Test Topics

Proofs by Induction

Proofs
- Contradiction
- Contrapositive
- Direct

Math ~~~~~~~~~~

Big-O
- Step Counting
- ~~Follow~~ the Pattern → Closed Form
  Find

Anything covered in class
and from the book chapters
covered!

aRb

Master Theorem

Recurrence Relation

BSTs ↵ Traversal
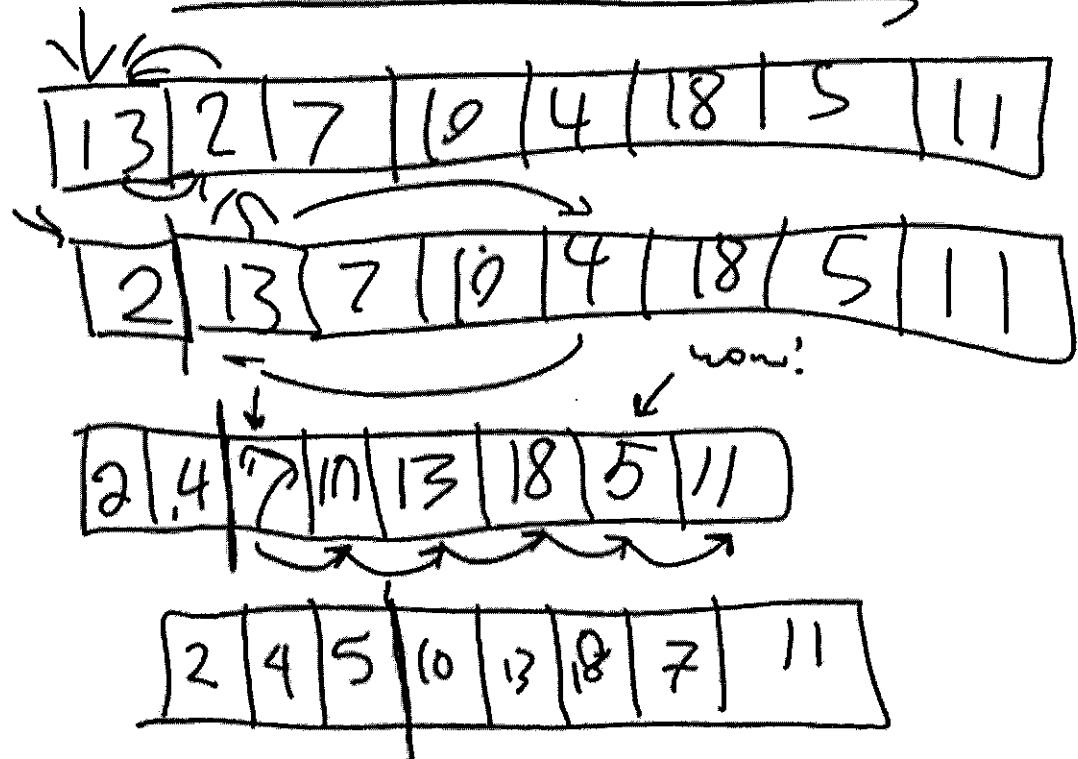
Heaps

Sorting

logs
Summations
Sets

ADTs

Huffman

Searching

Relations
(Equivalence)

Pseudocod

Selection L

1. find the smallest first → find the smallest →

2. Repeat

SUP

| 13 | 2 | 7 | 10 | 4 | 18 | 5 | 11 |

| 2 | 13 | 7 | 10 | 4 | 18 | 5 | 11 |

wow!

| 2 | 4 | 7 | 10 | 13 | 18 | 5 | 11 |

| 2 | 4 | 5 | 10 | 13 | 18 | 7 | 11 |

"a banana bonanza" $16 \times 3 = 48$

8 bit ASCII: 128
Fixed: 48 bits
Huffman: 38 bits
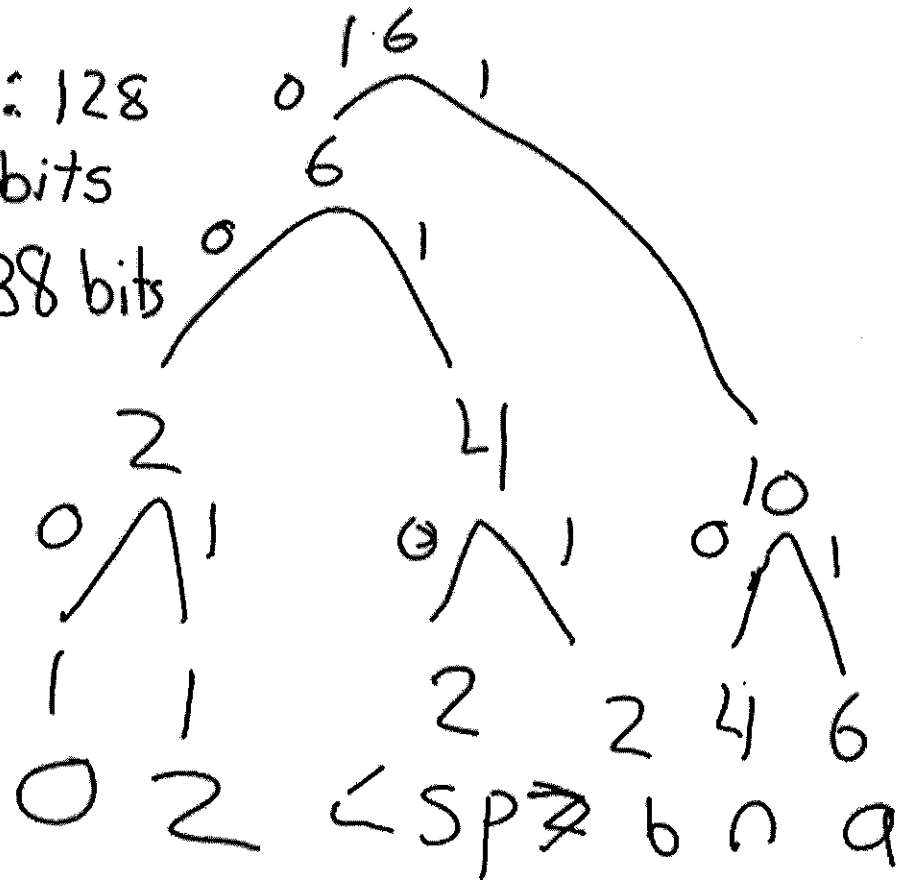
$6 \times 2 = 12$
$2 \times 3 = 6$
$4 \times 2 = 8$

freq	val	cod
6	a	11
2	b	011
4	n	10
1	o	000
2	z	001
2	\<sp\>	010

Tree (labeled):

16
0 / 1
6
0 / 1
  2   4   10
0 / 1   0 / 1   0 / 1
1   1   2   2   4   6
0   2 \<sp\> b   n   a

3
3
6

7 32 12 1 47 28 4 19

$O(n!)$
2^n
$O(n^2)$
$O(n)$
$O(\log n)$
$O(1)$
Time
input

$\log_2(8) = 2^3$
$\log_2(16) = 2^4$

linear

binary