Data Structures Assignment-4

B) Jack and Railways

Jack arrives at the first stop of the railway line. The railway line has N stops and Jack wants to reach the last stop (N^{th} stop). It takes 1 minute to travel from one stop to its adjacent stop.

To make the travel cheaper, there are multiple travel passes available. Each travel pass has cost p and support distance r. A travel pass with support distance r can be used to travel at most r stops. So, if you enter at stop i and use travel pass with support distance r you can exit at any stop from i to $i+r$. To exit and reenter the stop i, it takes d_i minutes. There is no time spent on entering the first stop and exiting the last stop.

As Jack has t time available, he wants to choose the cheapest travel pass that would allow him to complete the journey within time t.

Input

First line contains two integers N and t, the number of stops and time that is available.
The second line contains $N-1$ integers (for $i = 1$ to $N-1$), p_i cost of travel pass with support distance i.
The third line contains $N-2$ integers (for $i = 2$ to $N-1$), d_i , number of minutes required to reenter at stop i.

Output

Output a single integer which is the cheapest cost that allows Jack to travel within time t.

Constraints

$1 \leq N \leq 50000$, number of stops
$N-1 \leq t \leq 10^9$
$1 \leq p[i] \leq 10^6$
$1 \leq d[i] \leq 10^5$

Sample Input 1

```
4 4
1 2 3
1 4
```

Sample Output 1

```
2
```

Sample Explanation 1

For r = 1, optimal path would be 1-¿2-¿3-¿4. so time taken is 8 minutes. But as it is greater than 4 minutes, you can't use r as 1.

For r = 2, optimal path would be 1-¿2-¿4. so time taken is 4. So you can use r = 2. Its price is 2.

For r = 3, optimal path would 1-¿4. so time taken is 3. So you can use r = 3. Its price is 3.

Hence, it is better to use r = 2, travel pass as it allows you to travel in time ¡= 4 minutes and is cheapest.

Limits

Time: 2 second

Memory: 256 MB