

## Povzetek

Sudoku je preprosta igra, ki nam pri reševanju ponuja mnogo intelektualnih izzivov. Je matematično zanimiva na različne načine, saj v ozadju skriva zanimivo logiko reševanja, hkrati pa še odpira veliko področij za raziskovanje. Eno poglavitnih vprašanj na katero bomo poskušali odgovoriti je: Koliko je vseh različnih Sudokujev? Tako bo naš osnovni namen razrešiti problem ekvivalentnosti. Diplomaska naloga je sestavljena iz uvoda, kjer bomo predstavili pojme iz teorije grup in opisali igro. V nadaljevanju pa bomo s pomočjo simetrij natančneje definirali, kdaj sta dva mini-Sudokuja ekvivalentna in pokazali, da obstajata le dva v bistvu različna tipa mini-Sudokujev.

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**Ključne besede:** grupa, Sudoku, ekvivalentnost, simetrija, permutacija.

## Abstract

Sudoku is a simple game, which offers many intellectual challenges regarding finding of its solutions. It is mathematically interesting in different ways, because its background reveals interesting logic of solving problems, but at the same time it opens a lot of fields for examination. One of the crucial questions that we will try to answer is worded as follows: What is the number of all different Sudokus? Therefore, our basic intention will be to resolve a problem of equivalency. Our work begins with the introduction, where we will present the basic concepts of the theory of groups and we will describe the game. Then we will use symmetries to define exactly when two mini-Sudokus are equivalent, and to show that there exist only two essentially different types of mini-Sudokus.

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**Keywords:** group, Sudoku, equivalency, symmetry, permutation.

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