Project 4 – Heap Structure and Heap Sort

Due: December 11, 2022   **Total point value: 50**

Goals
The goal of this project is to gain experience implementing and working with Heap Structures.

Project Description
Your program should create a heap structures (Max heap) based on the numbers that you read from a file (int). Your heap should have the ability to create heap using build heap (Floyd method), insert, delete max and sort the structure.

Create a simple interface.
1- Build heap
2- Insert
3- Delete
4- Heapsort
5- Print

When calling Build heap the information will be read from the file (The file consists of integer numbers).
When calling Heapsort the structure will be sorted and print the sorted list. In this case, the heap will be destroyed. So be careful that when calling heapsort the size should become zero (size not capacity). After Heapsort call, the heap is considered empty.
When calling Insert the program should prompt the user to insert a number and that number should be inserted in the correct place in the heap structure.

Requirements	Pts	Comment
Correctness	**40/40**	
Code Compiles	5/5	
Heap Structure	**20/20**	
Build Heap	5/20	
Insert	5/20	
Delete Max	5/20	
Proper Heap printing	5/20	
Heap Sort	**15/15**	
Design	**5/5**	
Documentation and Style	**5/5**	