

C, Memory

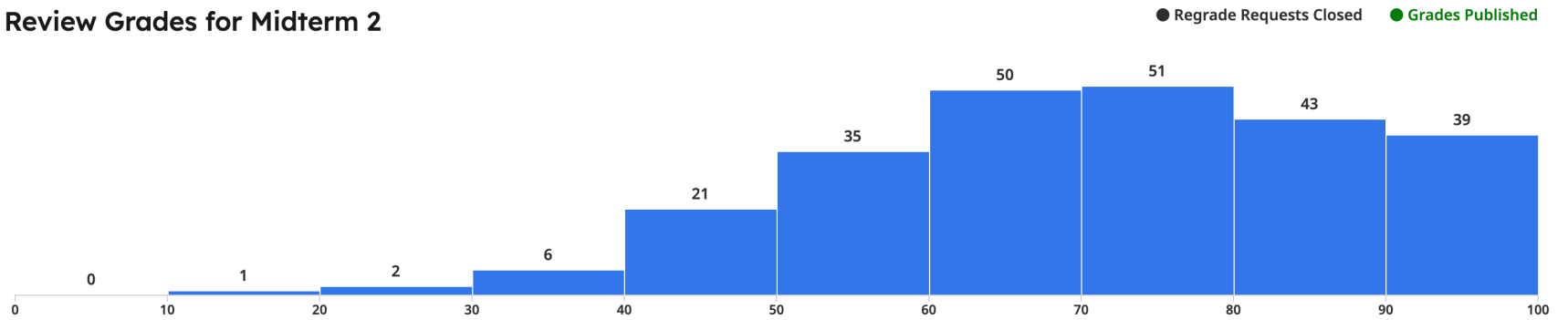
CS 2130: Computer Systems and Organization 1

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Announcements

- Homework 8 due Monday on Gradescope

Review Grades for Midterm 2



Minimum	Median	Maximum	Mean	Std Dev ?
15.0	71.75	103.0	70.79	17.08

Garbage

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- Weird: defined in terms of the future!
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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

More on man pages

```
char *strsep(char **s, const char *d);
```

Processes

Process - approximately what we think of as a “running program”

- Operating System effectively has a giant array of processes started since computer turned on
- Try `ps -A`
- Has access to all memory (but only its own!)
- Operating System maintains data structure about each process
 - What program is running, who ran it, when it started, ...
 - Array of “file like objects”