11 11 0f 0e 15 11 1a 0d 0e 19 14 10

page 18: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f b5 7f 7f fa 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 93 7f 7f 7f 7f 7f 7f

page 19: 0d 1b 11 11 0c 06 13 02 18 01 17 0b 15 12 04 10 02 07 0b 08 14 1e 0b 19 06 15 0a 10 02 19 06 0e

page 1a: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 1b: 17 01 15 16 0a 0f 05 16 01 1e 19 13 08 1c 1d 04 18 1a 14 15 0d 1c 1e 0b 18 0d 05 0a 03 1c 1d 03

page 1c: 07 06 0a 0e 1b 14 13 1a 0b 0d 07 19 1b 1c 12 03 02 18 1b 10 1c 1c 17 0b 0e 0a 0c 0e 00 03 05 11

page 1d: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f a5 7f 7f 7f 7f 7f 7f 7f

page 1e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 1f: 07 02 11 02 02 13 09 18 0f 1a 04 0f 18 02 1d 05 18 1e 19 09 03 0f 1c 09 1b 04 1c 00 09 1b 18 1c

page 20: 7f 7f 7f e1 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f db 7f 7f 7f

page 21: 7f 7f 7f 7f 7f 7f 99 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f d5 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 22: 11 1c 0e 08 18 19 00 14 02 03 1b 01 07 1e 0d 03 05 07 17 03 1c 0b 1e 1c 09 07 0e 03 14 01 00 1e

page 23: 0c 12 1e 15 09 10 0d 0f 0c 05 0c 0c 06 19 0b 04 11 1a 18 13 16 0a 04 07 0a 08 0e 04 04 07 06 18

page 24: 1e 07 0f 16 15 0d 18 0f 16 0f 1e 16 02 04 1d 07 00 07 0e 1d 0c 16 19 02 12 1e 11 10 0a 1d 1e 03

page 25: 06 1b 07 11 0e 0a 0c 00 05 13 17 06 05 1c 03 18 1b 04 19 04 01 08 0a 12 0d 18 14 03 06 17 03 1d

page 26: 7f 7f 7f 7f 7f a7 7f 7f 7f 7f 7f 7f 7f f5 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 97 7f 7f

page 27: 0f 12 11 1e 05 13 1e 16 11 0b 0c 1d 1b 14 1b 1c 1a 0b 0e 18 0b 17 0e 0a 0e 03 0a 0c 00 05 08 1a

page 28: 7f 7f 7f e8 7f 7f aa 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 8b 7f 7f 7f 7f 7f 7f 7f 7f 7f f9 7f 7f 7f 7f

page 29: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 2a: 1e 14 18 0e 0e 0f 17 16 06 0d 10 11 1c 1a 04 0b 03 00 02 05 17 14 18 08 04 1e 19 1d 00 0c 13 16

page 2b: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 2c: 13 12 0e 00 07 05 12 1a 18 18 19 07 1a 14 02 00 00 17 07 03 13 0a 02 04 10 05 08 16 0e 09 0e 00

page 2d: 18 1c 09 1b 0a 14 1e 17 01 0d 0b 09 19 0d 15 13 10 01 14 1b 05 13 0f 0a 16 1e 00 1b 0b 19 05 16

page 2e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 2f: 0a 17 0c 0b 11 06 02 07 00 14 0e 13 11 01 19 19 00 0d 18 0c 1a 15 14 1c 18 12 01 0e 15 10 12 0a

page 30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 31: 0d 0c 1a 12 16 1b 17 0f 17 13 14 13 0c 13 13 1d 18 1a 17 19 12 0a 08 15 1b 10 04 19 0f 0e 01 0f

page 32: 18 1e 1c 14 0a 07 18 1c 1d 05 12 0f 0d 18 1d 16 15 15 14 10 07 18 03 13 0b 11 13 0e 1e 07 00 1d

page 33: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 34: 09 07 17 00 05 0d 00 13 12 19 06 08 10 08 12 07 15 18 19 1e 10 0f 1a 17 11 0b 08 03 19 03 17 10

page 35: 03 1b 0f 06 12 19 00 00 04 16 04 15 15 10 06 1e 18 10 06 14 0c 11 09 13 01 09 1e 1b 09 1a 09 1d

page 36: 0b 14 00 0f 1d 15 0c 15 12 06 06 1b 08 02 19 10 0b 0f 16 05 14 16 19 08 12 07 11 05 18 1a 0a 06

page 37: 07 08 10 0e 0c 03 0b 14 10 10 1a 16 15 00 09 15 04 1c 04 1b 06 1a 1a 0a 1b 04 1a 0b 0d 03 12 08

page 38: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 39: 7f 7f 7f 7f 7f 7f 7f 7f 7f cb 7f 7f 7f 7f cc 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f a3

page 3a: 1b 07 0d 15 1c 15 13 0b 0d 13 0b 18 00 17 17 09 00 0a 12 18 1a 06 02 03 1e 14 03 15 1d 12 07 1d

