Ranveer Singh and his bulbs in Paan Shop

Ranveer Singh has decorated his Paan shop with N electric bulbs and N switches. When he enters the shop, he notices that individual bulbs B = [b1,b2,b3…bN] are switched on in a random manner. Two consecutive bulbs should not be on as they will burst due to overheating. Two consecutive bulbs should not be off as the shop will not be lightened up due to low lighting. Now Ranveer has to decide what bulbs to switch on or switch off so that no two consecutive bulbs are on or off. Now you need to tell Ranveer what is the minimum number of switches X that he should operate on.
If B = [1, 1, 1] then X=1. Because switching off middle light will result in B=[1, 0, 1]. If B = [1, 0, 0, 1, 0, 0, 1, 0] then X = 3. Since iteration 1, B = [1 0 1 1 0 0 1 0], iteration 2, B = [1 0 1 0 0 0 1 0], iteration 3, B = [1 0 1 0 1 0 1 0].

Input Format
1 1 1

Constraints
NA

Output Format
1

Sample Input 0
```
1 1 1
```
Sample Output 0
```
1
```

Priyanka Chopra in the city Georgopol

Priyanka Chopra is a commando in the city Georgopol, currently working on a war strategy. Her boss has given her set of N bombs B = [b1,b2,b3…bN] each with unique number. She has to set these bombs to blow up the enemies when they arrive to a building. Bombs will not blow if any three consecutive bombs are having numbers in either increasing order or decreasing order. So, Priyanka has to remove some of them from the N. Since the mission is to make maximum damage to the enemies, she needs to remove only few bombs out of B. Now given the bomb series B, she has to tell her boss what is the minimum number of bombs X that she should remove. If B = [5, 2, 3, 6, 1], then X=1. Here we have remove either 6 or 3. If B= [4, 2, 6, 3, 10, 1] then X = 0 since no need to remove any bomb.

Input Format
5 2 3 6 1

Constraints
NA

Output Format
1

Emma Watson and her cats

Emma Watson has N number of cats in her house. All the cats have eaten some number of fishes for their dinner F = [f1,f2,f3,….fN]. Since they are gangster cats, every day cats will discuss among themselves and select a number X. Now Emma has to make sure that X number of cats should have eaten same amount of fishes. If there are no such cats are there, then she can feed cats with some fishes and make X number of cats. Since Emma does not want to waste fishes because of the crooked rules framed by her gangster cats, you need to find what is the minimum number of fishes M she can feed to her cats to make X number of cats equal.
For example, if F = [3, 1, 9, 10] and X = 3 then M = 10. She can feed first cat with 7 fishes and third cat with one fish, then F becomes [10,1,10,10]. So M = 8. If F= [5, 3, 10, 5], X = 2 then M=0.

Input Format
4 3 1 9 10 3

Constraints
NA

Output Format
8

Sample Input 0
```
4
3 1 9 10
3
```

Sample Output 0
```
8
```

Explanation 0
1st line is the N - number of elements in second line Third line is the X

Aquaman and his fish squad

Aquaman recently got into fight with his brother for the underwater kingdom. Now to prepare for the war, Aquaman chooses N number of fishes. Each of these fishes have different ages F = [f1,f2,f3…fN]. Now he wants to create M set of teams to train them for war. Since each team should be united and not to have fights within the team itself, he set the following rule for team formation. As you are the strategist, he wants you to make sure that the age difference within the team should be minimal. Now, you can choose any number of fishes in individual teams. The team mates should be adjacent to other fishes from the orginal F. After a team is formed, you need to take the maximum age of a fish in team and take the differences between all the other fishes in the team with bigger fish. The objective is to have minimal sum of differences X between the bigger fish of a team and other fishes in the same team. For example, F = [2, 9, 5, 4, 8, 3, 6], M = 2 then X=19. Here two groups can be [2] with maximum fish 2 and [9, 5, 4, 8, 3, 6] with maximum fish 9. Sum of difference of first fish team = 2 – 2 = 0. Sum of difference of second fish team = (9-9) + (9-5) + (9-4) + (9-8) + (9-3) + (9-6) = 19. So X = 0+19 = 19. F = [12, 20, 30, 14, 25] and M = 3 then X=19.

