CSCA48 Summer 2017

Week 3 - Exceptions & Inheritance, Representation Invariants

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Administrative Details

- Term Tests
  - TT#1 - Wednesday June 7, 5-7pm, IC130
  - TT#2 - Monday July 10, 5-7pm, IC130

Exceptions: A Quick Review

- Execute a block of code, and "catch" any exception with error handling code

```
try:
        Block of code
except:
        Code to execute in case of an error
```

TRY/EXCEPT

- Can also catch only exceptions of a certain type

```
try:
        Block of code
except ExceptionType:
        Code to execute in case of an ExceptionType error
```

ELSE AND FINALLY

- `else`: allows us to continue code after the `try` block
- `finally`: code that will be executed whether an exception is raised or not

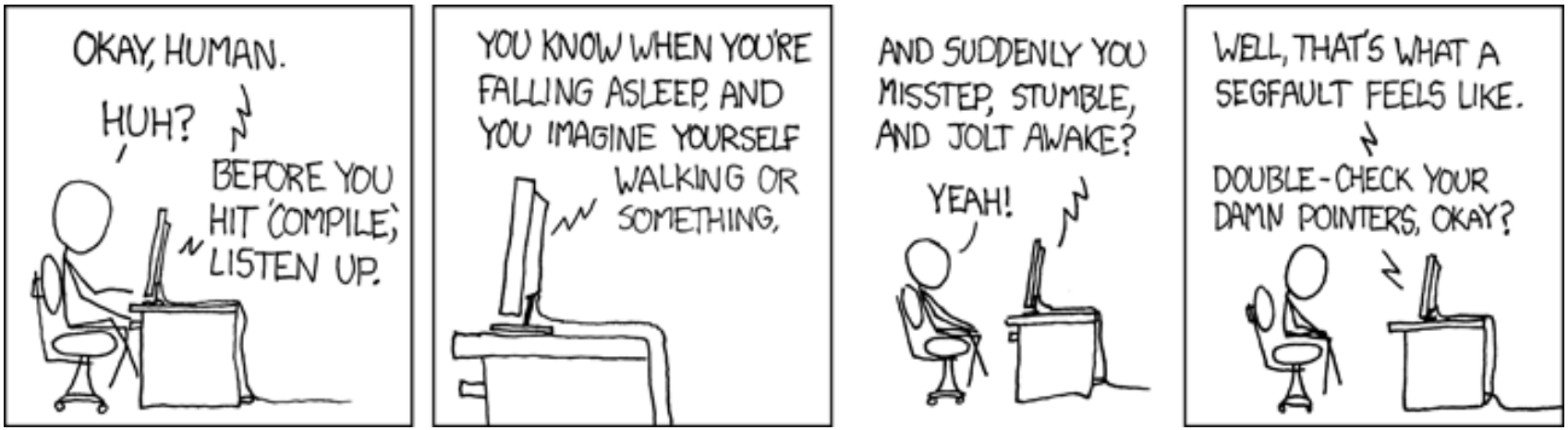
RAISE

- `raise`: raises a new exception

Exceptions and Abstraction

- How can this be problematic for abstraction?
- What if our abstraction “leaks” via our exceptions
- What can we do about it?

Break


OKAY, HUMAN.
HUH?
BEFORE YOU HIT 'COMPILE', LISTEN UP.
YOU KNOW WHEN YOU'RE FALLING ASLEEP, AND YOU IMAGINE YOURSELF WALKING OR SOMETHING,
AND SUDDENLY YOU MISSTEP, STUMBLE, AND JOLT AWAKE?
YEAH!
WELL, THAT'S WHAT A SEGFAULT FEELS LIKE.
DOUBLE-CHECK YOUR DAMN POINTERS, OKAY?