page 3b: 0e 0f 05 10 0d 1b 16 0e 04 04 1e 12 06 19 06 0e 1b 03 03 01 04 0b 09 08 00 0f 0d 16 09 12 09 17

page 3c: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 3d: 14 1a 00 05 0a 09 19 07 09 0f 1d 09 13 01 0d 1c 06 0b 14 11 11 12 14 0a 0a 0c 10 11 1b 0c 0d 19

page 3e: 00 07 1b 01 14 0f 1e 1e 03 08 1e 0a 05 1c 13 09 11 0d 0e 11 05 13 1d 12 18 08 04 00 1e 03 0b 14

page 3f: 7f 7f e7 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f e2 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 40: 0d 15 16 07 0f 0e 06 0c 11 1c 1c 08 14 01 02 0f 1b 04 17 1b 09 15 1a 0b 15 16 12 1a 1b 1d 11 05

page 41: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 42: 01 0a 0c 06 1b 0d 14 16 17 16 17 07 1e 04 1c 1a 1a 01 02 19 0e 0b 1e 01 10 0d 03 0c 15 1b 00 10

page 43: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 44: d7 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f ac 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 45: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f be e9 b7 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 46: 11 13 02 05 1d 08 02 08 16 08 06 08 0e 16 09 1b 1e 19 02 09 1c 1a 04 0d 0b 17 00 09 17 1b 01 12

page 47: 05 1e 1a 03 0a 16 16 1d 0d 19 14 09 12 1b 1a 0f 12 01 07 18 0c 05 11 15 14 0b 0d 0f 18 10 0c 0f

page 48: 9b 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 49: 7f 7f 7f 7f 7f 7f 7f dc 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f ec 7f fc 7f 7f 7f

page 4a: 09 10 08 00 09 02 0f 0f 1a 17 17 1e 08 0b 07 03 0f 0f 04 1c 1e 02 00 01 16 1a 02 00 10 0a 00 00

page 4b: 13 17 07 01 19 09 19 1d 13 03 1a 13 07 06 0f 03 1c 15 19 0b 1c 04 16 07 00 03 06 17 0b 0e 13 08

page 4c: 09 01 1c 1e 1e 03 06 13 1e 10 15 14 08 10 09 07 02 08 1e 0d 14 13 1d 0c 09 0a 09 1a 1b 09 0a 10

page 4d: 00 1d 1c 13 0b 11 1b 0e 18 12 0d 1c 0c 12 01 0e 01 15 00 01 03 04 0f 0b 08 1e 1c 14 18 19 07 19

page 4e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 4f: 0d 19 0d 19 01 16 03 0c 0d 05 0d 1a 01 06 1e 0d 0c 1c 18 05 12 05 18 11 18 02 1c 07 1a 0d 1b 03

page 50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 51: 0d 04 00 04 08 0e 00 02 18 1e 0d 0e 12 03 10 14 1d 13 10 0c 1c 10 0e 16 0d 02 12 1a 0b 02 03 1c

page 52: 7f 7f 7f 7f 7f 7f 7f c6 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f c7 7f 7f df d1 7f 7f

page 53: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f af 7f 7f 7f 7f 7f c0 7f 7f

page 54: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 55: 08 0e 18 1a 18 14 02 0c 14 09 0f 1c 03 1a 03 0b 1c 06 10 0c 1b 1e 08 0f 1b 10 06 17 0a 0f 00 1e

page 56: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 57: 0f 1e 07 16 02 05 1c 06 17 12 1a 0b 0a 09 1a 12 1d 1b 04 11 03 01 02 1a 18 19 0a 13 18 0b 11 06

page 58: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 59: 07 0f 0f 1c 02 10 11 04 0b 04 1b 0a 02 0e 10 1b 16 06 1c 00 15 01 19 05 18 19 17 03 0c 03 16 1e

page 5a: 7f 7f 7f b1 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 85 7f

page 5b: 04 0e 13 04 02 12 07 13 05 1a 09 0d 11 1b 1c 1a 15 02 05 10 1e 16 05 0b 1d 0f 1a 1a 18 13 14 0a

page 5c: 19 1e 07 06 17 17 0f 0f 0c 1b 18 12 01 1a 0e 05 09 15 00 03 09 1b 17 1e 10 11 11 10 10 19 1d 0c

page 5d: 07 16 01 0f 11 15 1c 18 11 0f 00 11 11 17 05 12 01 16 19 0d 15 14 09 02 17 0b 05 0d 19 1d 11 1e

page 5e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 5f: 15 05 0d 04 16 14 07 01 1d 19 11 10 1a 0e 0c 0a 07 00 14 0c 11 01 0b 04 03 08 19 0c 0c 12 07 00

page 60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 61: 0f 0d 14 18 02 00 19 0d 17 00 0d 16 07 1d 1b 00 00 10 1d 0b 06 0d 00 06 0d 0f 07 07 06 0e 08 00

