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CENG311
Fall 2021
PROGRAMMING ASSIGNMENT 1

In this assignment, I implemented priority queue construction in C and Java-based implementation. And also, I compare the performance of my implementations.

For Java Implementation: I used PriorityQueue class as written in the pdf.

- When there are 8 numbers in the file.txt
- The execution time is **18781100** nanoseconds.

```
Success...
18781100 nanoseconds

Process finished with exit code 0
```

- When there are 18 numbers in the file.txt
- The execution time is **22281600** nanoseconds.

```
Success...
22281600 nanoseconds

Process finished with exit code 0
```

- When there are $\mathbf{2^{28}}$ numbers in the file.txt
- The execution time is **6016872000** nanoseconds.

```
Success...
6016872000 nanoseconds

Process finished with exit code 0
```

For C Implementation: I implemented priority queue with max binary heap.

- When there are 8 numbers in the numbers.txt
- The Measured time = 0.017000 seconds.

```
Measured time = 0.017000 seconds.
Process returned 0 (0x0)   execution time : 0.070 s
Press any key to continue.
```

- When there are $\mathbf{2^{28}}$ numbers in the numbers.txt
- The Measured time = 0.031000 seconds.

```
Measured time = 0.031000 seconds.
Process returned 0 (0x0)   execution time : 0.117 s
Press any key to continue.
```

As a result, although implementation of c is tough and complex, it is faster than Java implementation. But how? How could it be possible? Because C is a procedural, low level, and compiled language. Java is a object-oriented, high level, and interpreted language. Java uses objects, while C uses functions. Also, C can do more and perform faster because it's closer to machine code.

REFERENCES

- https://www.tutorialspoint.com/
- https://www.geeksforgeeks.org/
- https://docs.oracle.com/en/java/javase/17/docs/api/java.base/java/util/PriorityQueue.html
- https://stackoverflow.com/questions/10575544/difference-between-array-type-and-array-allocated-with-malloc
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