PRIORITY QUEUES and HEAPS.

All the **HEAP** functions carry out their tasks on existing container classes; no HEAP DS is created.

**make\_heap (first, last, comp)** – Converts the dataset in a container from [first, last) into a heap   
 ordered according to the comparator.  
*By default comparator is ‘<’ which results in a MAX Heap. Using greater<int> might give us a MIN Heap.*

**push\_heap (first, last, comp) -** Extends the current heap from [first, last-1) to [first, last) by placing the  
 element at (last-1) at its correct position in the HEAP.

**pop\_heap (first, last, comp) -** Reduces the current heap from [first, last) to [first, last-1) by placing the  
 element at (first) to (last-1) in the container class.

**is\_heap (first, last, comp) –** Checks if [first, last-1) is a heap ordered according to the comparator or not.   
**is\_heap\_until (first, last, comp) –** Returns the iterator E [first, last-1) to the position **till the container is a   
 heap.  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**However the priority\_queue ( ) creates a Container which acts as the priority queue.**

**priority\_queue (data type, container class, comp): priority\_queue (int, vector<int>, greater<int>) pq**

**pq.push ( ) – Basically first calls the push\_back ( ) of the container class and then reorders (*heapifies*) to   
 extend the PQ length by 1 and maintain ordering according to container.  
pq.pop ( ) – It first calls the typical *deletetop* function and then after shifting the top value to the end of   
 the container class calls its pop\_back ( ) function and reduces the PQ’s size by 1.   
pq.top ( ) – Returns the top element of the priority queue, basically calls front ( ) of the Container Class.  
pq.size ( ) – Returns the size of the priority queue, basically calls size ( ) of the Container Class.**

**pq.swap (pq1)** - Swaps elements in PQ pq with pq1.  
**pq.clear ( )** - Clears PQ pq.   
**pq.empty ( ) -** Returns whether the Priority Queue is empty or not.