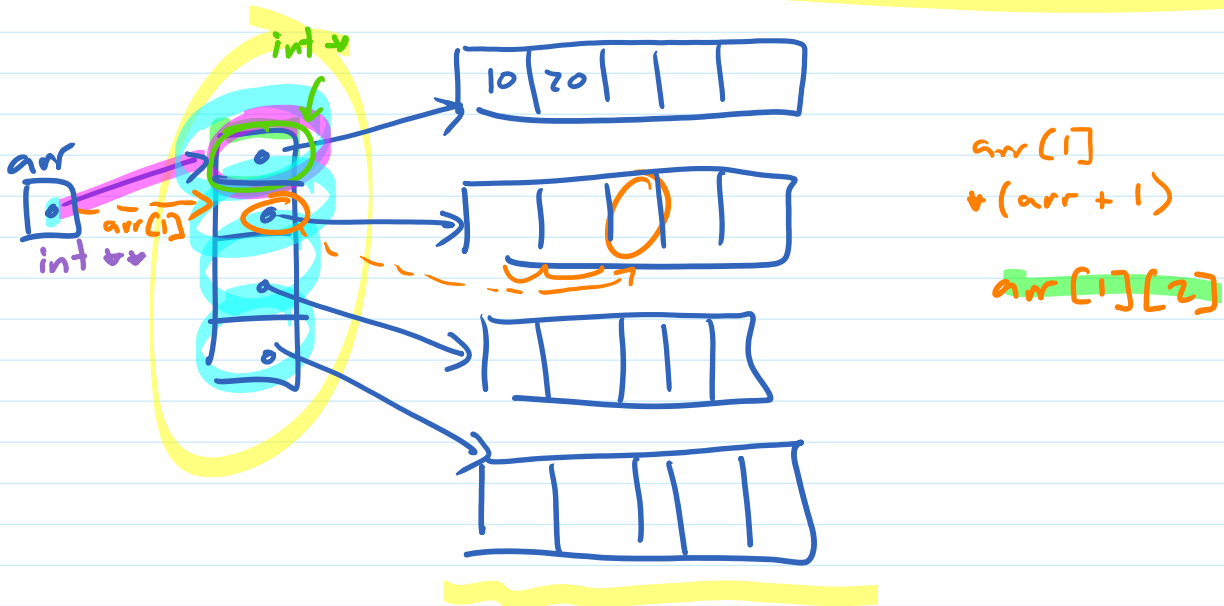
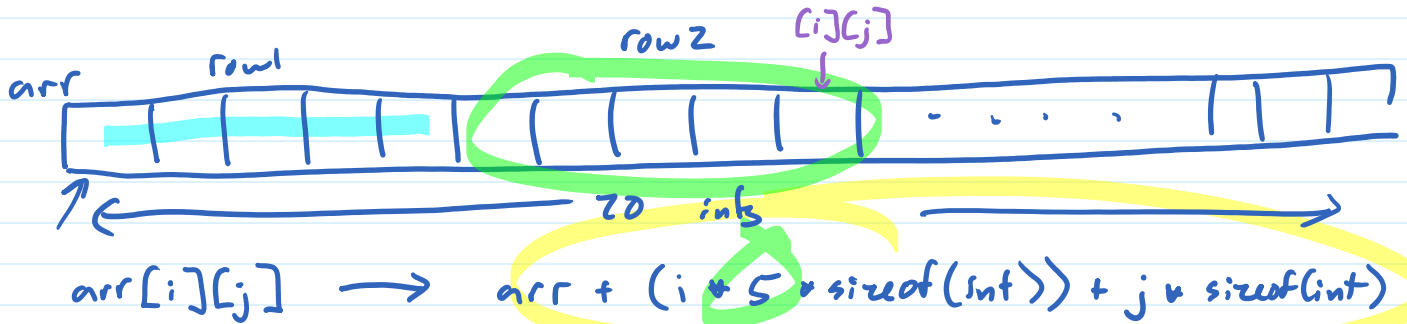
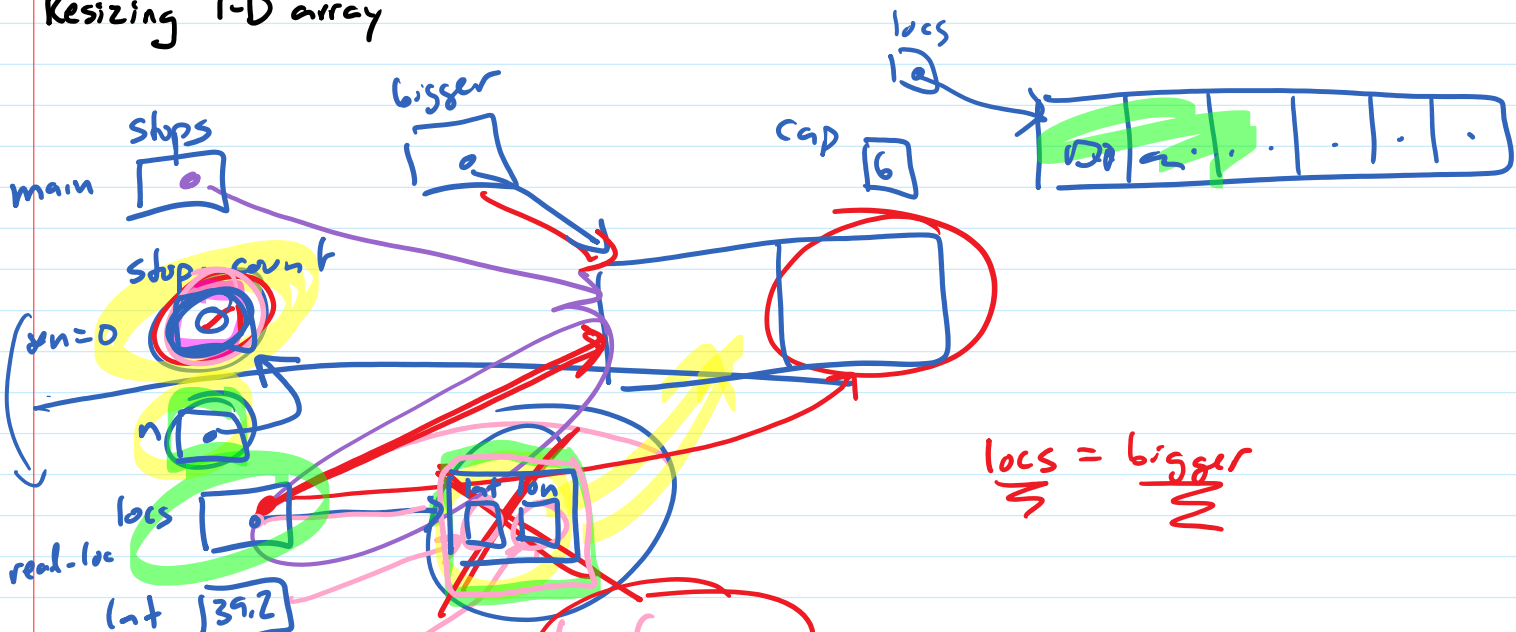
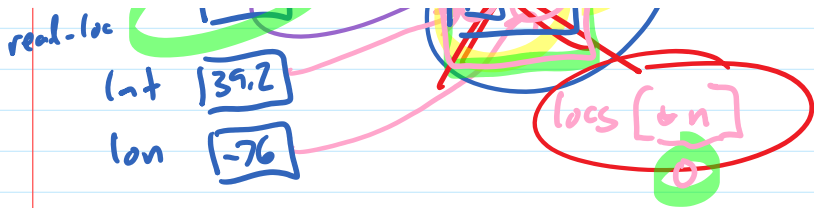


