Data Structures & Algs

Design a class — represent integers
  └ of any number of digits.

int : 4 bytes
long : 8 bytes

Big Integer operations
  add, sub, mult, div
  compare
  get # of digits
  find # of times each digit occurs

Represent
  → Array / List / Vector
  linked list
  String

123
-123

bool
| T/F |

| -1 | 2 | 3 |

| 0) | 1 | 2 | 3 |

Encapsulation / information hiding

Programmer

bool
T
| 1 | 2 | 3 |

| -1 | 2 | 3 |

"-123"

User

-123

Implementation ←——→ Interface

Fibonacci sequence

0, 1, 1, 2, 3, 5, 8, 13 . . .

$$fib(n) = \begin{cases} 0 & \text{if } n = 0 \\ 1 & \text{if } n = 1 \\ fib(n-1) + fib(n-2) \end{cases}$$