



Computer Science Olympiad

Penn State Hazleton

Second Round, Spring 2007

Deadline: Mar 30, 2007

ABCD-Sudoku

ABCD-Sudoku puzzle is a square with **4** rows \times **4** columns. There are four **2** \times **2** subsquares in the square. In figure 1 they are colored in different colors. Some of the cells are empty and others are filled in with letters from the set **S** = {'A', 'B', 'C', 'D'}, according to the following rules:

In each row, column, and subsquare there are two empty cells and two cells filled in with different letters from the set S.

A	*	*	D
C	*	A	*
*	A	*	C
*	C	B	*

Fig.1. An *ABCD-Sudoku* puzzle. The empty cells are marked by an asterisk.

An *ABCD-Sudoku* puzzle is **solved** if all rows, columns, and subsquares are filled in and contain all letters from the set S.

A solution of the *ABCD-Sudoku* from figure 1 is the following:

```

A B C D
C D A B
D A B C
B C D A

```

Write a program that reads an *ABCD-Sudoku* puzzle and prints a solution.

Input data:

Four strings each of the form: **xxxx**, where **x** is a *letter* from set **S** or an *asterisk*.

Example: The input data for the *ABCD-Sudoku* from fig.1 is the following:

```

A**D
C*A*
*A*C
*CB*

```

Output:

An *ABCD-Sudoku* puzzle solution.