BLG 335E

ANALYSIS OF ALGORITHM I

PROJECT-2

QUICK SORT AND PRIORITY QUEUES

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Deadline :19 November 2014

a) In this project, we sort the final notes of M applicants. And we select best N applicants for interview. When project is being done, there must be some operations to apply, INSERT, UPDATE and REMOVE. Before explanation of functions, there is a class called “heap”.This class holds the notes and ID of applicants. In main function there is a list of “heap” called “queue”. “queue” is sorted. There is one more “heap” list called “scores” in main. “scores” isn’t sorted, it is the first shape of heap.

In INSERT function, new element is read from file and added to “scores” heap.

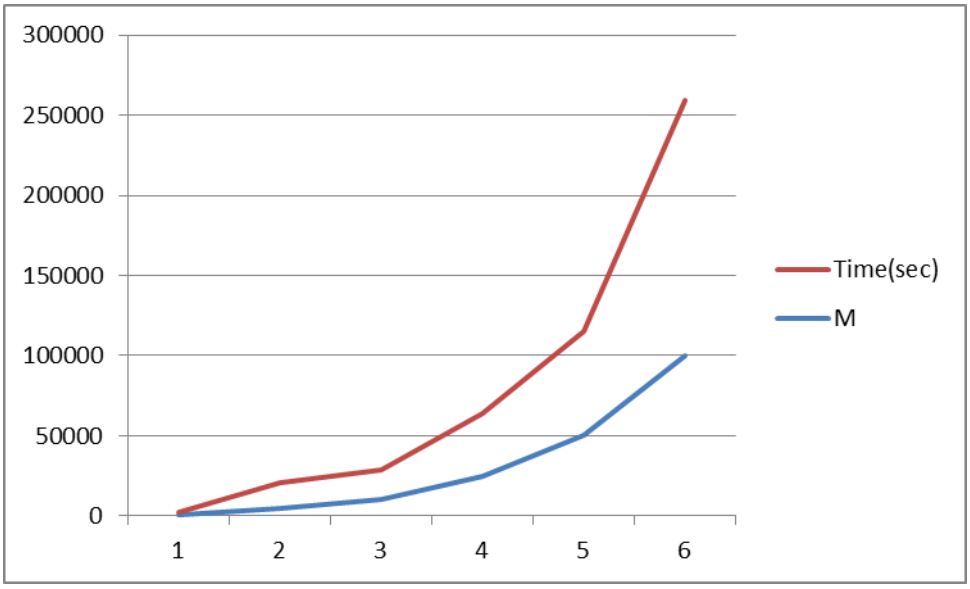
In UPDATE function, size of heap is controlled as first step. If heap is not NULL, an element is chosen using random number and updated via adding 0-10 points to final score or substracting 0-10 points from final scores.

In REMOVE function, the final score of chosen element updated as 0 and MAX_HEAPIFY operation for chosen element is applied and size of heap is decreased with 1. After MAX_HEAPIFY operation the smallest number is the last element of heap list, After decrase operation chosen element has been removed.

In main function,

b) N=50 p=0.5 d= 3

M	Time(sec)
1000	1.529
5000	15.896
10000	18.658
25000	39.281
50000	65.536
100000	159.064



N=50 p=0.5 d= 3 M=1000

```
46      253     67.8
47      91      67.8
48      385     66.75
49      139     66.75
50      348     66.3
Operations is done in 1.529 seconds.
```

N=50 p=0.5 d= 3 M=5000

```
47      2085    77.55
48      1388    77.25
49      1960    77.2
50      2057    77.1
Operations is done in 15.896 seconds.
```

N=50 p=0.5 d=3 M=10000

```
47      4021    83.55
48      3665    83.5
49      2846    83.35
50      3370    83.1
Operations is done in 18.658 seconds.
```

N=50 p=0.5 d=3 M=25000

```
47      11483   87.65
48      4917    87.6
49      8836    87.55
50      7131    87.4
Operations is done in 39.281 seconds.
```

N=50 p=0.5 d=3 M=50000

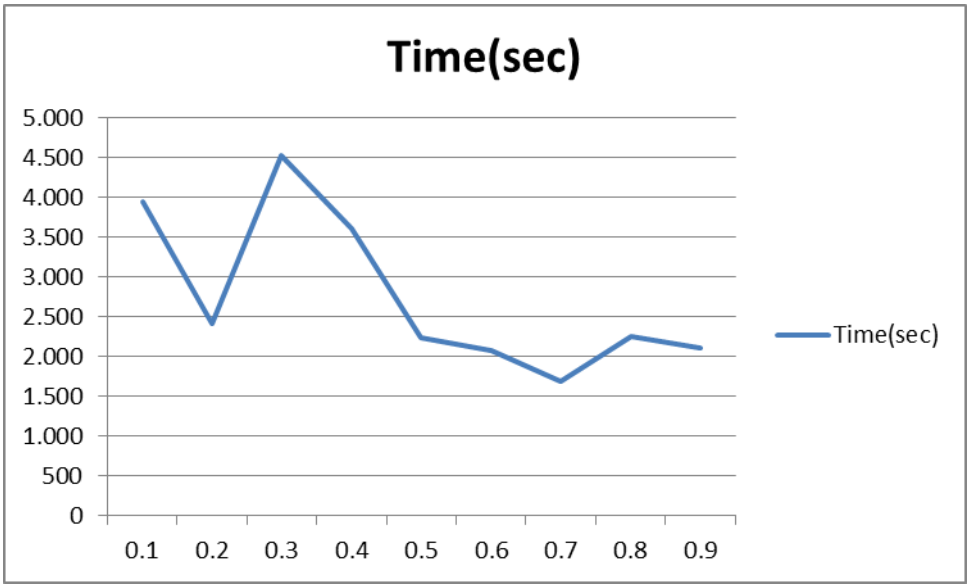
```
47      15756   90.15
48      22408   90
49      22605   90
50      18290   89.6
Operations is done in 65.536 seconds.
```

N=50 p=0.5 d=3 M=50000

```
46       42797    92.2
47       43294    92.05
48       43945    92.05
49       27195    91.95
50       14693    91.85
Operations is done in 159.064 seconds.
```

c) N=50 d=3 M=1000

p	Time(sec)
0.1	3.947
0.2	2.418
0.3	4.181
0.4	3.603
0.5	2.231
0.6	2.075
0.7	1.685
0.8	2.246
0.9	2.113



d) N=50 M=1000 p=0.5

p	Time(sec)
3	2.933

4	3.432