

# 31

## Pharaoh Puzzle

25 points

### Introduction

As most of you know, the Egyptian pyramids are one of the defining architectural achievements of the ancient world. Ancient Egyptians believed that when the king died, part of his spirit (known as “ka”) remained with his body. To properly care for his spirit, the corpse was mummified, and everything the king would need in the afterlife was buried with him, including gold vessels, food, furniture and other offerings.

Last month a new pyramid was discovered, and we are part of the team involved in the first exploration of the building. We found a very strange puzzle, and after solving the missing symbols, we had access to the first room. Every room is protected with one of these puzzles and each puzzle is more difficult to solve than the previous one.

Your main objective is to fill in the missing symbols!

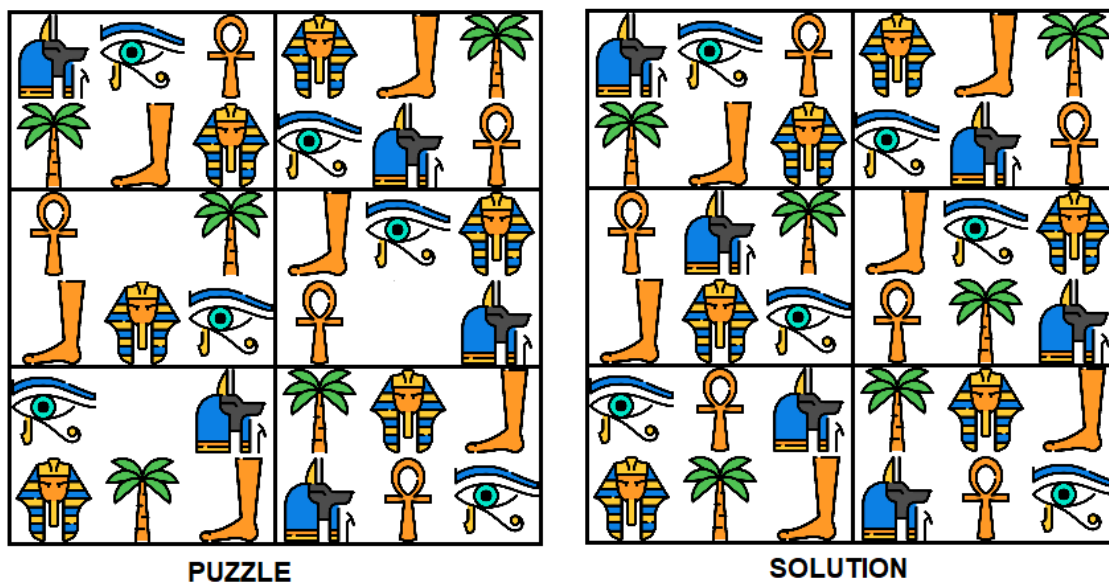


Fig 1. The first puzzle we found and its valid solution.

From solving the first puzzle we discovered that:

- A symbol can appear only once in each row.

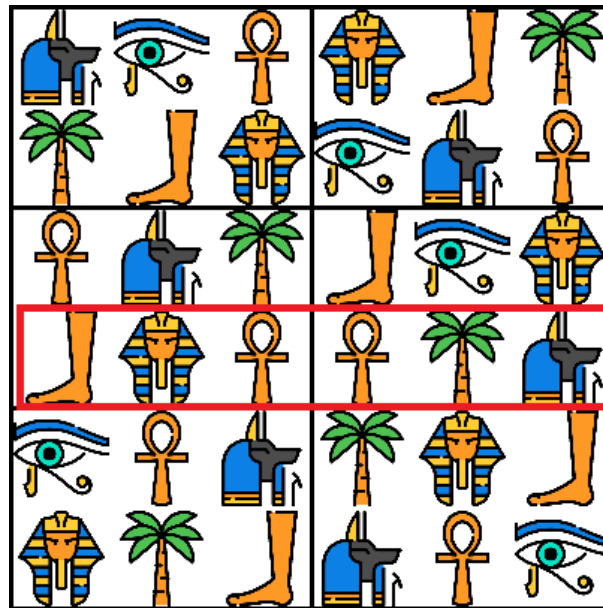


Fig 2. Incorrect solution: the fourth row contains identical symbols.

- A symbol can appear only once in each column.

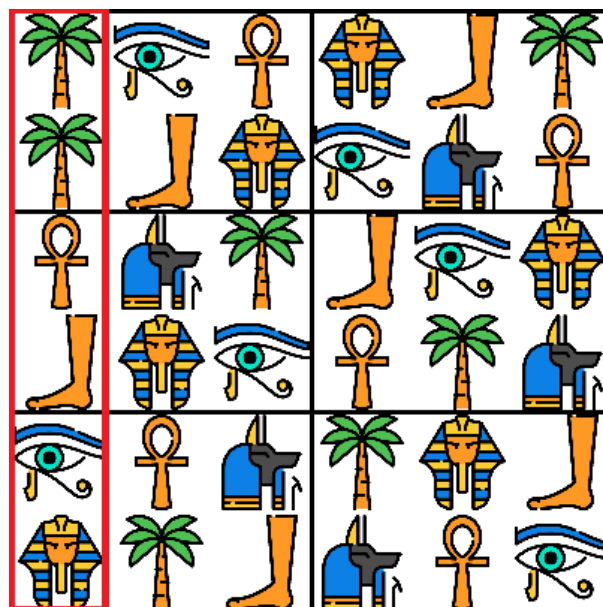


Fig 3. Incorrect solution: the first column contains two identical symbols.