Input Format
7 2 9 5 4 8 3 6 2
Constraints
NA
Output Format
19
Sample Input 0

```
7
2 9 5 4 8 3 6
2
```

Sample Output 0

```
19
```

Explanation 0
1st line is the N Second line is the array third line is the M

Superman and Batman at Child Deer Shop

Superman and Batman once went for having a fruit drink at Child Deer Shop. Until 10 PM, Superman and Batman had X and Y number of fruit drinks. The shop has very different way of serving the people after 10 PM. After 10 PM, for every call i they will get i number of drinks at a time. For example, during first call either Superman or Batman can have single shot of fruit drink. During second call either one of them can have 2 drinks and so on. Now both Superman and Batman has decided that they will leave the shop only after finishing equal number of fruit drinks. So now they need to figure out what is the minimum number of calls N to make the drinks equal. If X = 1, Y = 3 then N = 3. During first call we can add 1 drink to X then X=2. Add 2 drinks to Y then Y = 5. Add 3 drinks to X then X = 5. Now we made X and Y equal in N = 3 calls. If X = 30, Y = 20 then N = 4. During 4 calls add 1+2+3+4 to Y then Y = 30.

Input Format

1 3

Constraints

NA

Output Format

3

Sample Input 0

```
1 3
```

Sample Output 0

```
3
```

Hulk buys sweets at Haldirams

Hulk is a good young dude from Kasna village. He goes to Haldiram to buy N types of sweets for celebrating Diwali with his friends. Initially he bought sweets in kilos S = [s1, s2, s3…sN]. After paying bills he gets a call from his friends saying that he has to buy sweets in the following order. Every sweet Si has to be lesser or equal to next sweet Si+1. So he tells the Haldiram bhayya to make it in that way. Now bhayya can either add a kilo or remove a kilo of sweet from Si at a time. Now Hulk needs to tell Bhayya the minimum number of times T required to make the sweets in the specific order. For example S = [1, 2, 1, 4, 3] then T = 2. First we can add a kilo to 3rd sweet and subtract a kilo from 4th sweet to get [1, 2, 2, 3, 3]. If S = [1, 2, 2, 100] then T = 0.

Input Format
5 1 2 1 4 3

Constraints
NA

Output Format
2

Sample Input 0
```
5
1 2 1 4 3
```
Sample Output 0
```
2
```

Arnold buys teddy bears from Silvester

Arnold Schwarzenegger goes to doll shop to buy teddy bears for his wife. Silvester Stallone the shop keeper worked real hard and helped Arnold to choose N number of teddy bears each weighing W = [w1,w2,w3…wN]. Now Arnold decided that every doll should weigh at least greater than or equal to T. But Silvester does not like to help Arnold at all. So Silvester tells Arnold that every time he can take two smallest teddy and replace by a single teddy. That single teddy should weigh equal to LCM of the two smallest teddies. Arnold is wondering that what is the minimum number of iterations X required to make every teddy bear greater or equal to T. If it is impossible to get such teddy bear combination print -1. If N = 4, T = 3 , W=[1 4 5 5] then X = 1. Since LCM of 1 and 4 is 4 then (1,4) will be replaced by single teddy 4. Now W = [4,5,5]. If N = 5, T = 8 , W=[4,4,4,4,4] then X = -1. Because it is impossible to get such teddies.

Input Format
4 1 4 5 5 3

Constraints
NA

Output Format
1

Sample Input 0
```
4
1 4 5 5
3
```
Sample Output 0
```
1
```

Swami and his student gangs

Swami is a highly talented faculty :P who taught a fantastic course called Deep Learning to N number of 4th year students. In his class he had wide varieties of students each with different mentality towards life. Based on some analysis he found that each student has level of mentality in terms of either positivity or negativity in their minds M = [m1,m2,m3…mN]. Swami believes in a marvellous theory about student gangs. He believes that the energy a gang is the product of the students' mentalities in the gang. Now Swami ji is wondering that how many different possible student gangs X are there with negative mentalities. The students of a gang should be adjacent to each other from the M. If M = [-1, 2, -2] then X = 4. Because gangs with negative mentalities are [-1], [-2], [-1, 2] and [2, -2]. If M = [5, -4, -3, 2, -5], then X = 8.

