

12 Project – submit your solution to petr.kovar@vsb.cz

If you speak Czech, please submit the project to odevzdávárna gvyem4w.

Combinatorics

- 12.1. In a board game similar to Monopoly we roll a dice and based on the number of points we move our peg along the boars with 42 fields in a row. At the beginning of the game the peg is on the start field (number zero). What is the probability the peg will move to field i , where $i \in [1, 42]$?
(5 b, exceptionally up to 10 b)

Graph Theory

- 12.2. We have a deck of 52 cards (2–10, J, Q, K, A in four different suits) and we distribute them randomly into thirteen piles with four cards in each pile. Show that it is always possible to pick one card from each pile so that among the thirteen chosen cards there is one card for each value (2–10, J, Q, K, A).
How will the solution change if we distribute the 52 cards into twelve piles of four or five cards each and we want to choose one card from each of the twelve piles to obtain twelve distinct values?
Explain carefully! (5 b, exceptionally up to 10 b)

Guidelines

Write the project using a computer, include the title with your name, student ID, number of the project, year and a grading table (see the sample project). The project will contain a detailed description of your solution for each problem. If you skip a problem, mark it clearly in the text by saying „*I did not solve the problem number X*“.

Submit your project to petr.kovar@vsb.cz as an uncompressed PDF file, use your student ID in the name of your submitted file.

You will be awarded 0 upto 2 or 0 upto 3 points for each of the problems.

Submit your project no later than on **Monday 7.12.2015 at 23:59**.