Homework 5. MAX HEAP Implementation & HEAP SORT

1. Main Program

* 초기 입력 데이타 (26,5,77,1,61,11, 59, 15, 48, 19) 프로그램에서 정의
* Heap size : array size 11으로 고정

2) Menu :

1.Insert, 2.Delete, 3. Search 4. Print 5.Level-test **6. Heap Sort**
7. Make Heap 8. Quit

ADT:

- insert HEAP: 데이터 삽입
- delete HEAP: 데이터 삭제 (top element 만 삭제)
- Search HEAP: 데이터 탐색
- Level-test : Heap의 Level 출력
- Print HEAP : Heap 의 내용을 출력
- MakeHeap: Binary Tree 를 Heap변환 (첫번째 adjust algorithm)
- Heap Sort: Heap을 sort하여 출력 (두번째 adjust algorithm)

2. Testing 절차 (다음을 실행 후에는 HEAP의 내용을 출력할 것)

Command		**Print**
1) Create Heap with		(26,5,77,1,61,11, 59, 15, 48, 19)
2) Level Test		Level of tree is 4
3) Search 77	:	77 is found
4) Make heap (heapify)	:	77 61 59 48 19 11 26 15 1 5
5) Insert 9	:	77 61 59 48 19 11 26 15 1 5 9
6) delete:		61 48 59 15 19 11 26 9 1 55
7) Search 77	:	77 is NOT found
8) Heap Sort	Sort 결과:	**Heap: 1 5 9 11 15 19 26 48 59 61**

3. Algorithm (See lecture Note)

4. 화면 출력

*** 아래화면 처럼 sorting 과정 보여주는것으로 제출할 것.**

```
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 4
 Heap:   26 5 77 1 61 11 59 15 48 19
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 5
Level of Heap is 4
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 3
Enter a number to search: 77
77 is found
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 7
Heap 변환:  Heap:   77 61 59 48 19 11 26 15 1 5
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 1

Enter a number to insert: 9
 Heap:   77 61 59 48 19 11 26 15 1 5 9
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 2
 Heap:   61 48 59 15 19 11 26 9 1 5
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 3
Enter a number to search: 77
 Not found
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 6

 Heap:   59 48 26 15 19 11 5 9 1 61
 Heap:   48 19 26 15 1 11 5 9 59 61
 Heap:   26 19 11 15 1 9 5 48 59 61
 Heap:   19 15 11 5 1 9 26 48 59 61
 Heap:   15 9 11 5 1 19 26 48 59 61
 Heap:   11 9 1 5 15 19 26 48 59 61
 Heap:   9 5 1 11 15 19 26 48 59 61
 Heap:   5 1 9 11 15 19 26 48 59 61
 Heap:   1 5 9 11 15 19 26 48 59 61
Sort 결과:  Heap:   1 5 9 11 15 19 26 48 59 61
Enter Command:(1.insert, 2.delete, 3. search, 4.print, 5.leveltest 6. heapsort  7. makeheap  8. quit) 8

C:₩Users₩circs₩OneDrive₩바탕 화면₩자료구조₩LABS&HW₩자료구조-연습₩Tree₩tree₩heap-sort₩Project1₩Debug₩Proje
스 43528개)이(가) 종료되었습니다(코드: 0개).
이 창을 닫으려면 아무 키나 누르세요...
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