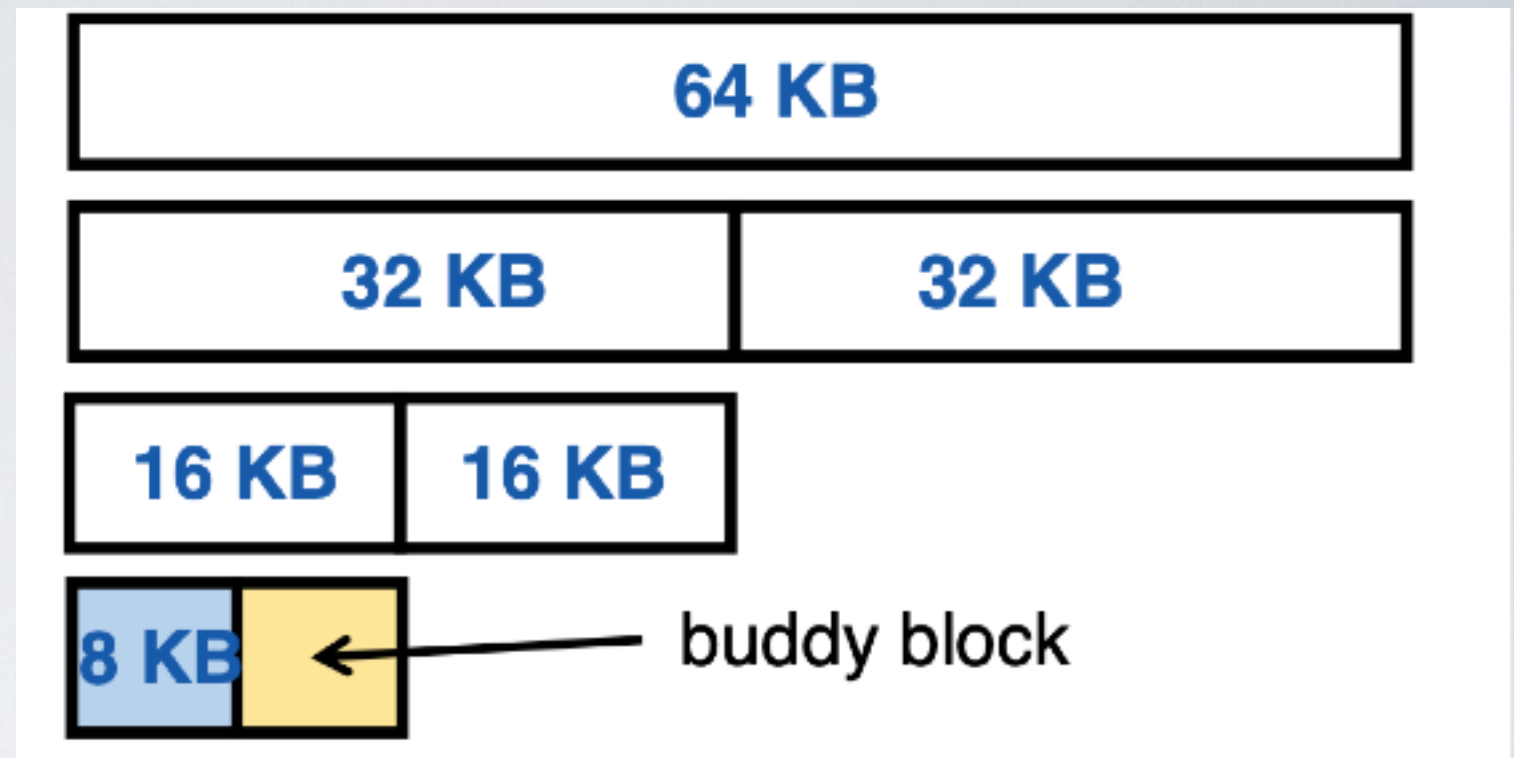


# Buddy Allocation

➡ Allocate blocks in  $2^k$



## Data structure

Maintain  $n$  free lists of blocks of size  $2^0, 2^1, \dots, 2^n$

## Code

- recursively divide larger blocks until reach suitable block
  - insert buddy blocks into free lists
  - upon free, recursively coalesce block with buddy if buddy free
- ➡ the addresses of the buddy pair only differ by one bit

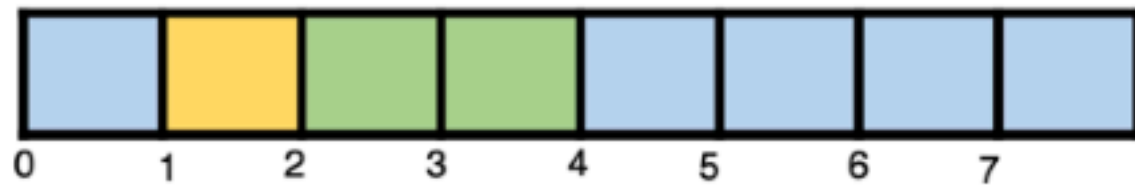
# Example



`p1 = alloc(20)`



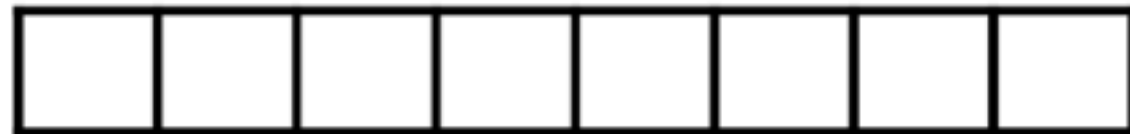
`p2 = alloc(22)`



`free(p1)`



`free(p2)`



`freelist[3] = {0}`

Note: 2<sup>3</sup>

`freelist[0] = {1}, freelist[1] = {2}, freelist[2] = {4}`

`freelist[0] = {1}, freelist[1] = {2}`

`freelist[2] = {0}`

`freelist[3] = {0}`