CS 153
Section 021
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Lab 3 Design Document

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In Lab 3, we want to change the user memory layout of the OS by moving the stack to the top of the address space and implementing backwards stack growth. We have to rearrange the address space to contain:

```
code
heap (grows towards the high-end of the address
space)
... (gap)
stack (at end of address space; grows backwards)
```

We have to change how we load and allocate the stack to move the stack up. We should be sure to keep track of the size of a process's address space, and the addresses for the top of the heap/bottom of the stack.

We also have to implement a trap to handle page faults when an unmapped page is accessed. With T_PGFLT, a page fault will not automatically cause a kernel panic. If the page fault was caused by trying to access a page directly under the stack, the page is allocated and mapped to the stack, and the stack growth counter increases. If any other different address triggers the page fault, a kernel panic occurs as usual.