

Memory Errors, malloc and free examples

CS 2130: Computer Systems and Organization 1

November 18, 2022

Announcements

- Homework 8-10 posted, due last day of class at 11pm
- Lab 10 please try on your own (with classmates), check off by last day of class
- No more quizzes this semester

malloc man page

What is the closest thing to `malloc` in Java?

```
MyClass c = new MyClass();
```

```
new int[500];
```

Garbage - memory on the heap our code will never use again

- Weird: defined in terms of the future!
- Compiler can't figure out when to free for you

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What about Java?

Garbage Collector

Garbage Collector - frees garbage “automatically”

- **Unreachable memory** - memory on heap that is unreachable through pointers on the stack (or reachable by them)
 - Subset of all the garbage
 - Identifiable!
- Takes resources to work
- *Very* popular - most languages have garbage collectors
 - Java, Python, C#, ...

Common Memory Bugs (reading)

List example

