**DIVIDE AND CONQUER**

PROBLEM 3:

3-FINDING FLOOR VALUE

AIM:

Given a sorted array and a value x, the floor of x is the largest element in array smaller than or equal to x. Write divide and conquer algorithm to find floor of x.

CODE:

#include <stdio.h>

int findFloorRec(int arr[], int left, int right, int x) {

if (left > right) {

return -1;}

if (x < arr[left]) {

return -1;

}

int mid = left + (right - left) / 2;

if (arr[mid] == x) {

return arr[mid];

}

if (arr[mid] < x && (mid == right || arr[mid + 1] > x)) {

return arr[mid];

}

if (arr[mid] < x) {

return findFloorRec(arr, mid + 1, right, x);

}

return findFloorRec(arr, left, mid - 1, x);

}

int main() {

int n, x;

scanf("%d", &n);

int arr[n];

for (int i = 0; i < n; i++) {

scanf("%d", &arr[i]);

}

scanf("%d", &x);

int floorValue = findFloorRec(arr, 0, n - 1, x);

if (floorValue == -1) {

printf("%d\n", x);

} else {

printf("%d\n", floorValue);

}

return 0;

}

INPUT AND OUTPUT:

