

Nicole Luong

Week 2

Operators, Data types, Arithmetic, If Statements

The background features several thick, hand-drawn style teal lines. One line starts from the left edge, curves downwards, and then turns right. Another line starts from the top left, goes right, then down, then right again. A third line starts from the top left, goes right, then down, then right again, crossing the other lines.

**Before we
begin**

Home Computing

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Tutorial Overview

1. Operators
2. Data Types and Arithmetic
3. Flow Charts (If Statements)
4. Leap Year Flow Chart
5. Using Flow Charts and Pseudocode to plan a program

Operators

Operators

Type of Operator	Operators
Arithmetic	<div><div>+</div><div>-</div><div>*</div><div>/</div><div>%</div></div>
Logic	<div><div>&&</div><div> </div><div>!</div></div>
Comparison	<div><div><</div><div>></div><div><=</div><div>>=</div><div>!=</div><div>==</div></div>

What is the difference between / and %?

Data Types

What are the 3 different data types we have learnt so far?

Data Types

int - integers (whole numbers)

double - floating point number (decimal point)

char - character

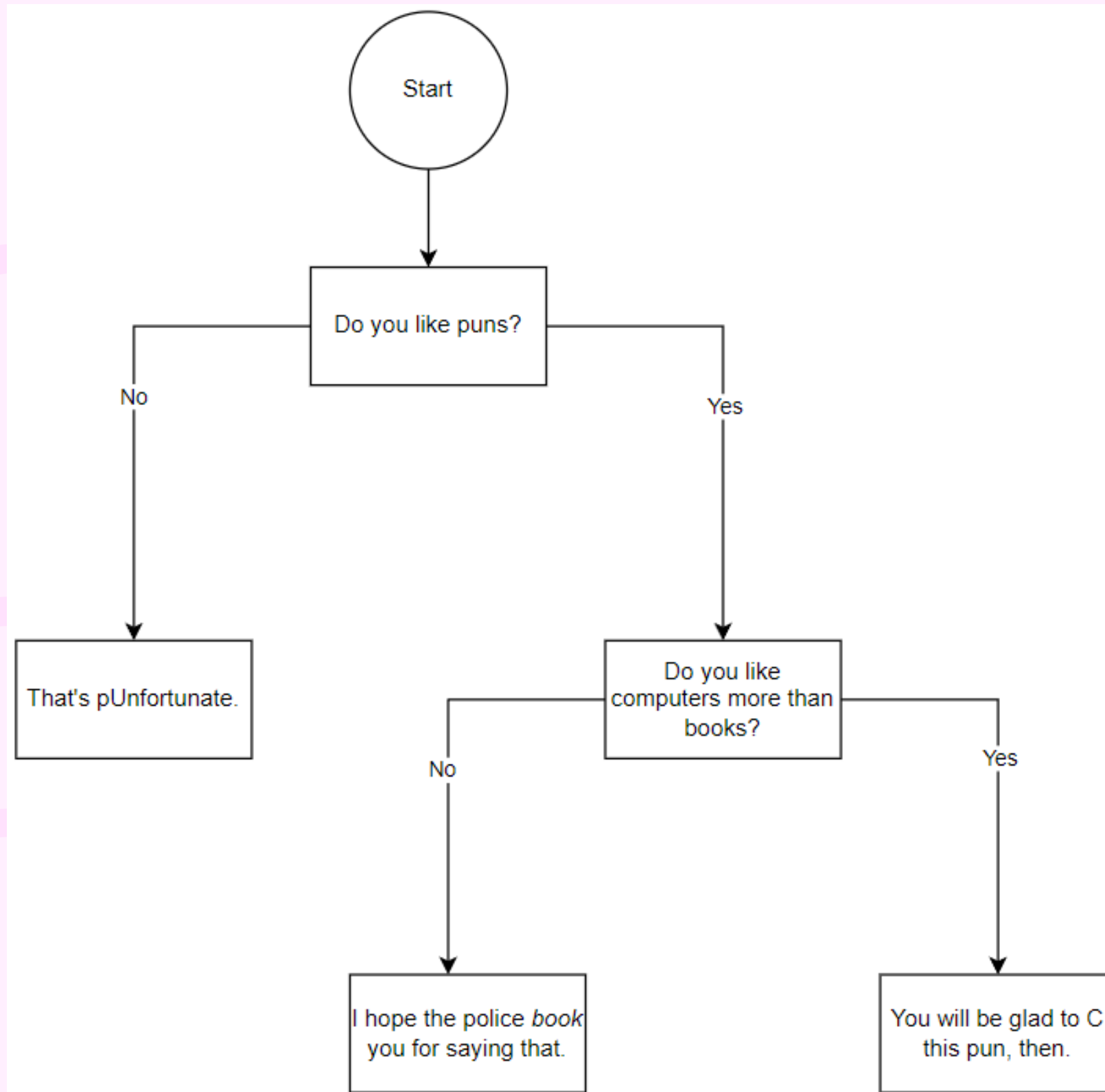
A (7 / 2)

B (3.0 / 2) + 1

C 'a' + 5

D 'F' - 'A' + 'a'

Flow Charts (If Statements)



Features:

Circle - Start of the flow chart

Boxes - Question

Arrows - An answer to a question, directing you to the next question

Leap Year Flow Chart

In your groups, draw out a flowchart that determines if a given year is a leap year.

Rules of a Leap Year

- Years divisible by 4 are leap years. (e.g. 1904 was a leap year)
- Except, years divisible by 100 are not leap years. (e.g 1900 was NOT a leap year)
- Except, years divisible by 400 are always leap years. (e.g. 2000 was a leap year)

Features of a Flow Chart

Circle - Start of the flow chart

Boxes - Question

Arrows - An answer to a question, directing you to the next question

Planning a Program with a Flow Chart

Draw a flow chart of the given program.

Program Instructions

- Scan in two integers (a and b).
- If the first integer is less than the second, print out a short error message using a procedure.
- If the second integer is 0, print out a different short error message.
- If the first integer is larger than the second, prints a / b and $(a * 1.0) / (b * 1.0)$.

Features of a Flow Chart

Circle - Start of the flow chart

Boxes - Question

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Planning a Program with a Flow Chart

Convert your flow chart into pseudocode

```
// C style pseudocode example.  
// Prints out "Hurrah!" if the entered number is 5  
  
int n = 0  
print "Enter a number"  
scan a number into n  
if (n == 5) {  
    print "Hurrah!"  
}
```

Convert Pseudocode into a C Program



Lab Time!

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