The Bus Driver Problem

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Time: 1 seconds

Problem Descriptions(1/2)

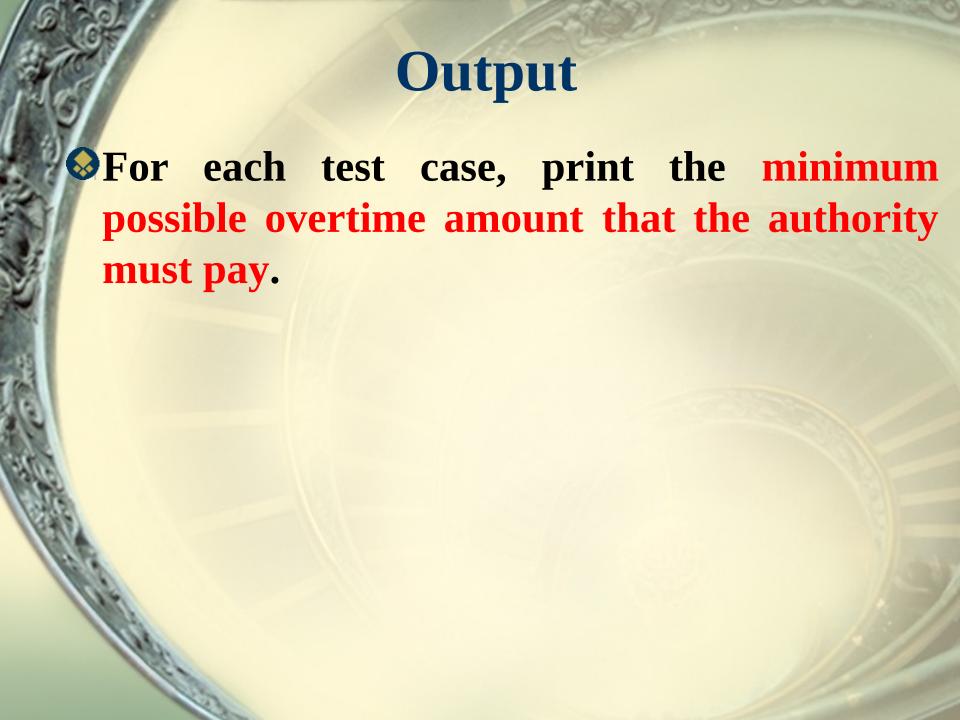
- In a city there are n bus drivers. Also there are n morning bus routes & n afternoon bus routes with various lengths.
- **⊗**Each driver is assigned one morning route & one evening route.
- SFor any driver, if his total route length for a day exceeds d, he has to be paid overtime for every hour after the first d hours at a flat r taka / hour.



Your task is to assign one morning route & one evening route to each bus driver so that the total overtime amount that the authority has to pay is minimized.

Input

- The first line of each test case has three integers n, d and r, as described above.
 - **⊗** n: n drivers and n routings.
 - **d**: total length cannot be exceeded.
 - ⊗r: extra paid r / hour while exceeding length d.
- Similarly the third line has n space separated integers denoting the evening route lengths.
- The lengths are positive integers less than or equal to 10000.
- **⚠** The end of input is denoted by a case with three 0 s.



Sample Input / Output

Input

2 20 5

10 15

10 15

2 20 5

10 10

10 10

0 0 0

Output 50

End of input

Brute Force

- 1. n afternoon routings
- 2. n evening routings
- 3. Select minimum amount of exceeding k hours from possibilities
- 4. O()

Greedy

- 1. Sorting n afternoon routings
- 2. Sorting n evening routings
- 3. Maximum afternoon + Minimum evening routing
- 4. O(nlogn+n)
- 5. O(nlogn)

```
#include <iostream>
       #include <algorithm>
 3
       int main()
 5
           int n, d, r;
           int morning route[101], evening route[101];
 9
           while ((std::cin>>n>>d>>r)&&(n || d || r))
10
11
                for (int i = 0; i < n; i++)
12
                    std::cin>>morning route[i];
               for (int j = 0; j < n; j++)
13
                    std::cin>>evening route[j];
14
15
               std::sort(morning route, morning route + n);
16
17
                std::sort(evening route, evening route + n);
18
                int extra pay = 0;
19
20
                for (int k = 0; k < n; k++)
21
22
                    if (morning route[k] + evening route[n-k-1] > d)
23
24
                        extra pay += ((morning route[k] + evening route[n-k-1] - d) * r);
25
26
                std::cout<<extra pay<<std::endl;
27
28
```