

# Memory Maps

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CS 1134

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Prof. Romero Cruz

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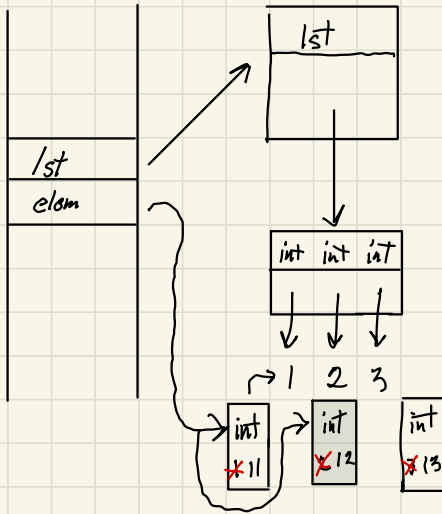
Lecture 01

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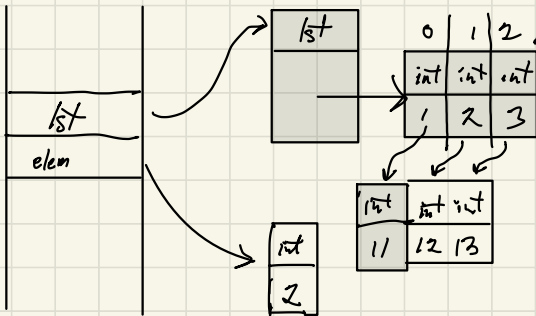
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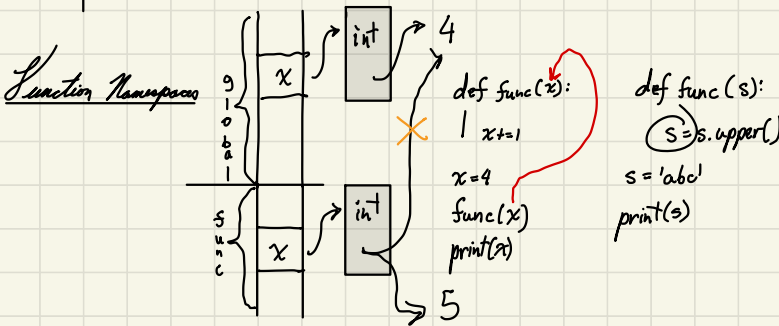
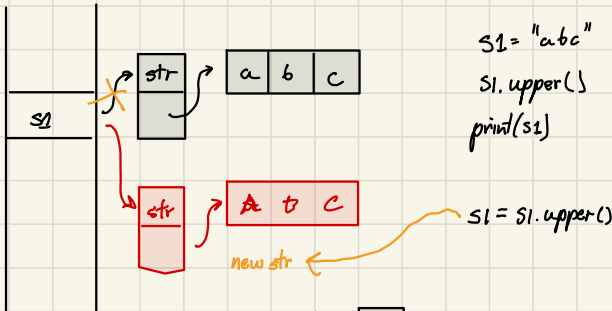
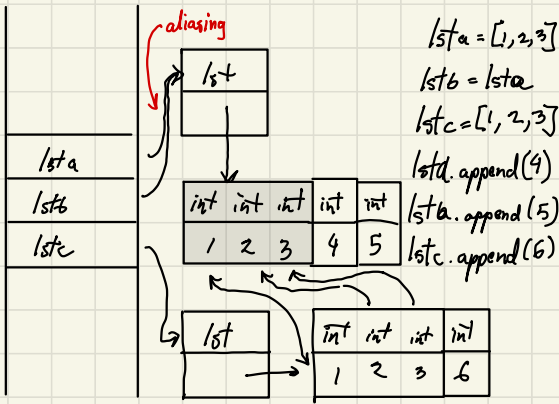




$lst = [1, 2, 3]$   
 $\rightarrow$  for elem in  $lst$ :  
     elem += 10  
 print( $lst$ )

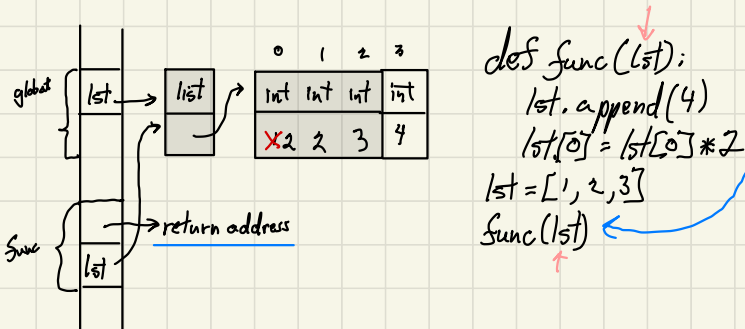


$lst = [1, 2, 3]$   
 for idx in range(len( $lst$ )):  
      $lst[idx] += 10$   
 print( $lst$ )



**Immutable Objects**

`def func(s):`  
 `s = s.upper()`  
 `s = 'abc'`  
 `print(s)`



## Two kinds of copying

1. Shallow Copy: New list with a new container (to store items) but the contents (of the original list) are shared

```
import copy  
l1 = copy(l)  
l2 = copy(l1)
```

2. Deep Copy: New list w/ a new container but the contents of the original list are also not copied

```
from copy import deepcopy
```

```
l1 = [1, 2, 3, [4, 5]]  
l2 = deepcopy(l1)
```