Input Format
3 -1 2 -2

Constraints
NA

Output Format
4

Sample Input 0
3
-1 2 -2
Sample Output 0
4

Pawan Kalyan cuts bamboos in Kerala

Pawan Kalyan has a farm in Kerala. One day cut down all the bamboos in his farm. There are N number of bamboos each with different heights H = [h1,h2,h3…hN] in meters. He has a machine that can down a bamboo by M meters. Now Pawan wants to make all the bamboos to equal size. Now you have to tell Pawan that what is the minimum number of times X he needs to cut the bamboos to make them all equal. If you cannot make them equal, you need to print -1. For example if H = [12, 9, 15], M = 3 then X = 3. After cutting first bamboo H becomes [12, 9, 12] then after cutting 3rd bamboo two times then H becomes [9, 9, 9]. If H = [10, 9], M = 2 then X = -1.

Input Format
3 12 9 15 3

Constraints
NA

Output Format
3

Sample Input 0
3
12 9 15
3
Sample Output 0
3

Ed Sheeran at Radisson Blu in December

Ed Sheeran owns hotel Radisson Blu near Pari Chowk. The hotel has N rooms each is initially set with temperatures T = [t1,t2,t3…tN]. Some of the room temperatures may be in negative also due to random initialization of the temperature system. Since it is December and a heavy winter, Sheeran has to adjust all the room temperatures to maximum possible. However, he can adjust the temperature only in the following way. Any time he can chose a room at index i where the temperature or ith room and (i-1)th room can be multiplied by -1. i.e. positive temperatures will become negative and vice versa. Now after sometime, he can sum up the temperature of all rooms to calculate total temperature X. Sheeran is wondering how much maximum X he can achieve by iteratively adjusting the temperatures of N rooms. If T = [-10, 5, -4] then X = 19. Because initially he can choose first room (i=1) and do operation. Now T = [10, -5 , -4]. Now after he choose second room T becomes [10, 5, 4] now total is 19. If T = [10, -4, -8, -11, 3] then X=30. If he chooses rooms at indices i = 2,3,4 then T = [10,4,8,11,-3] now X = 30.

Input Format
3 -10 5 -4

Constraints
NA

Output Format
19

Sample Input 0
```
3
-10 5 -4
```
Sample Output 0
```
19
```

Amir Khan is the dangerous Warden of Bennett Hostel

Amir Khan is the warden of Men's hostel of Bennett University. There are N rooms with each room having one student. There are different students G = [g1,g2,g3…gN] who are vegetarians and non-vegetarians (1 denoting non-vegans, 0 denoting vegans). Amir Khan found that students use to form a gang with their neighbours. So, there can be different sizes of gangs with any number of students. Different gangs use to secretly order non-veg food from the Hotel Le Raja Dhaba and eat them at midnight. Amir Khan was wondering that what can be the maximum size of a gang X where the number of non-vegans is more than the vegans. For example, G = [0, 1, 1, 0, 0, 1] then X = 5 where such gang is [1, 1, 0, 0, 1]. If G = [1, 0, 0, 1, 0] then X = 1 because such gang is [1].

Input Format
6 0 1 1 0 0 1

Constraints
N can be upto 100000

Output Format
5

Sample Input 0
6
0 1 1 0 0 1
Sample Output 0
5

M.S.Dhoni and his pet dogs

M. S. Dhoni has N different dogs in dog houses D = [d1, d2, d3… dN] each of them is marked by a positive integer number to denote their type of breed. Every day Dhoni goes for jogging with gang of dogs whose dog houses are neighbours to each other. A dog gang is called psycho gang if at least two of the dogs in a gang are of same breed. Now Dhoni is wondering that what can be the size X of smallest psycho gang. If no such gang is there then print -1. If D = [1, 2, 3, 1, 5, 4, 5] then X = 3. Such smallest psycho gang is [5,4,5]. If D = [4, 7, 11, 3, 1, 2, 4] then X = 7. Psycho gang is [4, 7, 11, 3, 1, 2, 4].

