Computer Science 112
Data Structures

Lecture 19:
Review for Exam 2

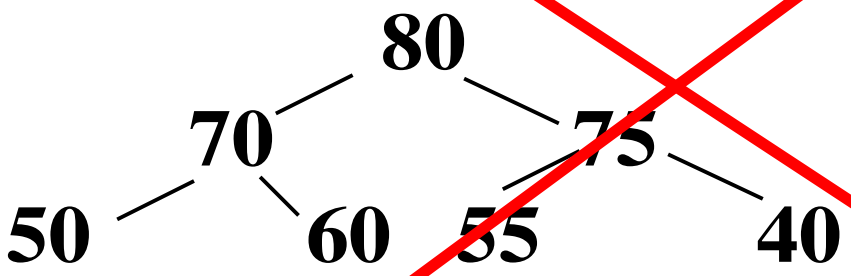
Announcements

- **Midterm Exam 2**
  - **Sunday April 12**
  - **3:00 – 4:20 pm**
  - **See sakai announcements for rooms**
- **Today: review for exam**
- **Thursday: Graphs**
- **Watch videos on hashing, graphs**
  - **see sakai announcements**

Heaps not on exam 2 !!

For the MaxHeap below

What would be the first three numbers removed?

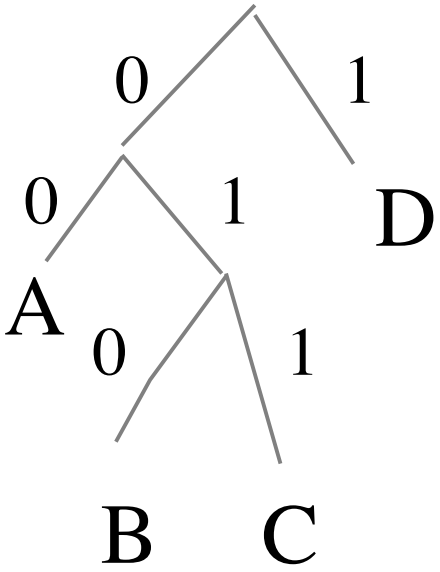


Redraw the heap as it would be after all three have been removed.

For the Huffman code represented by the tree below,

What is the shortest code for any character?

What sequence of characters does 100100011001represent?

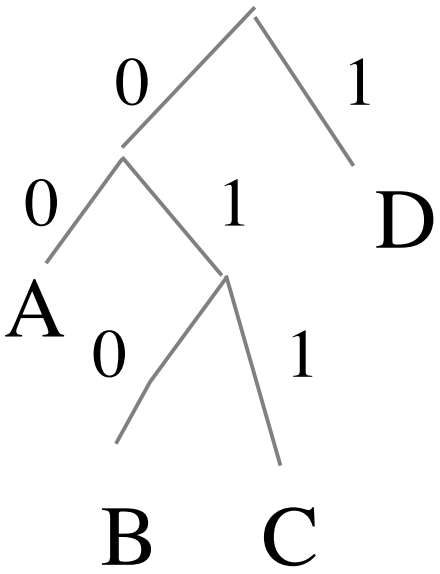


For the Huffman code represented by the tree below,

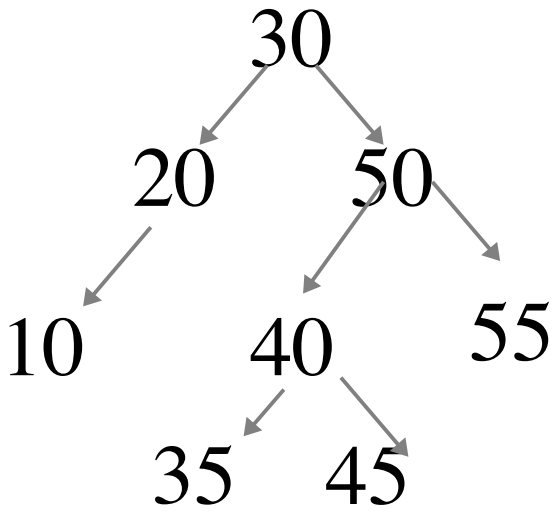
What is the shortest code for any character? 1 = D

What sequence of characters does 100100011001represent?

