

CPSC 2430-02 Fall 2017 Programming Assignment #4
Tuesday, November 7, 2017 at Midnight

P4 exercises your understanding of Heaps (Priority Queues) and dynamic memory in C++

Create a **Heap** (min or max, your choice) **class** containing the standard functionality of **insertion** and **removal**. Use a **dynamically-allocated array** for storage of your heap, allowing the heap to **grow** as needed (no reduction of size is required).

In addition, this heap allows the user to **“flush”** a value from the heap. In other words, the user supplies a value and the heap removes all instances of that value automatically.

Because this is a structure with dynamic memory in C++, you must include the **memory management methods**.

In your driver, test the heap by:

- 1) Inserting more than the default size number of values (to test insertion and resize)
- 2) Removing the next value and printing it to the screen (to test remove)
- 3) “Flushing” a given value from the heap, then removing and printing values until it is clear the flushed value has been removed (to test flush)

Note that you must know a value is on the heap to know if your flush method removed it. Consequently, you must either insert one (or more) known values on the heap, or track one (or more) of the random values.

Call your files “heap.h”, “heap.cpp” and “p4.cpp”. Submit your project by typing the following command from the prompt in the directory where the files are located:
/home/fac/sreeder/submit/cpsc2430/p4_runme