Stack (Zoo)  $\approx$  8MB array of doubles (8 bytes each)  
 // 1 million doubles

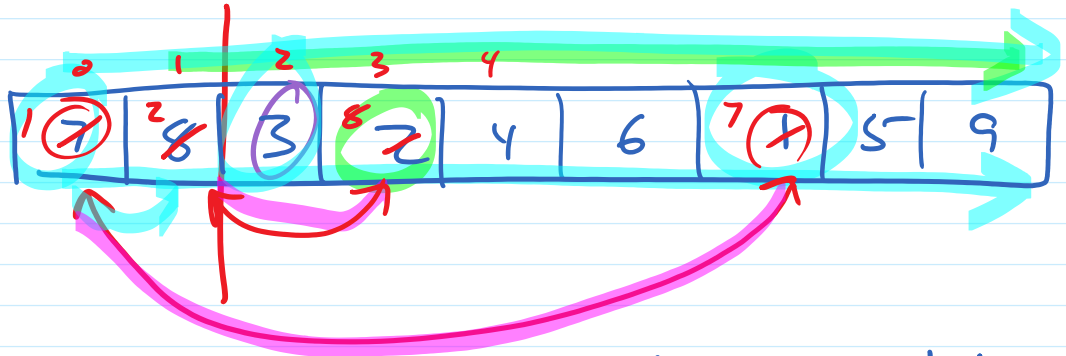


Resizing 1-D array





## Selection Sort



$i = 2$

$i = 0$        $n - 1$  key comparisons  
 $i = 1$        $n - 2$  key comp  
 $\vdots$   
 $i = n - 2$        $+ 1$

|          | worst case copies<br>in realloc |
|----------|---------------------------------|
| $n = 0$  | 0                               |
| $n = 1$  | 1                               |
| $n = 2$  | 2                               |
| $n = 3$  | 0                               |
| $n = 4$  | 4                               |
| $n = 5$  | 0                               |
| $n = 6$  | 0                               |
| $n = 7$  | 0                               |
| $n = 8$  | 8                               |
| $\vdots$ | $\vdots$                        |
| $n = 15$ | 0                               |
| $n = 17$ | 16                              |
| $\vdots$ | $\vdots$                        |
| $n = 31$ | 0                               |

$\frac{31}{2} = \# \text{ total reads} - 1$   
 $\bar{\Theta}(n^{\frac{n}{2}} - 1)$

sel. sort is  $\Theta(n^2)$