

# Fragmentation is impossible to solve

## **Theoretical result**

For any allocation algorithm, there exist streams of allocation and deallocation requests that defeat the allocator and force it into severe fragmentation L

➡ Avoiding fragmentation is impossible

# Heap Memory Allocator

## **What the memory allocator must do?**

- ➔ Track which parts of memory in use, which parts are free  
ideally no wasted space, no time overhead

## **What the memory allocator cannot do?**

- Control order of the number and size of requested blocks
- Know the number, size, & lifetime of future allocations

## **What makes a good memory allocator?**

- ➔ The one that avoid compaction (time consuming)
- ➔ The one that minimize fragmentation