North South University

Department of Electrical and Computer Engineering

CSE 373: Design and Analysis of Algorithms

Fall 2019

Assignment 01

Problem description:

In this assignment, you are given several segments of line on the X axis represented as $[L_i, R_i]$, where L_i is the left end of the i[th] segment and R_i is the right end. Write a C program that selects the minimal number of segments, such that they completely cover the segment $[0, M]$.

Input specification:

The input starts with the integer M ($1 \leq M \leq 5000$), followed by the pairs L_i, R_i ($|L_i|, |R_i| \leq 50000, i \leq 100000$), each on a separate line. Input is terminated by the pair '0, 0'.

Output specification:

In the first line of output, your program should print the minimal number of segments which can cover the segment $[0, M]$. In the following lines, the coordinates of segments, sorted by their left end (L_i), should be printed in the same format as in the input. Pair '0 0' should not be printed. If $[0, M]$ cannot be covered by given line segments, your program should print 0. Your program must not print any extra text whatsoever.

Sample input:	Sample output:
10 -2 5 -1 6 -1 3 0 4 1 5 2 6 3 7 7 8 8 10 8 9 0 0	4 -1 6 3 7 7 8 8 10

Submission instructions:

Please read carefully the following instructions on how to submit your assignment. If you make any mistake at all in the submission process, your assignment will not be marked.

Suppose your NSU student ID is 1234567890. After you complete the assignment, rename your source file (let's say main.c for example) as "1234567890.c" and upload this file on Google Classroom in assignment section. Do not send assignments as message attachment. Do not upload any additional file.

Any form of cheating will be penalized heavily. Duplicate codes (no matter if full or partial) will not be marked regardless of which one the original is.