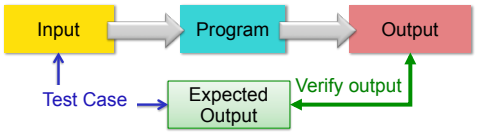
Objectives

- Review
- Lab 1
  - Linux practice
  - Programming practice
    - Numeric operations
    - Getting input from the user

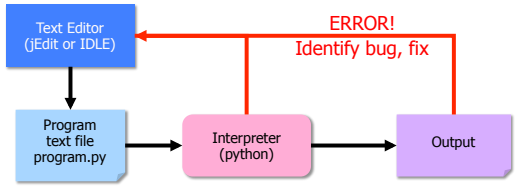
Review: Testing Process



- Test case: **input** used to test the program, **expected output** given that input
- Verify if output is what you expected
- Need good test cases
  - Good that you know the "problematic" test cases, even if we don't know how to address them yet

Debugging

- Edit the program, re-execute/test until everything works
- The error is often called a "bug"
- Diagnosing and fixing it is called ***debugging***



Good Development Practices

- Design the algorithm
  - Break into pieces
- **Implement** *and* **Test** each piece *separately*
  - Identify the best pieces to make progress
  - Iterate over each step to improve it
- Write comments FIRST for each step
  - Elaborate on what you're doing in comments when necessary

Review: Arithmetic Operations

Symbol	Meaning	Associativity
+	Addition	Left
-	Subtraction	Left
*	Multiplication	Left
/	Division	Left
%	Remainder ("mod")	Left
**	Exponentiation (power)	Right

Precedence rules: P E - DM% AS

negation

Associativity matters when you have the same operation multiple times

Review: Two Types of Division

- Float Division: Result is a `float`
  - 3.0/6.0 → 0.5
  - 6.0/3.0 → 2.0
  - ***At least*** one of numerator and denominator must have a decimal, i.e., have type `float`
- Integer Division: Result is an `int`
  - 3/6 → 0
  - 6/3 → 2
  - x/y, if both x and y are `int`s
  - If both numerator and denominator are `int`s, result is `int`

Not always obvious

General Announcements

- CS Issues Grading/Expectations
  - 6 pts for blog entry
    - Common issue – missing answers to one of questions
  - 4 pts for participation in class
- Idea: online grading (in Sakai) in future?
  - No paper copy (less waste)
  - But you'd have to login to Sakai and look at the feedback

Lab 0 Feedback

- Overall, did well
  - Often lost points because missed some directions
    - E.g., broken Web page links, documentation in programs, output of programs
  - Generally, lab grades should be high
- Interesting article links
  - Consider reviewing for extra credit
    - Missed my Sakai extra credit

Linux Command Conventions

- `<arg>` means fill in the appropriate thing
- `[arg]` means optional argument
- Example: Move or Rename a file
  - `mv <sourcefile> <destination>`
  - If `<destination>` is a *directory*, keeps the original source file's name

```
mv ~/labs/file.py labs/lab1/
```

directory

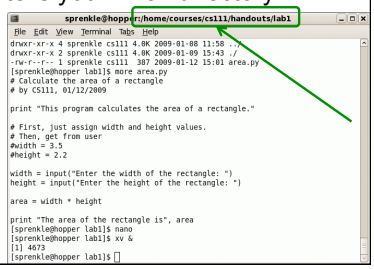
  - File "`file.py`" will be in `labs/lab1` directory

Lab 0 Feedback

- `ls -l` option
  - Demonstrate how different from `-1` option
- Need electronic as well as printed submission
  - I can execute your program, help find mistakes
  - Copy your lab directory into your `turnin` directory
  - How do you copy a directory?

Lab 1: Linux Practice

- Setting up directories
- Renaming/moving files
- Note: terminal tells you which directory you're in



Lab 1: Programming Practice

- Name them **lab1.n.py**, where *n* is the problem you're working on
- After completed, demonstrate that your program works
  - Close IDLE/Python shell, rerun program
    - Get rid of the output from when you were developing/ debugging ("scratch work")
  - Execute using **good** test cases
    - More than one test case if dealing with user input
    - Don't need to exhaustively test
  - Save output for each program in file named **lab1.n.out** where *n* is the problem you're working on

Lab 1 Notes

- Expect comments in programs
  - High-level comments, authorship
  - Notes for your algorithms, implementation
- Expect testing on programs
  - What are good test cases for your programs?
  - Show the output from those test cases
  - But don't go overboard, testing every possible number!
- Honor System
  - Pledge the Honor Code on printed sheets