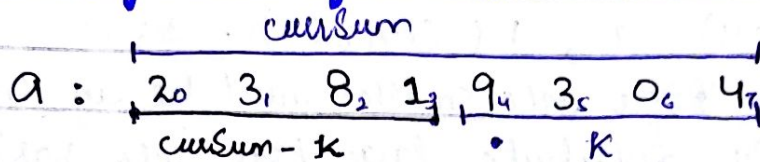


• Hashing :-

i) Find Subarray with given sum k :-



map :-

key : value $\rightarrow i+1$

$a_0 + a_1$ 1

$a_0 + a_1 + a_2$ 2

$a_0 + a_1 + a_2 + a_3$ 3

Suppose ;

• $k = 16$; $curSum = 30$; $curSum - k = 14$;

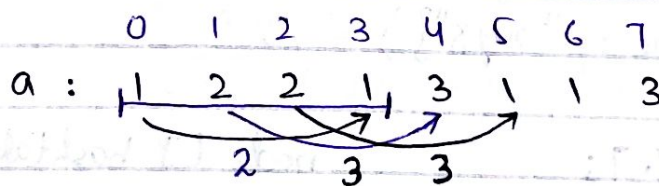
$start = map[curSum - k] + 1$;

$end = i$; break ;

• if ($curSum == k$) $start = 0$, $end = i$; break ;

ii) Find Distinct elements in window k :-

$k = 4$;



map :-

• if ($i < k$)

$map[array[i]] = (map[array[i]] | 0) + 1$;

• if ($i \geq k$) // if value of 1st element is > 1 the subarray

if ($map[array[i-k]] > 1$) $map[array[i-k]] -= 1$;

if ($map[array[i-k]] \leq 1$) delete ;

$map[array[i]] = (map[array[i]] | 0) + 1$;

$console.log(map.size)$;

Diagram illustrating the sliding window for finding distinct elements in a window of size k :

Array a : $1, 2, 2, 1, 3, 1, 1, 3$

Window size $k = 4$ is indicated by a bracket below the array, spanning from index 1 to index 4.

The distinct elements in the window are 2, 3, and 1.

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