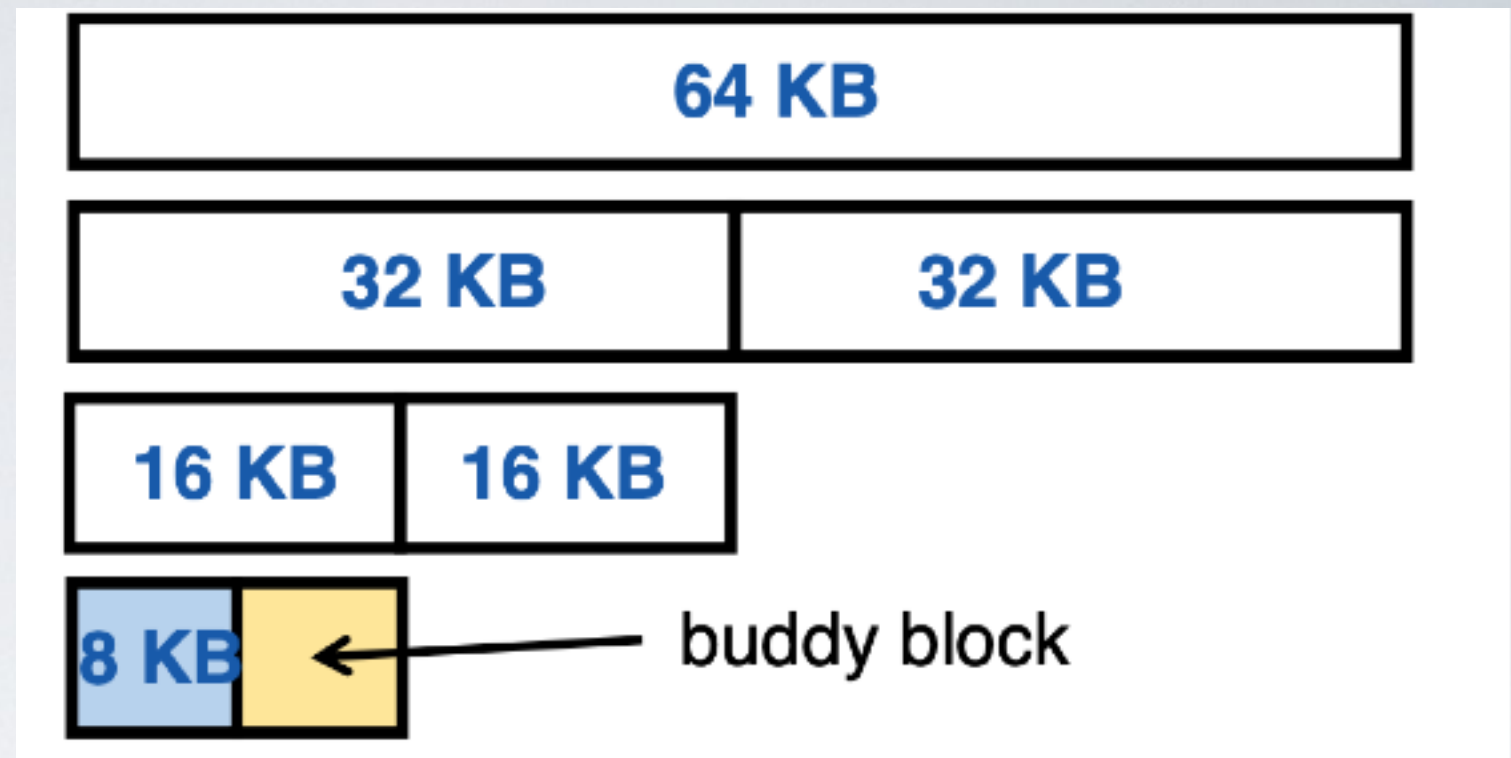# Buddy Allocation

➡ Allocate blocks in 2^k

Data structure

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

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
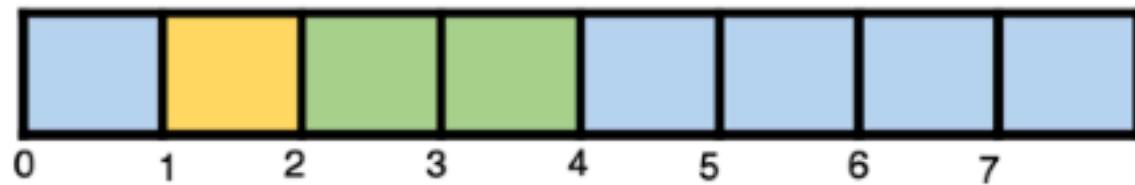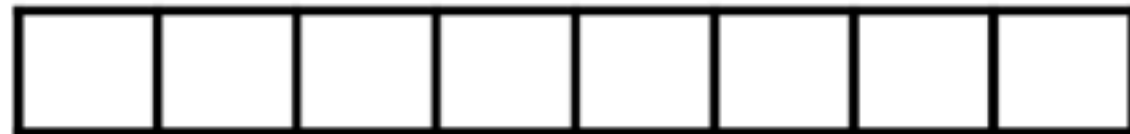- ➡ the addresses of the buddy pair only differ by one bit

Example

freelist[3] = {0}
Note: 2^3

```
p1 = alloc(2^0)
```

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

```
p2 = alloc(2^2)
```

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

```
free(p1)
```

freelist[2] = {0}

```
free(p2)
```

freelist[3] = {0}