Week 7

Problem 1

Problem Statement:

XYZ has invented a new drug to reduce the spread of Covid-19, each unit of that drug can stop covid positive patient from transmitting for one unit of time. Polycarp has tested positive for covid-19, and he has to reach his home, without infecting anyone along the way. Fortunately, there are some medical stations where predetermined amounts of the newly invented drug is available. Formally, there are N medical shops, where the ith shop has Ai quantity of the new drug available, and the ith shop is Bi meters away the home of Polycarp. Polycarp is initially L meters away from his home and has P units of drug with him, he also has a vehicle that can cover 1 meter in 1 unit of time. We want to know the minimum number of stops that Polycarp has to make in order to reach his home without spreading the infection to any one on his way.

Input:

The first line contains an integer n denoting the number of medical stores, the next line contains n space separated integers, where the ith integer denotes the units of drug available at ith hospital. The next line also contains n space separated integers, where the ith integer denotes the distance of the ith hospital from Polycarp's home. The last line contains two space separated integers L and P, L denotes the distance of Polycarp's home from Polycarp's current location, and P denotes the amount of the new drug that Polycarp has with him.

Output:

Print a single integer denoting the minimum number of stops Polycarp needs to make on his way back home, without potentially infecting any one on the way. If it's not possible to do so, print –1.

Constraints:

1 <= n <= 1,00,000

1 <= A[i] <= 1,000,000

1<=B[I}<= L <= 1,000,000

1<=L<=1,000,000

1<=P<=1,000,000

Sample Testcases:

Input	Output
4 4 2 5 10 4 5 11 15 25 10	2

Explanation:

Polycarp is 25 units away from his home, he has 10 units of drug. Along the way, there are 4 medical shops at distances 4, 5, 11, and 15 from the home(so these are initially at distances 21, 20, 14, and 10 from Polycarp). These shops can supply up to 4, 2, 5, and 10 units of drug, respectively. Polycarp's one possible strategy is Drive 10 units, stop to acquire 10 more units of drug, drive 4 more units, stop to acquire 5 more units of drug, then drive to home.