

## CS22203 Lab Assignment no. 2

Ex. For each of the following algorithms, the total no. of element comparisons gives an estimate of the time taken by the algorithm. Modify the algorithms and execute them so that you can: i) count the no. of element comparisons (e), ii) find the actual time taken (in ms) by the program (t). Fill up the respective tables. [You may use time functions in Python to find the actual time taken]. Plot a graph for each table [you may use a line chart or bar chart].

**Hint: Fill the list A with numbers automatically using a Python function (you may use the random module). Do not hard-code the values of A.**

1) Finding the minimum in an unordered list of n elements

```
Min(A,n) //
begin
// Returns maximum element from the list, A
min = 99999 // Assign a very large number
for i = 1 to n
do
    if A[i] < min then
        min = A[i]
    endif
done
return min
```

n	10	100	1000	10000	100000
e					

n	10	100	1000	10000	100000
t					

2) Finding the minimum in an unordered list of n elements using Divide-and-Conquer (D-and-C)

[Hint: For splitting, you can use slicing in Python]

```
min(L)
{
if |L|==1, then return e1 ;// e1 is the first element in L
split L into L1 and L2 ;
    //(L1 and L2 may be of same or different sizes, such //that (L1 || L2 = L)
o1 = min (L1)
o2 = min (L2)
```

```

if  $o_1 < o_2$  , return  $o_1$  //combining results
else return  $o_2$ 
}

```

<b>n</b>	10	100	1000	10000	100000
<b>e</b>					

<b>n</b>	10	100	1000	10000	100000
<b>t</b>					

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