ASSIGNMENT 3

MODIFICATION QUESTION - DESIGN

Input: 3 lines.

1. First-line : An integer N which is the number of elements in the paper strip.
2. The second line : N numbers.
3. The third line : The number X for the special gift.

Output: The output contains 2 * N + 1 lines.

- The first 2 * N − 1 lines contains the employee ID followed by numbers present in the piece of paper given to each employee as space separated elements.
- The next line : The employee IDs of all who have got the special gift.
- The next line: The total number of gifts distributed (including special gifts).

Global Variable

1. Total_gifts = 0

Main( ): **--1 mark**

1. Read N
2. Declare an array of int: arr[N]
3. Declare an array of int: gift_list[N] // To store the employee_id of the person who got the Gift.
4. For i in range [0, N):
    a. Read arr[i]
5. Read X
6. For i in range [1, N):
    a. gift_list [i] = -1
7. Total_gifts = 0
8. Call **EmployeeGiftDivision** (1, arr, 0, N-1, gift_list)
9. Call **SpecialGift(** arr, X, N, gift_list**)**
10. print Total_gifts

EmployeeGiftDivision(Emp_ID, arr[], m, n, gift_list[]) ---1 mark

1. If m>n return;
2. Total_gifts = Total_gifts + (n - m + 1)
3. Mid = m + (n-m)/2;
4. Print Emp_ID
5. For i in range [m,n]
    a. Print arr[i]
6. if (m != n) // There are more than one number in the list. Dividing them to 2i th and 2i+1 th persons.
    a. **EmployeeGiftDivision (2*Emp_ID, arr, m, mid, gift_list); ---1 mark**
    b. **EmployeeGiftDivision (2*Emp_ID + 1, arr, mid+1 , n, gift_list); --- 1 mark**
7. else
    a. gift_list[m] = Emp_ID;
8. return

SpecialGift(arr[], X, N, gift_list) //N is no. of employees – 1 mark

1. for i in range [1, N):
    a. if(arr[i] == X)
        i. tmp_ID = gift_list[i];
        ii. break;
2. while (tmp_ID > 0)
    a. total_gifts ++ ; // counting the special gifts
    b. print tmp_ID
    c. tmp_ID = tmp_ID / 2;
3. return