Rajalakshmi Engineering College

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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 6_CY_Updated

Attempt : 1
Total Mark : 30
Marks Obtained : 30

Section 1 : Coding

1. Problem Statement

Priya, a data analyst, is working on a dataset of integers. She needs to find the maximum difference between two successive elements in the sorted version of the dataset. The dataset may contain a large number of integers, so Priya decides to use QuickSort to sort the array before finding the difference. Can you help Priya solve this efficiently?

Input Format

The first line of input consists of an integer n, representing the size of the array.

The second line consists of n space-separated integers, representing the elements of the array.

Output Format

The output prints a single integer, representing the maximum difference between two successive elements in the sorted form of the array.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
10
Output: Maximum gap: 0

Answer

```
// You are using GCC #include <stdio.h>

void quickSort(int arr[], int low, int high) {     if (low
< high) {         int pivot = arr[high];         int i = low -
1, temp;         for (int j = low; j < high; j++) {             if
(arr[j] <= pivot) {                                  i++;
temp = arr[i];                                       arr[i] = arr[j];
            arr[j] = temp;
         }
      }
      temp = arr[i+1];                               arr[i+1] =
arr[high];                                           arr[high] =
temp;        int pi = i +                            1;

      quickSort(arr, low, pi - 1);
      quickSort(arr, pi + 1, high);
   }
}

int main() {
   int n;
   scanf("%d", &n);
int arr[10];
```

```
    for (int i = 0; i < n;                i++) {                        scanf("%d",
&arr[i]);
     }

    quickSort(arr, 0, n -                 1);

    if (n < 2) {
        printf("Maximum
gap: 0\n");       return                  0;
    }

    int maxGap = 0;
    for (int i = 1; i < n;                i++) {       int
gap = arr[i] - arr[i - 1];                if (gap >
maxGap) {
            maxGap = gap;
        }
    }

    printf("Maximum gap: %d\n", maxGap);     return 0; }
```

Status : Correct*Marks : 10/10*