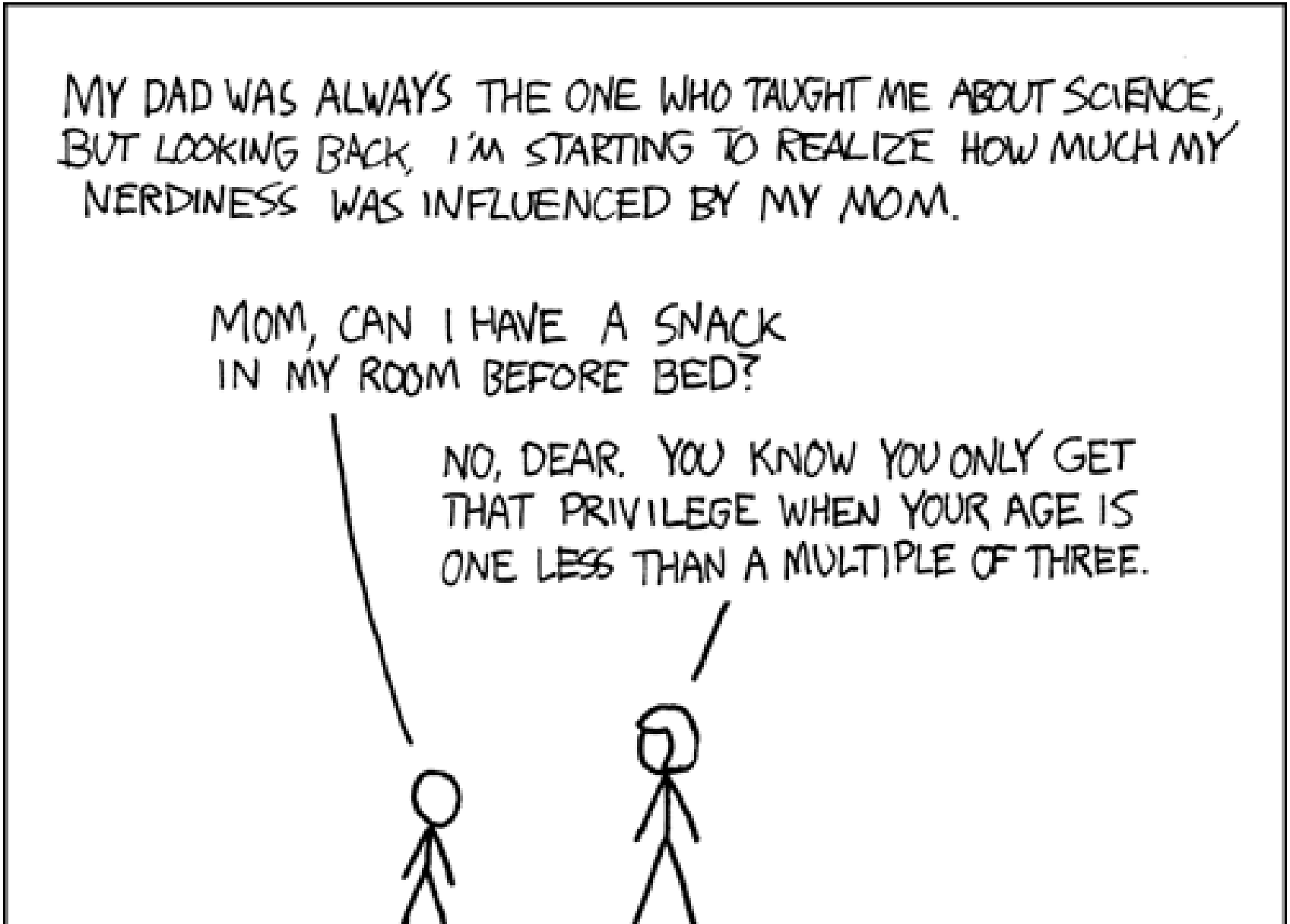
Inhritance: A Quick Review

- `class MyClass(ParentClass)`
  - Makes `MyClass` a "Child" of `ParentClass`
  - If python is looking for a method in `MyClass` and can't find it, it will look in `ParentClass`
  - Can either write own methods, let python use parent's methods, or a hybrid (directly call `ParentClass.method()` from within `MyClass.method()`)

Inheritance and Abstraction

- Can inheritance cause leaks in our abstraction?

Break


MY DAD WAS ALWAYS THE ONE WHO TAUGHT ME ABOUT SCIENCE, BUT LOOKING BACK, I'M STARTING TO REALIZE HOW MUCH MY NERDINESS WAS INFLUENCED BY MY MOM.
MOM, CAN I HAVE A SNACK IN MY ROOM BEFORE BED?
NO, DEAR. YOU KNOW YOU ONLY GET THAT PRIVILEGE WHEN YOUR AGE IS ONE LESS THAN A MULTIPLE OF THREE.

Representation Invariants

- Basic idea
  - What you can assume will be true at the start of each function
  - What you must guarantee to be true at the end of each function
  - Sort of like docstring, but for internal code sharing

Representation Invariants

- Written as an internal comment (using #)
- Usually goes inside the `__init__` method
- Should be sufficient for programmer to understand mapping between ADT -> representation
- Doesn't care about what happens during methods
- Only what is true BETWEEN methods