CS 162
Intro to CS II

Review: Pointers, Arrays, & Structs
Odds and Ends…

• Assignment #1 design due Sunday on Canvas
• Questions???
Array Review...

• What is a dynamically allocated array?
• 1-d dynamic arrays
  – Picture?
• 2-d dynamic arrays
  – Picture?
Array Review...

• Example Function call: fun(array);
  – Can we change the contents of an array? 🟢
  – Can we change where it points? 🟢

• Example Function call: fun(&array);
  – Can we change the contents of an array? 🟢
  – Can we change where it points? 🟢

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Array Review...

• How do we create a 1-d dynamic array of n?

• How do we create a 2-d dynamic array of m x n?
Array Review...

• How do we free a 1-d?

• How do we free a 2-d?
```cpp
#include <iostream>
#include "f.h" // include interface to know about fun

using namespace std;

int main () {
    int a[2][2]; // create a statically allocated array
    fun(a); // pass the name, which contains address of 1st row pointer
    return 0;
}
```
f.cpp – function implementation

```cpp
#include "f.h"

// You have to have stride, and you can put whatever for rows because you
// are only receiving an address and stride is important for dereferencing
// a statically allocated array
void fun(int a[][2]){
}
```
f.h – function interface (prototypes)

```c
1 //prototype for function fun
2 void fun(int a[][2]);
```
Makefile

1. CC=g++
2. exe=a
3. $(exe): $(exe).o f.o
4. $(CC) a.o f.o
5. $(exe).o: $(exe).cpp
6. $(CC) -c a.cpp
7. f.o: f.cpp
8. $(CC) -c f.cpp
9. remove:
10. rm -rf a.out *.o