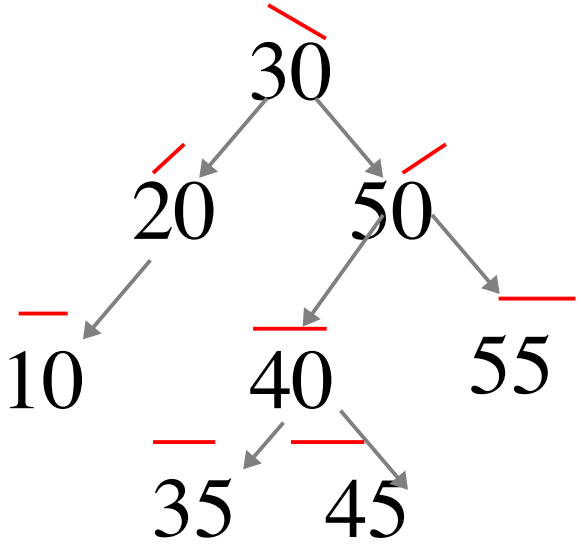
DADACAD

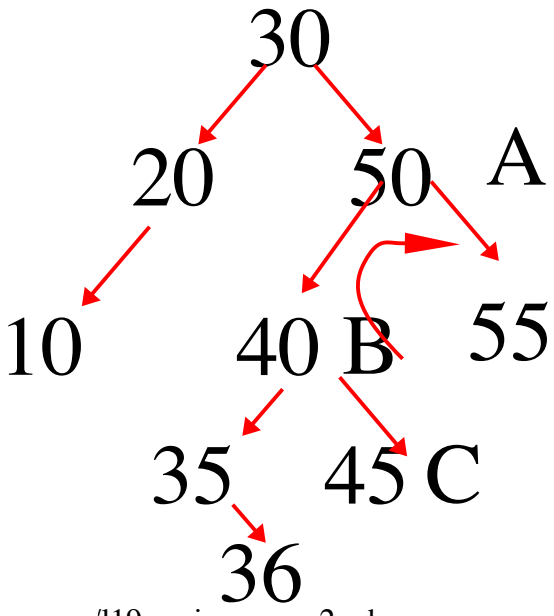


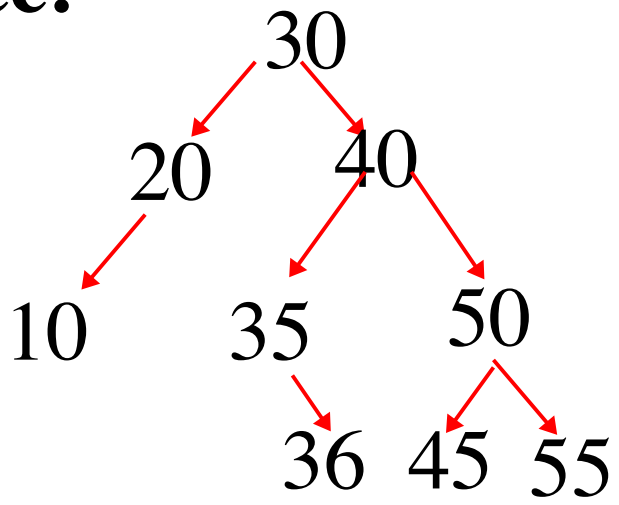
Mark balance factors in the nodes of the following AVL tree. Then insert 36, and draw the resulting AVL tree.



Mark balance factors in the nodes of the following AVL tree. Then insert 36, and draw the resulting AVL tree.







Topics for exam 2

Binary search trees

AVL trees

Huffman codes

Hashing

[NOT Heaps]

Binary search trees

Ordering, Search, Insertion, Deletion,

Depth as a function of number of nodes

AVL trees

Balance factor, Rotation operation, Insertion and rebalancing [NOT deletion], Big-O

Huffman codes

Varying length codes, Huffman trees,

Decoding, Encoding, Building the tree

Hashing

Insertion, Chaining, Searching,

Load factor and rehashing, Big-O:

search and insert, worst and expected