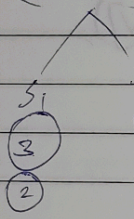
PARTITION A SET INTO TWO SUBSETS WITH MIN ABS SUM DIFFERENCE

Date : / /

Ex:-

- Calculate the totalsum
- To get the sum of 2nd subset you can calculate the totalsum & reduce 1st subset sum from total.
- Identify all the possible chances save them and return the minimum.

Ex:- {3, 2, 7} ⇒ Total sum = 12



0	1	2	3	4	5	6	7	8	9	10	11	12
✓	X	✓	✓	X	✓	X	✓	X	✓	✓	X	✓
12-12=0		②	③		2+3		①		7+2	7+3		

⇓ Possibilities of S1 are

S1 ⇒	0	2	3	5	7	9	10	12
	12-0	12-2	12-3	12-5	12-7	12-9	12-10	12-12
S2 ⇒	12	10	9	7	5	~~3~~	2	0
ABS DIFF ⇒	12	8	6	2	2	6	8	12

Identify the min & return it

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```
int totalSum = 0
for(int i=0; i<n; i++) totalSum += arr[i];
for(int i=0; i<n; i++) dp[i][0] = true;
if(arr[0]<=k)
dp[0][arr[0]] = true;
for(int ind=1; ind<n; ind++) {
  for(int target=1; target<=k; target++){
      bool notTake = dp[ind-1][target];
      bool take = false;
    if(arr[ind] <= target) take = dp[ind-1][target-
                                    arr[ind]];
    dp[ind][target] = take | notTake;
  }
}
}
int mini = 1e9;
for(int s1=0; s1<=totalSum/2; s1++){
    if(dp[n-1][s1]==true){
      mini = min(mini, abs(totalSum-s1)-s1));
}
}
  return mini;
}
```