COS226 Group Activity

1. Binary heaps. from Spring 2008 Midterm, Question 5

Consider the following binary heap (i.e., the array-representation of a heap-ordered complete binary tree).

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|
| - | Z | W | Y | T | G | K | V | R | S | F | Α | _ | _ |

(a) Delete the maximum key. Give the resulting binary heap. Circle those values that changed.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|
| _ | | | | | | | | | | | | | |

(b) Insert the key X into the original binary heap. Give the resulting binary heap. Circle those values that changed.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|
| _ | | | | | | | | | | | | | |

| 2. | Suppose you are given an input file with the keys C A H D J B F I E G. | | | | | | | | | | |
|----|--|---|--|--|--|--|--|--|--|--|--|
| | (a) | Draw the BST that results when you insert the keys in that order into an initially empty BST. | | | | | | | | | |
| | (b) | Give the level order traversal of the BST. | | | | | | | | | |
| 3. | Star | t with the BST drawn above. | | | | | | | | | |
| | (a) | Draw the sequence of BSTs that result when you Hibbard delete G then D then H. | | | | | | | | | |
| | (b) | Give the level order traversal of the resulting BST. | | | | | | | | | |