NOI 2007 TASKS OVERVIEW

	Executable file	*Input file*	*Output file*
Task 1: GIFT	GIFT.EXE	GIFT.IN	GIFT.OUT
Task 2: RECT	RECT.EXE	RECT.IN	RECT.OUT
Task 3: CIPHER	CIPHER.EXE	CIPHER.IN	CIPHER.OUT
Task 4: HOLE	HOLE.EXE	HOLE.IN	HOLE.OUT
Task 5: JAWBREAK	JAWBREAK.EXE	JAWBREAK.IN	JAWBREAK.OUT
Task 6: STREET	STREET.EXE	STREET.IN	STREET.OUT

Notes:

1. **Each task will be tested on 5 data sets.**
2. **The maximum execution time for every task is 10 seconds.**
3. **Each data set is worth 20 points.**
4. **For each question, the 5 data sets vary in size, starting from small, and ending with sizes around the limits given in each question.**
5. **Either zero mark or full mark (20 points) is awarded to your answer to each data set. There is no partial credit per data set.**
6. **The task statements are contained on 11 pages following this overview page.**
7. **In the event of tie breaking, a bigger-numbered task is favoured over a smaller-numbered one.**

HAPPY PROGRAMMING!

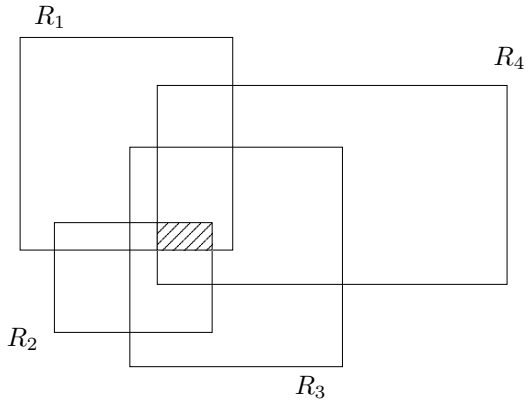
TASK 2: RECT

Given a set of rectangles $\{R_1, R_2, \cdots, R_n\}$, compute the area of their common intersection. i.e.,

$$\text{Area } (R_1 \cap R_2 \cap \cdots \cap R_n)$$

The edges of the rectangles $R_1, R_2, \cdots, R_n$, are either vertical or horizontal lines.

For example, the intersection of 4 rectangles, R_1, R_2, R_3, and R_4, in the following figure is the shaded rectangle.



Input File: `RECT.IN`

The first line specifies the number of rectangles n, where $1 < n < 1{,}000$. Since the sides of the rectangles are parallel to the x and y axes, each rectangle is bounded by the lines $x = x_1$, $x = x_2$, $y = y_1$ and $y = y_2$ and each subsequent line of the input file thus specifies one rectangle in the following format:

```
x1 x2 y1 y2
```

such that $0 \leq x_1 < x_2 \leq 10{,}000$ and $0 \leq y_1 < y_2 \leq 10{,}000$, and x_1, x_2, y_1 and y_2 are integers.

Example 1

```
2
0 2 0 2
1 3 1 3
```

Example 2

```
3
1 4 1 8
0 2 0 5
10 15 22 35
```

Output File: RECT.OUT

The output file contains the area of the intersection of all the rectangles.

Example 1

```
1
```

Example 2

```
0
```