

CMSC 420: Data Structures

Spring 2002

<http://www.cs.umd.edu/class/spring2002/cmcs420/>

HOMEWORK 2: Due April 2, 2002

Suppose you have a text file called `RectIn` where each line in the text file contains information about a rectangle. A line in the text file has the format

```
RectangleID LLx Lly URx URy
```

This information says that there is a rectangle named `RectangleID` (string type) whose lower left corner is (LLx, Lly) and whose upper right corner is (URx, URy) . `LLx`, `Lly`, `URx`, `URy` are all integers.

You are required to write an algorithm called *find-intersections*. What the algorithm does is to take a file `RectIn` of the above kind as input and it returns as output, a file `RectOut` having the same structure. The contents of the output file are determined as follows. If there are two distinct rectangles r_1, r_2 in `RectIn` that intersect, then the output must contain a rectangle describing the intersection of r_1 and r_2 (note that the intersection of two rectangles is also a rectangle). The rectangle obtained in this way should have the name $r_1 : r_2$.

Your output file must not contain any redundant or unnecessary information (i.e. all rectangles in the output must be the intersection of two rectangles in the input and the intersection must not be empty).