COP 3502 8/25/2025

0) SI Announcement

1) calloc ✓

2) realloc ✓

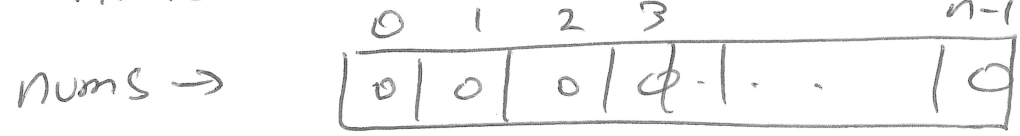
3) array struct ✓

4) array ptr struct ✓

5) Smoothie - General Idea/Example

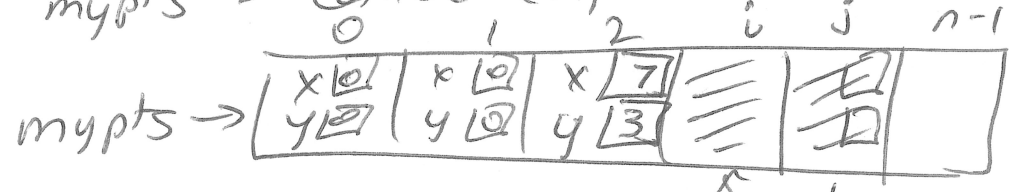
```
int* nums = calloc(n, sizeof(int));
```

num items, space for each item




```
typedef struct pt {
    int x;
    int y;
} pt;

pt* mypts = calloc(n, sizeof(pt));
```



all memory copied

```
mypts[2].x = 7;
mypts[2].y = 3;
```

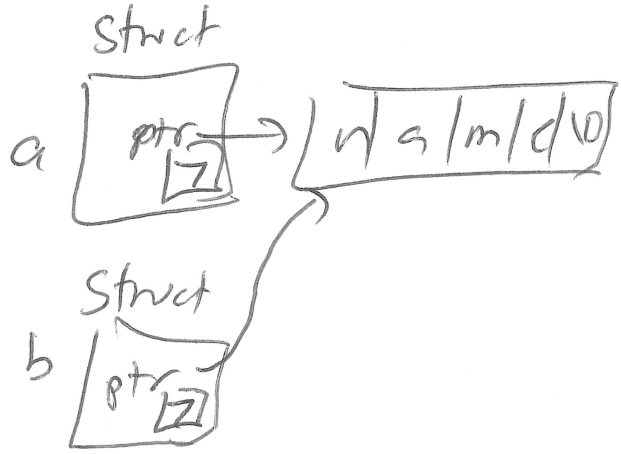
brackets for index into array

use dot when var to left IS A STRUCT

DO NOT DO efficiency!

```
mypts[i] = mypts[j];
```

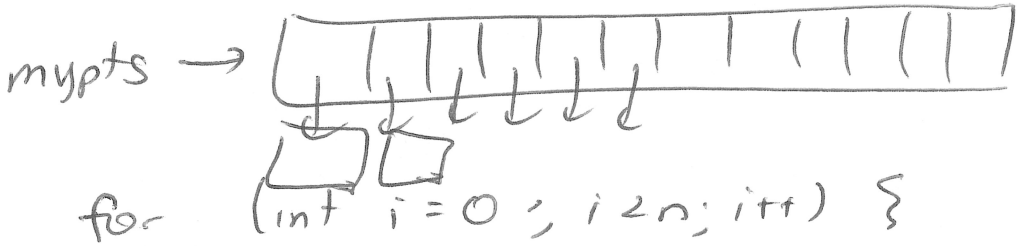
ASGN



b = a

BETTER DESIGN

pt** mypts = calloc(n, sizeof(pt*));



pt* tmp = mypts[i];
mypts[i] = mypts[j];
mypts[j] = tmp;

mypts[2] → x = 7;
mypts[2] → y = 3;

ANS: When the variable to the left IS A PTR to STRUCT.

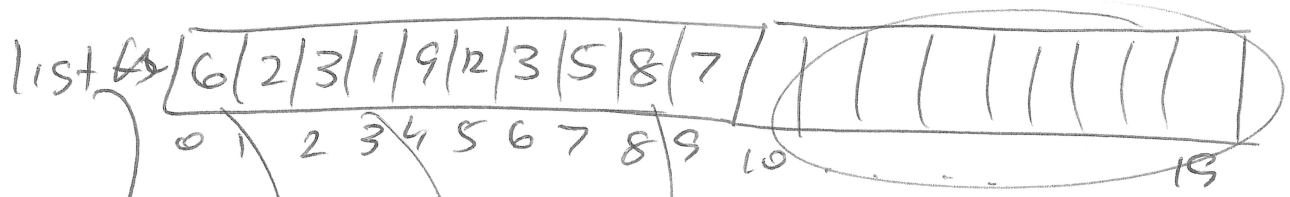
When do I use an arrow?

To refer to the variable a pointer is pointing to, put a * to the left of it

(*mypts[2]).x = 7

is of type pt. (dereferenced pointer)

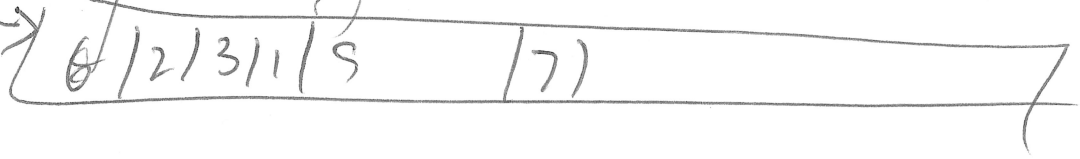
```
int* list = calloc(10, sizeof(int));
```



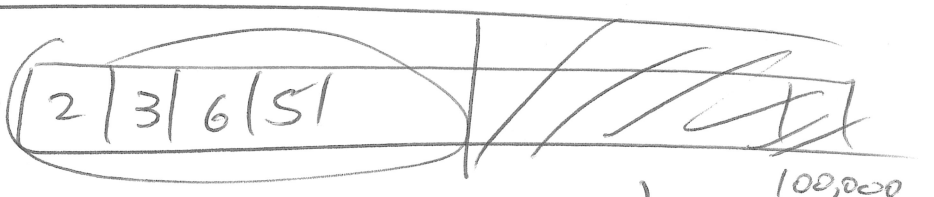

```
list = realloc(list, 20 * sizeof(int));
```

either → extend memory in place

OR → find new memory adequate + copy everything over + return a ptr to where this memory is.



OR




```
list = realloc(list, 10 * sizeof(int));
//reduces your allocation.

realloc(list, 0); // equivalent to free(list);
```

Smoothie Drawings