- A symbol can appear only once in each diagonal.

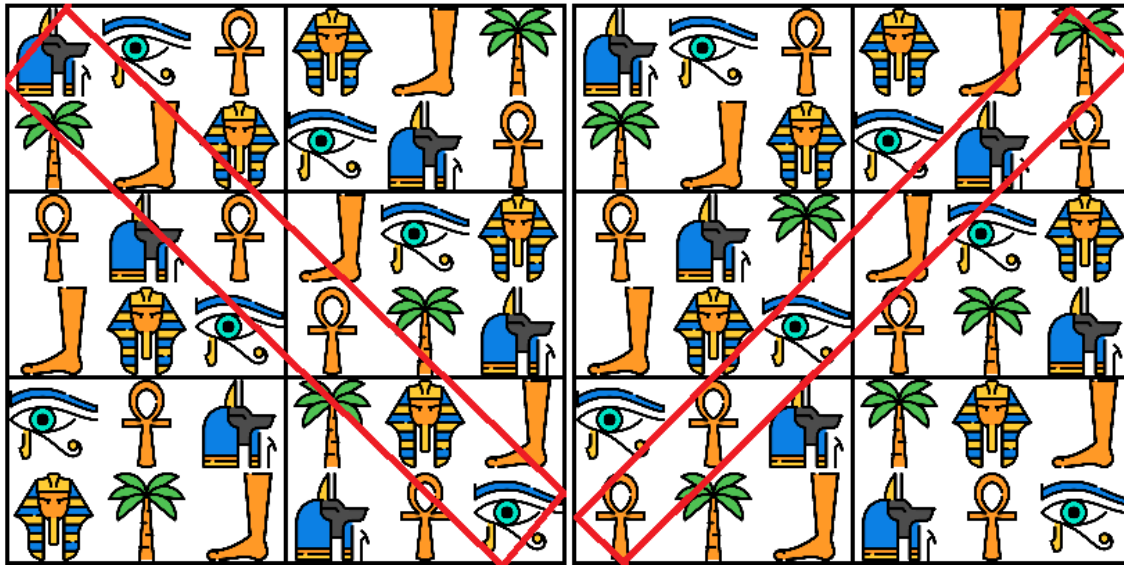


Fig 4. Incorrect solution: both diagonals contain two identical symbols.

- A symbol can appear only once in each 2x3 square.

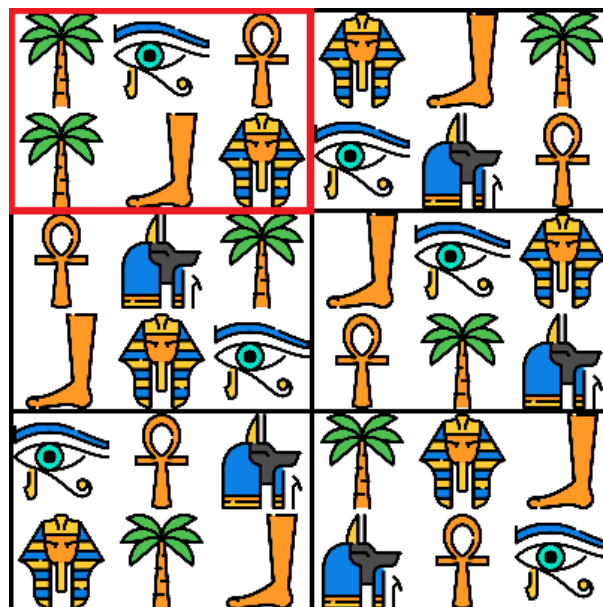


Fig 5. Incorrect solution: the top left square contains two identical symbols.

Please study the examples to avoid confusion. Each input has only one valid solution!

## Input

The input of the program is one line with 36 integers, between 1-6 for the symbols, 0 for an empty space, and separated with white spaces. Each set of 6 values represents a table row.

Here is a table for converting the symbols to numbers:



## Output

The output is 36 integer between 1-6, separated by white spaces.

### Example 1

#### Input

0 3 0 2 4 5 0 4 2 1 0 6 2 5 3 4 6 1 4 1 6 5 2 3 3 2 5 6 1 4 1 0 4 3 5 2

#### Output

6 3 1 2 4 5 5 4 2 1 3 6 2 5 3 4 6 1 4 1 6 5 2 3 3 2 5 6 1 4 1 6 4 3 5 2

### Example 2

#### Input

0 0 1 3 5 2 0 5 0 1 0 0 0 0 0 5 6 1 0 1 0 2 3 4 4 3 2 0 1 5 0 0 5 4 0 3

#### Output

6 4 1 3 5 2 2 5 3 1 4 6 3 2 4 5 6 1 5 1 6 2 3 4 4 3 2 6 1 5 1 6 5 4 2 3