Input Format
7 1 2 3 1 5 4 5

Constraints
N can be upto 100000

Output Format
3

Sample Input 0
7
1 2 3 1 5 4 5
Sample Output 0
3

A.R.Rahman plans his grand composition

A.R.Rahman owns a multi-story studio with N floors. Each floor has an instrument with different level of loudness L = [l1,l2,l3…lN]. Every time he selects set of instruments which are adjacent to each other in the floors. The instruments are chosen in the manner where the topmost and bottom most instruments have more loudness than the between floor instruments. With the chosen set of instruments, he composes the songs for the movies. One day a famous movie director requests Rahman to compose a song with largest number of instruments. Since you are the sound mixer for Rahman, you gotta help Rahman to choose the instrument set with largest number of instruments and report him the number of instruments X. If L = [4 2 6 5 3 1] then X = 3. Instruments set with the longest number of instruments is [4, 2, 3] or [4, 2, 6] or [4, 2, 5]. If L = [5 4 1 2 3] then X = 4. Instruments set with the longest number of instruments is [4, 1, 2, 3].

Input Format
6 4 2 6 5 3 1

Constraints
N can be upto 100000

Output Format
3

Sample Input 0
6
4 2 6 5 3 1
Sample Output 0
3

Govinda the dance master from Hariyana

Govinda is a dance master from Hariyana. He has a dance coaching school with N number of students D = [d1,d2,d3…dN] where each dancer d=1 if dancer is female and d=0 if the dancer is male. They are ordered on the basis of their joining date. Every day Govinda chooses set of dancers and forms a dance group. The dancers are adjacent to each other from the original D. A dance group is called a jumbo group is the difference between number of male dancers and female dancers are exactly equal to J. One day Govinda wants to choose set of dancers to form the biggest jumbo group for given J. Now you have to help Govinda in finding the size X of the such big jumbo group. If D = [0, 1, 1, 0, 1] and J = 2 then X = 4. Here such jumbo group is [1, 1, 0, 1]. If D = [1, 1, 0, 1, 1, 1, 0, 0, 1, 1, 1], J = 0 then X = 6 where jumbo group is [0, 1, 1, 1, 0, 0].

Input Format
5 0 1 1 0 1 2

Constraints
N can be upto 100000

Output Format
4

Sample Input 0
```
5
0 1 1 0 1
2
```
Sample Output 0
```
4
```

Rahul ji playing PUBG

Rahul Gandhi ji decided to organize a Pubg game festival at Congress Office one day. He planned to have teams with 3-member squad for the game. In his office, there are N party members each with different amount of levels in the pubg ranking L = [l1,l2,l3…lN]. Rahul ji found that a team can be led well by a single person whose rank is equal to the sum of the remaining two member's ranks. Now your task is to count how many such distinct teams X are possible given the L.
For example, if L = [1, 3, 4, 15, 19] then X = 2. Such teams are [1, 3, 4], [4, 15, 19]. If L = [7, 2, 5, 4, 3, 6, 1, 9, 10, 12] then X = 18.

Input Format
5 1 3 4 15 19

Constraints
NA

Output Format
2

Sample Input 0
```
5
1 3 4 15 19
```
Sample Output 0
```
2
```

Amit Shah targets 2024 elections

Amit Shah ji has N number of politicians each with political influence P = [p1,p2,p3…pN]. Shah ji plans a strategy for his party to win the 2024 PM election. He decides to split the politicians into two groups P1 and P2. He wants both the groups P1 and P2 to be almost equally powerful. As a political advisor to Amit ji, you need to tell him that what is the minimum possible absolute difference X between sum of P1 and P2. If P = [1, 6, 11, 5] then X = 1 as P1 = [1, 5, 6] and P2 = [11].

