

**Genome 559:  
Introduction to Statistical and  
Computational Genomics  
Winter 2010**

**19b: Exceptions  
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# Python “Exceptions”

A moderately “advanced” feature, but worth seeing because you’ll see it in other people’s programs and/or packages you use

Computers are frustratingly literal; odd cases that wouldn’t bother you cause errors

In your program, you can test for/handle all sorts of oddities. But more difficult if A calls B calls C calls D, which detects some error; what to do? Print a message? Return a special value? Just quit?

# Exceptions:

## (semi) uniform error handling

If you detect an error, you “raise” or “throw” an “exception”.

*Caller* may (or may not) choose to write special code to handle it – e.g., print a message or quit or maybe go on via some default or fall-back.

“Exceptions” aren’t always errors; sometimes just the uncommon case, like end-of-file

## Simple Example

```
import sys
def flip(x):
    try:
        result = 1/x
    except ZeroDivisionError:
        print "..Returning default"
        result = 10.0**99
    return result
answer = flip(float(sys.argv[1]))
print answer
```

Try `ex0.py`, `ex1.py`,  
`ex2.py` on the home  
page

# Try This, with argv = 1 and 0

## Which “Exiting” messages do/don’t appear?

```
import sys
def A(x):
    print "Entering A with", x
    try:
        result = B(2*x)
    except ZeroDivisionError:
        print "..ZDiv Error."
        print "..Returning default"
        result = 42
    print "Exiting A with", result
    return result
```

```
def B(x):
    print " Entering B with", x
    result = C(2*x)
    print " Exiting B with", result
    return result
def C(x):
    print " Entering C with", x
    result = 1/x
    print " Exiting C with", result
    return result
```

```
print "the answer is..."
answer = A(int(sys.argv[1]))
print answer
```

# More on exceptions

Exceptions are named

Exception handler can, probably should, say which ones it wants to handle.

Passed “up” to caller if it doesn’t handle it

A “default” handler is provided at the top level to handle all the rest (prints those error messages you know and love).