**Calculate the time complexity for the following:**

**Code 1:**

**function processAndPrintInfo(arr, size)**

**{**

**console.log("First element of array = “, arr[0]);**

**for (var i = 0; i < size/2; i++)**

**{**

**console.log("%d\n", arr[i]);**

**}**

**for (var i = 0; i < 100; i++)**

**{**

**console.log("Hi");**

**}**

**}**

**Code 2:**

**let recursiveFunction = function (arr, x, start, end) {**

**// Base Condition**

**if (start > end) return false;**

**// Find the middle index**

**let mid=Math.floor((start + end)/2);**

**// Compare mid with given key x**

**if (arr[mid]===x) return true;**

**// If element at mid is greater than x,**

**// search in the left half of mid**

**if(arr[mid] > x){**

**return recursiveFunction(arr, x, start, mid-1);**

**} else {**

**// If element at mid is smaller than x,**

**// search in the right half of mid**

**return recursiveFunction(arr, x, mid+1, end);**

**}**

**}**

**function searchValueInArr(arr, x) {**

**if (recursiveFunction(arr, x, 0, arr.length-1)) {**

**console.log(“Element found.”);**

**} else {**

**console.log(“Element not found.”);**

**}**

**}**

**searchValueInArr([2,3,5, 9, 11, 13], 3);**

**3. What are you exactly doing during Problem 1 & 2? pick one of below**

1. **Performance Engineering**
2. **Benchmarking**
3. **Performance validation**
4. **1 & 2**
5. **None of the above**

**4. What are 3 main differences between Performance Engineering and performance testing.**

**5 Where and how does Performance engineering fits into DevOps release process. This is not a question but requesting NCG’s to read through this link -** [**https://medium.com/@radsri123/performance-engineering-and-devops-df856e2b414**](https://medium.com/@radsri123/performance-engineering-and-devops-df856e2b414)

**6.Find the top 2 expensive process by memory in your laptop/VDI. Output should only list the top 2 process and their memory foot print. Use powershell in case of Windows OS**

**7.Implement Problem 1 & 2 in Java and by using Java Microbenchmarking list down below parameters**

*Throughput,* *AverageTime,* *SampleTime*, and *SingleShotTime*

**8.(Advanced if time permits) Install JMeter and find average response time of List Users API defined here -** [**https://reqres.in/**](https://reqres.in/) **. Please configure 5 iterations of execution with thread pool concurrency 5 in single thread group.**

**9(Advanced to cover during Project execution) On your local Postgres database, pick one Primary table of your Project and find Avg response time of Select query.**

**Guidelines here:** [**https://medium.com/@ganeshsirsi/database-performance-and-load-testing-using-jmeter-ms-sql-470045303785**](https://medium.com/@ganeshsirsi/database-performance-and-load-testing-using-jmeter-ms-sql-470045303785)

**10. Read about “Memoization” and “Dynamic Programming” and how it reduces the time complexity of a code. (Optional)**

**11. Go through Big O cheat sheet and compare time and space complexities of various Algos and data structures.(Optional)**

<https://www.bigocheatsheet.com/>

**----------------**