

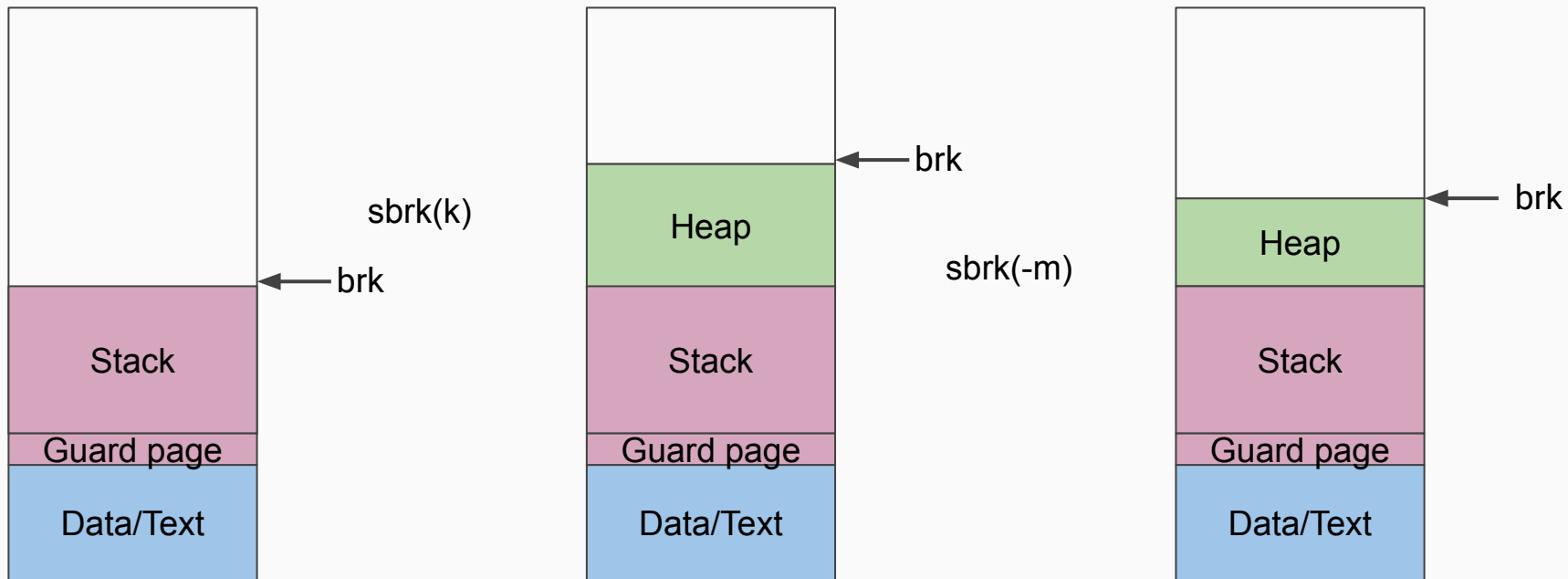
# sbrk

Hey Kernel, give me more heap space!

# Heap

- User level programs call `malloc` and `free` to manage heap memory
- But how do we get physical memory for users?

# sbrk(n)



# sbrk(n)

- Ask for a new physical memory page
- Insert the new mapping into the page table for the current proc
- We have new Heap memory

# Lazy sbrk(n)

- Sometimes when the user asks for extra heap memory, they don't really use it.
- How about we give memory to them at the moment the user really uses the memory but not the time they ask for the memory?

# Some functions you may want to check out

- `int growproc(int n);`
- `uint64 sys_sbrk(void);`
- `void usertrapret(void);`
- `int mappages(pagetable_t pagetable, uint64 va, uint64 size, uint64 pa, int perm);`