

## 1467 Installations

In the morning, service engineers in a telecom company receive a list of jobs which they must serve today. They install telephones, internet, ipTVs, etc and repair troubles with established facilities. A client requires a deadline when the requested job must be completed. But the engineers may not complete some jobs within their deadlines because of job overload. For each job, we consider, as a penalty of the engineer, the difference between the deadline and the completion time. It measures how long the job proceeds after its deadline. The problem is to find a schedule minimizing the sum of the penalties of the jobs with the two largest penalties.

A service engineer gets a list of jobs  $J_i$  with a serving time  $s_i$  and a deadline  $d_i$ . A job  $J_i$  needs time  $s_i$ , and if it is completed at time  $C_i$ , then the penalty of  $J_i$  is defined to be  $\max\{0, C_i - d_i\}$ . For convenience, we assume that the time  $t$  when a job can be served is  $0 \leq t < \infty$  and  $s_i$  and  $d_i$  are given positive integers such that  $0 < s_i \leq d_i$ . The goal is to find a schedule of jobs minimizing the sum of the penalties of the jobs with the two largest penalties.

For example, there are six jobs  $J_i$  with the pair  $(s_i, d_i)$  of the serving time  $s_i$  and the deadline  $d_i$ ,  $i = 1, \dots, 6$ , where  $(s_1, d_1) = (1, 7)$ ,  $(s_2, d_2) = (4, 7)$ ,  $(s_3, d_3) = (2, 4)$ ,  $(s_4, d_4) = (2, 15)$ ,  $(s_5, d_5) = (3, 5)$ ,  $(s_6, d_6) = (3, 8)$ . Then Figure 1 represents a schedule which minimizes the sum of the penalties of the jobs with the two largest penalties. The sum of the two largest penalties of an optimal schedule is that of the penalties of  $J_2$  and  $J_6$ , namely 6 and 1, respectively, which is equal to 7 in this example.

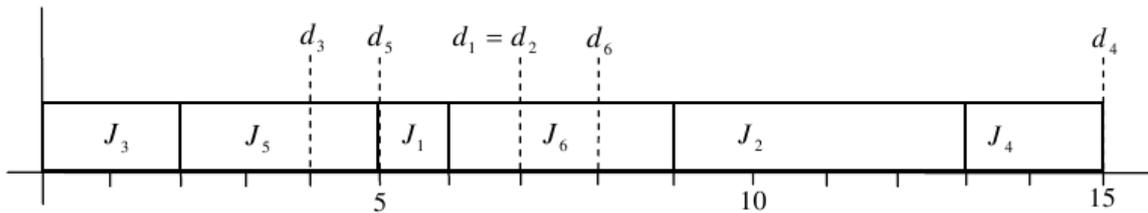


Figure 1. The optimal schedule of the example

### Input

Your program is to read from standard input. The input consists of  $T$  test cases. The number of test cases  $T$  is given on the first line of the input. The first line of each test case contains an integer  $n$  ( $1 \leq n \leq 500$ ), the number of the given jobs. In the next  $n$  lines of each test case, the  $i$ -th line contains two integer numbers  $s_i$  and  $d_i$ , representing the serving time and the deadline of the job  $J_i$ , respectively, where  $1 \leq s_i \leq d_i \leq 10,000$ .

### Output

Your program is to write to standard output. Print exactly one line for each test case. The line contains the sum of the penalties of the jobs with the two largest penalties.

The following shows sample input and output for three test cases.

### Sample Input

```
3
6
1 7
```

4 7  
2 4  
2 15  
3 5  
3 8  
7  
2 17  
2 11  
3 4  
3 20  
1 20  
4 7  
5 14  
10  
2 5  
2 9  
5 10  
3 11  
3 4  
4 21  
1 7  
2 9  
2 11  
2 23

### Sample Output

7  
0  
14