

Basic idea :

1. Generate an array in random, and the size should be a variable we can define.
2. Run the heapsort method in different input size. Then record the running time they cost when the array size is 100, 1000, 10000, and 100000 respectively in your report. Then compare the result(running time) with insertion sort and merge sort in HW1.
3. Compare the big O of the result run by your program with the $O(f(n))$ you learned in class, where $f(n)$ is the big O of insertion sort and merge sort respectively. And discuss it in the report.

4. Upload format

There are three file you need to upload:

student ID_name_HW1.cpp or .c,
student ID_name_HW1.exe,
student ID_name_HW1.doc or .pdf.

Program description:

1. Let input be the size of array. As mentioned in 2., you should allow TAs to input different size.
2. After inputting the size of array, randomly generate the elements in the array.
3. Process the array with heapsort mentioned on class, and record the time with each sort method. You can look up how to get the processing time of a C program on line, there are some simple functions to get the sorting time. (You may notice that we're discussing the sorting time, instead of the entire program.)
4. You shall print some simple instructions or leave some comment, so TAs would realize how to demo your program.

Note that:

You may refer to the textbook or pseudo code to make your project.