Input Format
4 1 6 11 5

Constraints
NA

Output Format
1

Sample Input 0
```
4
1 6 11 5
```
Sample Output 0
```
1
```

John Wick with his Bizon Gun

John Wick goes on a mission to kill his enemies. He goes to a secret house to buy some 9mm bullets for his PP-19 Bizon gun. The secret house has N number of bags each with different number of bullets B=[b1,b2,b3…BN]. Due to the constraints of the mission John Wick wants to buy all the bags and does not want to carry large number of bags. As per house's policy he can buy the bullets only in the following way. He can randomly choose any number two bags bi and bj whose sum of bullets is an even number. Then these two bags can be replaced by a single bag at ith position with the sum of bullets of two bags bi+bj. In this way he can iteratively do these operations and finally end up with new set of bags. As a boss of the weapon house, you need to tell John that what is the minimum possible number of bags X he can make out of B. For Examples if B = [88 98 1 7 3] then X = 2. Applying the rules B can be made to [88, 98, 1, 10] then [98, 98, 1] then [186, 1]. Here we cannot move further since 186 + 1 = 187. So X = 2. If B = [7 4 3 2 6] then X = 1 since [7 4 3 2 6] can be made to [10, 4, 2 ,6] then [14, 2, 6] then [14,8] then [22].

Input Format
5 88 98 1 7 3

Constraints
NA

Output Format
2

Sample Input 0
5
88 98 1 7 3
Sample Output 0
2

Bugs Bunny on a PUBG Mission

Bugs Bunny goes on a PUBG mission to destroy haunted houses in Military Base. There are N number of houses each with different temperature T=[t1,t2,t3,…tN]. Bunny can blow up any number of consequent houses with a single missile only if the sum of temperatures of houses is divisible by the missile code X. Now you gotta tell Bunny that what is the largest number of consequent houses Y can be blown with a single missile. If T = [2, 7, 6, 1, 4, 5], X = 3 then Y=4 as the houses can be [7, 6, 1, 4} with temperature sum=18 which is divisible by 3. If T = [-2, 2, -5, 12, -11, -1, 7}, X=3 then Y=5.

Input Format
6 2 7 6 1 4 5 3

Constraints
NA

Output Format
4

Sample Input 0
6
2 7 6 1 4 5
3
Sample Output 0
4

Mickey Mouse loves Hot Dogs

Mickey Mouse loves to eat hot dogs. After the work Mickey comes home and found that Minnie Mouse has cooked lot of hot dogs and arranged the dinner table with N number of plates each with different number of hot dogs H = [h1,h2,h3….hN]. Now Minnie gives a small mission to Mickey before having the dinner. Minnie tells Mickey the he can eat all the N plates only if all plates are having equal number of hot dogs. Now Mickey asks how? Minnie gives a solution that Mickey can choose any two plates i and j and replace the larger plate (i or j) with the absolute different between those plates |i-j|. In this way, Mickey can do the operation any number of times to finally arrive at N plates with equal number of hot dogs. Since Mickey loves to eat hot dog he was wondering what is the maximum number X of hot dogs he can have that night. If H = [9 12 3 6] then replacing 2nd plate 12 with |12-6| then H becomes [9 6 3 6] now replacing 4th plate with |6-3| H = [9 6 3 3]. Replacing 1st plate 9 with |9-6| then H = [3 6 3 3]. Replacing 2nd plate 6 with |6-3| then H becomes [3 3 3 3] so X = 12. If H = [4 8 6 10] then X = 8.

Input Format
4 9 12 3 6

Constraints
NA

Output Format
12

Sample Input 0
```
4
9 12 3 6
```
Sample Output 0
```
12
```

Popeye the part-time Scientist

Popeye the sailor man is a full-time wanderer and a part time scientist also. He is known for his clinical work in DNA analysis. He recently found that he can find the similarity between DNAs of any two people. Popeye found that two people's compatibility level will be high if both of their DNA sequences [a1,a2,a3…aN] and [b1,b2,b3…bN] contain some lengthy common subsequence. One day Homer Simpson and Bart Simpson goes to Popeye with DNA reports A = {1, 2, 8, 2, 1} and B= {8, 2, 1, 4, 7}. Now Popeye tells them that their compatibility level number X is 3 as the length of the longest sequence [8, 2, 1] which is common to both A and B is 3. If there is no such subsequence exist Popeye has to report X as 0. For example, A= {1, 2, 3, 2, 1} and B = {8, 7, 6, 4, 7} has no common subsequence in it.

Input Format
5 1 2 8 2 1 8 2 1 4 7

Constraints
NA

Output Format
3

Sample Input 0
```
5
1 2 8 2 1
8 2 1 4 7
```
Sample Output 0
```
3
```