page 62: 0f 11 0b 09 0d 10 0e 1a 02 06 1d 12 13 13 07 0c 06 04 1e 17 1b 00 15 09 0f 14 00 0b 11 1b 0f 09

page 63: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 64: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 65: 7f 7f 7f 7f 7f 7f 7f 7f 7f ff 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 89 7f 7f 7f 7f

page 66: 02 01 0b 16 09 04 18 19 1a 09 0d 07 11 0a 0a 18 1d 12 03 14 0d 1e 16 19 15 10 1b 19 09 04 0b 10

page 67: 0a 03 04 07 02 10 15 11 15 07 06 11 1b 0d 00 00 09 13 02 06 15 1e 0a 12 10 00 0a 04 07 17 15 01

page 68: 09 0a 0a 17 0f 10 04 1c 0a 0a 02 1e 0e 1c 1c 1e 19 1c 1c 18 04 10 11 1e 18 15 17 0b 1d 13 0c 0e

page 69: 1d 11 13 16 09 12 0e 0f 0c 10 06 07 06 12 07 18 1c 17 0a 1d 0a 0b 12 14 0c 18 1a 08 06 0c 15 14

page 6a: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 6b: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 6c: 00 1b 13 09 0d 17 18 05 13 05 1e 0d 1c 16 12 08 10 04 04 16 0b 17 07 16 16 09 03 0c 0f 03 05 01

page 6d: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 6e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 6f: 0d 1e 06 03 04 12 03 08 06 01 1d 0a 1d 16 06 1c 00 1e 01 07 11 00 17 02 19 01 10 06 08 0f 0b 0c

page 70: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f cf 7f 7f 7f 7f 7f 7f 7f 7f 81 b6 7f 7f 7f 7f 7f

page 71: 06 01 15 19 1d 13 0a 19 03 15 02 0c 0f 0b 05 07 19 0e 11 06 16 0a 12 1c 1e 01 18 1a 09 0b 11 1c

page 72: 7f 7f f3 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 8d 7f 7f 7f a2 7f 7f 7f 7f 7f 7f 7f 7f e6 7f 7f 7f

page 73: 0e 19 05 04 1c 08 01 0f 1e 19 0c 1e 18 1a 14 0c 1c 0e 1c 11 1c 0e 0d 12 09 04 12 1a 08 1a 18 18

page 74: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 75: 0f 1a 1e 17 0d 08 03 19 04 11 0e 01 06 19 10 1c 1c 02 15 01 0d 0d 1d 12 05 0f 10 06 0b 1b 1e 18

page 76: 08 10 0d 17 1a 07 08 15 0c 04 06 11 12 1d 10 12 04 0c 08 15 08 06 0b 0e 0a 12 05 1b 15 10 01 0a

page 77: 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f bb 7f 7f 7f 7f 7f 7f 7f 7f

page 78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 79: 01 08 13 1d 06 07 1a 0a 0c 0b 01 1d 15 00 03 04 0b 1b 04 07 09 0f 1b 10 1c 10 0d 1b 12 0e 0f 0b

page 7a: 12 18 1a 06 02 12 0b 16 09 0d 19 02 0c 04 10 16 1e 17 04 0d 10 13 15 1e 1d 06 04 1e 04 1e 03 12

page 7b: 7f f6 7f 7f 7f 7f 7f ef 7f 7f cd 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f 7f

page 7c: 09 0f 0b 10 00 0d 0d 09 0c 18 15 0f 14 0b 06 00 08 12 1b 19 0f 1e 0e 19 0c 17 1e 09 05 13 10 0b

page 7d: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 7e: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

page 7f: 11 03 11 00 1b 0a 0b 11 13 12 0f 13 1a 0d 0f 19 00 04 0a 06 1b 04 03 09 0f 19 1e 1a 12 01 01 13

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请回答下列虚地址是否有合法对应的物理内存，请给出对应的pde index, pde contents, pte index, pte contents。

```

Virtual Address 6c74

Virtual Address 6b22

Virtual Address 03df

Virtual Address 69dc

Virtual Address 317a

Virtual Address 4546

Virtual Address 2c03

Virtual Address 7fd7

Virtual Address 390e

Virtual Address 748b

```

比如答案可以如下表示：

```

Virtual Address 7570:

--> pde index:0x1d pde contents:(valid 1, pfn 0x33)

--> pte index:0xb pte contents:(valid 0, pfn 0x7f)

--> Fault (page table entry not valid)

Virtual Address 21e1:

--> pde index:0x8 pde contents:(valid 0, pfn 0x7f)

--> Fault (page directory entry not valid)

Virtual Address 7268:

--> pde index:0x1c pde contents:(valid 1, pfn 0x5e)

--> pte index:0x13 pte contents:(valid 1, pfn 0x65)

--> Translates to Physical Address 0xca8 --> Value: 16

```