-6

## 20 POINTS

1. Using the buddy system of memory allocation, fill in the **starting addresses** for each of the following **memory allocation requests** as they enter an initially empty memory region which has a memory size of $2^{16}$ (64K) bytes. Addresses run from 0 to 64k -1, and can be given in K form (i.e. location 4096 = 4K.) Assume that when memory is allocated from a given block-size list, the available block of memory closest to address 0 (shallow end of memory) is always given for the request. Give the **address** of each allocation in the space provided below **if the allocation can be made**, or write in **"NO SPACE" if the allocation cannot be made** at the time requested.

| TIME | JOB REQUESTING | JOB RETURNED | REQUEST SIZE(BYTES) |
|---|---|---|---|
| 1 | A | | 12K |
| 2 | B | | 3K |
| 3 | C | | 17K |
| 4 | | A | |
| 5 | D | | 5K |
| 6 | E | | 4K |
| 7 | | B | |
| 8 | | D | |
| 9 | F | | 13K |
| 10 | G | | 2K |
| 11 | | E | |
| 12 | | C | |
| 13 | | G | |
| 14 | H | | 15K |

A: B: 16k (4k) C: D: 24k (8k) E: F: 0 (16k)

*ANSWERS*

Request A at 0

Request B at 16k

Request C at 32k

Request D at 24k

Request E at 20k

Request F at ~~16k~~ 0

Request G at ~~No Space~~ 16

Request H at ~~32k~~ 16 0

1024(1k)
2048(2k)
4096(4k)
8192(8k)
16384(16k)
32764(32k)
64k

20k
32k 48k