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Assignment 3

First option

```
Enter an array size: 1000
Enter max. value: 50000
Enter 1 for dividing the array size by half; 2 for decreasing the array size by 1
1
Option 1 : Average time 18584.2 nano seconds
sh: pause: command not found
Program ended with exit code: 0|

Enter an array size: 10000
Enter max. value: 50000
Enter 1 for dividing the array size by half; 2 for decreasing the array size by 1
1
Option 1 : Average time 177360 nano seconds
sh: pause: command not found
Program ended with exit code: 0

Enter an array size: 100000
Enter max. value: 50000
Enter 1 for dividing the array size by half; 2 for decreasing the array size by 1
1
Option 1 : Average time 1.73412e+06 nano seconds
sh: pause: command not found
Program ended with exit code: 0|
```

Second option

```
Enter an array size: 1000
Enter max. value: 50000
Enter 1 for dividing the array size by half; 2 for decreasing the array size by 1
2
Option 2 : Average time 6165.27 nano seconds
sh: pause: command not found
Program ended with exit code: 0

Enter an array size: 10000
Enter max. value: 50000
Enter 1 for dividing the array size by half; 2 for decreasing the array size by 1
2
Option 2 : Average time 56369.4 nano seconds
sh: pause: command not found
Program ended with exit code: 0|

Enter an array size: 100000
Enter max. value: 50000
Enter 1 for dividing the array size by half; 2 for decreasing the array size by 1
2
Option 2 : Average time 744988 nano seconds
sh: pause: command not found
Program ended with exit code: 0
```

1.

```
Func DecreaseByOne(arr, size)
```

```
    If size  $\rightarrow$  0
```

```
        Return arr[0]
```

```
    Return Min(arr[size], DecreaseByOne(arr, size - 1))
```

Recurse count: $(size * 2) - 1$

Time complexity: $O(n)$ because of the number of recursion and every other operation is $O(1)$

2.

The space is $O(1)$ because the function does not store data of n number of objects.

3. IDK

4. It results make logical sense because the divide and conquer method makes 2 recursion calls per function call which would take more time.