

Assignment 4: Data Structures (Due date: December 8, 2008)

We have two set A and B of integer values. Then write a program using heap that performs the following functions;

1. To construct the heaps of A and B,
2. To construct the heap of $C = A \cup B$
3. Print the heaps of A, B, and C from the root node by preorder traversal.
4. Remove and print every element from the heap C.

The input file "assignment4.inp" is given as

A → the set of A
N_A → the number of elements of A
v₁
v₂
...
v_{N_A}
B → the set of B
N_B → the number of elements of B
u₁
u₂
...
v_{N_B}

Then the output file "assignment4.out" should be

V1 → value of 1st visit of heap A by preorder traversal
V2 → value of 2nd visit of heap A by preorder traversal
...
V_{NA} → value of NAth visit of heap A by preorder traversal
U1 → value of 1st visit of heap B by preorder traversal
U2 → value of 2nd visit of heap B by preorder traversal
...
U_{NB} → value of NBth visit of heap B by order traversal
W1 → value of 1st visit of heap C by order traversal
W2 → value of 2nd visit of heap C by preorder traversal
...
W_{NC} → value of NCth visit of heap C by preorder traversal
X1 → value of 1st removal from heap C
X2 → value of 2nd removal from heap C
...
X_{NC} → value of NCth removal from heap C

Note 1: You should submit the source program via ESPA system.

Note 2: If there are duplicated values, then take only value.

Note 3: When you define the data structure of heap, you should use NOT array BUT pointer
(e.g. Node *lchild; Node *rchild;)

Due Date: December 8, 10:00pm (Firm deadline)