Recitation 2

MIT - 6.033
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What happened?

- Used 5 blocks instead of 4
- Software only supported 4
- Drew shape of block as custom
- Computer miscalculated dosage when shapes drawn with zero-width segments

SHOW SLIDES

16 hr. days

- Overworked physicist didn't manually check dosing times

- Patients got 20% - 2x more radiation than they should have
  - Staff didn't notice that treatment times 2x others

Would patients have had bad outcomes anyway? Seems not.

SHOW SLIDES
Why?

Breakout Rooms

- Tiny company (Mnlttatn) focused on radiology
- Software has bugs — but not all bugs lead to catastrophe!
- Vulnerable population
- Overworked staff
  lack of manual checks
- Using system in unexpected ways
  s blocks instead of 4... but supported
- Hospital didn’t have software maintenance contract
  bought cheap soft… under maintained
- Poor documentation
- No warning to user when computer got unexpected input
- Multi data didn’t respond to complaints about miscalculations
- FDA didn’t follow up on 1998 warning letter
  “reliant on the good intentions”
- Social factors
  * Wealthy hospital?
  * Wealthy patients
But really why?

- Use error
- Software bugs
- Business pressures
- Incentive
- Lack of $
What to do about it?

**Software/Hardware**

- Defense in depth ("Swiss cheese model")
  * e.g. Covid test at MIT

- Average-case inputs vs. worst-case inputs
  * Anything can be put into system will be
  * "Computer scientist walks into a bar,..."

**Human Factors**

- Article blames the software but I'm not so sure...

- Legal protections / sanctions?

**Physical Cheeks**

- Dosimeter at patient (defence in depth)

→ There are ugly cost-benefit calculations that underlie all of the systems we use.

**Modularity** - What would it mean here?

How would it help?
Why are we reading about this mishap?

- An obvious disaster... no doubt that something went wrong

- Beware: Computer systems are responsible for many non-obvious disasters as well...

Examples...

Usually, we are many steps removed from the people whose lives our system affect.

Think about the non-obvious disasters as well.