SPIDER ALGO INDUCTION

**CODE EXPLANATION(LOGIC)**

TASK-1A (Decomposing binary strings as averages of two others)

In the code we have taken two inputs one the length of the string and other the binary string which needs to be decomposed as average of two binary strings.

For the implementation first we have checked whether the string contains only one or not if the number of 1 is equal to the length of string then we have printed -1 else we have created two binary strings y and z both initialized with the same String which was taken as input and then we have traversed string y and soon as we encounter first 01 pair we have swapped them and in case of z as soon as we encounter first 01 pair we have converted the 1 to 0 these both things are done as every number can be expressed as power of 2

Then we have first printed z as its smaller than y.

TASK-1B (Find the degree of symmetry of a string)

In the code we have taken two inputs one the length of the string and other the string whose degree of symmetry needs to be found.

For the implementation we have created a global variable mid and c both initialized to zero and a function called symmetry which takes two parameters length of string and string in the function we have calculated the value of mid and created to substrings ch1 and ch2 .ch1 is from 0 to mid and ch1 is from mid to n-1. Then there is a condition if the mid is not equal to zero and ch1==ch2 the value of c will be incremented since symmetry exists now we will again call the function with mid and ch1 as parameter to check if symmetry exists in ch1 also or not ,the value of c will be incremented until the symmetry exists.

We have printed the value of c.

TASK 1(C) - Decipher the array sequence in four queries

In the code we have taken four inputs from the user w1,w2, w3 and w4

For the implementation we have created an array ‘a’ initialized with 6 distinct numbers present in the question .and have sorted array a.

Suppose advay has thought of an array b of order [43 , 9,8,7,10,16]

Adit already knows the digit present in array b but doesn’t know the order.

So adit asks advay the product of first and last element and advay answers 688.

Now adit will traverse the array a which he has created and check which number is divisible by 688

Let x1 be the number divisible by 688 and y1 be 688/x1 now we will check y1 is present in the array with adit or not if it is not present we will continue else the value of x1 and y1 is found.

Then adit asks the product of first and second element and adavy answers 43\*9(387)

Now adit again traverse the array in the same way as he found x1 and y1 to find x2 and y2.

Now adit knows the value of x1,y1,x2,y2.and in this the value which is repeating twice is the value of b[0] . and the other two are b[1] and b[5].

Now adit will ask the product of second last and last element (which is 160) and as adit already knows the value of b[5] he can calculate b[4] by 160/b[5]

Now adit will ask the product of second and third element (72) and since he already knows b[1] he can find value of b[2] easily by 72/b[1]

Now the value of b[3] can be found by adding all the elements of a (which adit has) -the sum of (b[0]+b[1]+b[2]+b[4]+b[5])

Now adit can print the order which advay has thought of.

TASK 1(D) – (Determine the final rating)

In this we have input the value of n ,the rating r, the increment x and the decrement y and then we have taken two array input like scn and c

For implementation we have created a variable t =r and we have traversed to array and checked three condition first if the both the array have value 1 at that position the we have incremented the value of r by x

Second if both the array have different value at that position then we have decremented the value of r by y

Third if both the condition doesn’t match then value of r remains unchanged .

Now we have compared the value of t and r if t is greater than r then we will print “demoted”

If t is less than r then we will print “promoted” else if both are equal the “no change”.