

# Sp18 CS 61B Discussion 2

# Welcome!

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# Announcements

- Project 0 due 1/26, 11:59pm!
  - Come to OH! (Mine is Tuesday 1-3pm, SLC)

# Before We Start...

- This section is an exam prep section! Plan accordingly.
  - Spend the next few weeks attending different discussions to find your favorite TA.
  - Please find a TA that suits your learning style! Don't worry, we won't be offended :)

“Quiz” Time!

# Quiz Directions

- Please also **neatly** put your email address **outside the name box** if you want to be emailed!
- Bubble number **41**.

FunZone

# What Happens when NBody Meets Real Life

- <https://www.cio.com/article/2368489/government/88716-8-famous-software-bugs-in-space.html>
- [https://en.wikipedia.org/wiki/List\\_of\\_software\\_bugs#Space](https://en.wikipedia.org/wiki/List_of_software_bugs#Space)



# What Happens when NBody Meets Real Life

- 1996: Cluster satellite self-destructs
  - Overflow error strikes again.
  - Tries to calculate velocity as a 64-bit floating point (like what we did).
  - Then converts number to 16-bit signed integer.
  - Take 61C for why exactly this is a bad idea.

# What Happens when NBody Meets Real Life

- 1996: Cluster satellite self-destructs
  - In floating point, 8 bits represent the exponent of a number in sci notation (from  $10^{-128}$  to  $10^{127}$ )
  - No such thing in a 16-bit integer.
  - Oops.

# Moral of the Story

- **Test. Your. Code.**
  - This is unit-testable!

# We're Not Done

- 1999: Mars Climate Orbiter disintegrates
  - Ground software calculated with English measurements (pound force), sends to orbiter.
  - Orbiter software expects metric (Newtons).
  - Oops.

# Moral of the Story

- **Test. Your. Code.**
  - This is unit-testable (easily...)

# We're Still Not Done

- 1997 Mars Pathfinder: **priority inversion error**
  - Luckily corrected via software update, rover saved!
  - Take CS 162 (OS) for this one.
- 2006: Mars Global Surveyor: **memory allocation error**
  - Blew up (oops).
  - Take CS 61C / CS 162 for this one.

# Onto Discussion

# Q1: Static Shock

- Visualizer: <https://goo.gl/YdB3Kf>



## Q2: Horse-o-Scope

- Visualizer: <https://goo.gl/QtmWYv>

## Q3: Give em the 'Ol Switcheroo

- Visualizer: <https://goo.gl/G5wPMX>

## Q4: Quik Maths

- Visualizer: <https://goo.gl/mGWt5y>