Czech ACM Student Chapter
Charles University in Prague
Slovak University of Technology
University of Žilina
Matej Bel University in Banská Bystrica

Czech Technical University in Prague
Technical University of Ostrava
Pavol Jozef Šafárik University in Košice
Masaryk University
University of West Bohemia

CTU Open Contest 2011

Nine Invaders from Outer Space

It is 2091. After many years, the SETI@home project finally brings some results. Unfortunately, these results are not quite exactly what the authors expected. The creatures from space turned out to be hostile aliens. The Earth faces a danger of their invasion. Would you help to save the human race? We need a couple of programs to make the fight easier.

Your programs can be written in C, C++, Pascal, or Java programming languages. The choice is yours but you will be fully responsible for the correctness and efficiency of your solutions. We need the correct answer produced in some appropriate time. Nothing else matters. You may choose any algorithm and any programming style.

All programs will read one single text file from the standard input. The results will be written to the standard output. Input and output formats are described in problem statements and must be strictly followed. Each text line (including the last one) should be always terminated by a newline character ("`\n`"), which is not considered to be a part of that line.

You are not allowed to use any other files, communicate over network, or create processes.

A small advice: If not specified otherwise, all *input* numbers and output *results* will fit into a signed 32-bit integer type. Note however, that some intermediate results may exceed 2^{31}, even if it sometimes may not be obvious.

Good luck in the Czech Technical University Open Contest 2011!

And remember, the future is in your hands!

This problem set consists of 11 sheets of paper (including this one) and contains nine problems. Please make sure that you have the complete set.