

Komponenta výukového serveru TI - P- -úplné problémy 2

Component of Learning Server for Theoretical Computer
Science - NP-complete problems 2

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Diplomová práce

Vedoucí práce: Borivoj Gulas

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Kapitola 1

OFDM - Orthogonal Frequency Division Multiplexing

1.1 Introduction

In Kapitola 1.1, we see how to turn Sections into Chapters. And in kapitole 1.1, it is done manually.

$$\Leftarrow \pm$$

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do. [1]. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do. [2].

$$\sum_{i=1}^n i = 1 + 2 + 3 + \dots + n$$

Code snippet in C programming language:

A code editor window with a light gray background. It contains a C program snippet with line numbers 1 through 6 on the left. The code is: 1 #include <stdio.h>, 2, 3 int main() {, 4 printf("hello, world!\n");, 5 return 0;, 6 }. A small blue tab with the letter 'c' is visible in the top right corner of the editor.

```
1 #include <stdio.h>
2
3 int main() {
4     printf("hello, world!\n");
5     return 0;
6 }
```

Obrázek 1: Computer program in C language

More simple language, for example SQL:

sql

```

1 SELECT
2   c.customer_id,
3   c.fname,
4   c.lname,
5   c.email
6 FROM customer c
7 WHERE EXISTS (
8   SELECT *
9   FROM purchase p
10  WHERE p.customer_id = c.customer_id
11 )

```

Obrázek 2: lksdfjdl

1.2 Subheading Level 2

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$$\begin{bmatrix} 1 & * & * \\ * & 1 & * \\ * & * & 1 \end{bmatrix}$$

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1.3 Prokázání netranzitivity

První úkolem je ukázat, že vztahy mezi kostkami nejsou tranzitivní, to znamená, že vztahy mezi kostkami jsou tzv. cyklické¹. Tvrdíme totiž, že platí $B > A$, $C > B$ a současně $A > C$. To znamená, že žádná kostka není „nejlepší“ ve všech případech.

Pro každou dvojici kostek vypočítáme pravděpodobnost vítězství jedné kostky nad druhou, konkrétně $P(B > A)$, $P(C > B)$ a $P(A > C)$, a ověříme, že všechny tyto pravděpodobnosti jsou větší než $\frac{1}{2}$.

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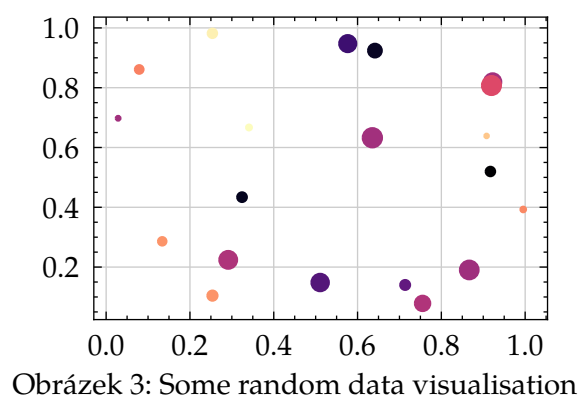
¹Wikipedia, *Intransitivity*: <https://en.wikipedia.org/wiki/Intransitivity>

1.4 Subheading Level 2

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1.4.1 Subheading Level 3

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Obrázek 3: Some random data visualisation

Kapitola 2

Heading Level

QQ *hello* ja fi diofjosdfodsjsdlsdlsdkjflskdjklkffffffffffffffffffffffffffff kldkjksdfjlsdfljjjj.j..jll jsem k a v o.

$$f(x) = y$$

$$\begin{pmatrix} 1 & 2 & \dots & 10 \\ 2 & 2 & \dots & 10 \\ \vdots & \vdots & \ddots & \vdots \\ 10 & 10 & \dots & 10 \end{pmatrix}$$

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2.1 Heading Level 2

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$$\begin{aligned} \Omega = \{ & (2, 1), (2, 1), (5, 1), (5, 1), \\ & (2, 4), (2, 4), (5, 4), (5, 4), \\ & (2, 4), (2, 4), (5, 4), (5, 4), \\ & (2, 4), (2, 4), (5, 4), (5, 4) \} \end{aligned}$$

Velikost pravděpodobnostního prostoru je $|\Omega| = 16$. Z rozepsané Ω vidíme, že počet případů, kdy kostka B vyhraje nad A je vyšší (10) než počet, kdy prohraje (6). Pravděpodobnost vypočteme jako:

$$P(B > A) = \frac{2 + 4 \cdot 2}{|\Omega|} = \frac{10}{16} = \underline{\underline{0.625}}$$

Kapitola 3

Heading Level 1

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3.1 Subheading Level 2

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Kapitola 4

Heading Level 1

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4.1 Subheading Level 2

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FANCY-ALGORITHM

```
1 do something
2 do something else
3 while still something to do do
4 | do even more
5 | if not done yet then
6 | | wait a bit
7 | | resume working
8 | else
9 | | go home
10 | end
11 end
```

Algorithm 1: My cool algorithm

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4.2 Subheading Level 2

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4.3 Subheading Level 2

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4.4 Subheading Level 2

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Kapitola 5

Heading Level 1

5.1 Heading Level 2

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5.2 Heading Level 2

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necessitatibus saepe eveniet, ut et voluptates repudiandae sint et molestiae non recusandae. Itaque earum rerum defuturum, quas natura non depravata desiderat. Et quem ad me accedis, saluto: 'chaere,' inquam, 'Tite!' lictores, turma omnis chorusque: 'chaere, Tite!' hinc hostis mi Albucius, hinc inimicus. Sed iure Mucius. Ego autem mirari satis non queo unde hoc sit tam insolens domesticarum rerum fastidium. Non est omnino hic docendi locus; sed ita prorsus existimo, neque eum Torquatum, qui hoc primus cognomen invenerit, aut torquem illum hosti detraxisse, ut aliquam ex eo est consecutus? – Laudem et caritatem, quae sunt vitae.

Kapitola 6

Heading Level 1

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6.1 Heading Level 2

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6.1.1 Heading Level 2

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6.2 Heading Level 3

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Term: hello [1, p. 358] Secon term: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequi doleamus animo, cum corpore dolemus, fieri. Halting: it is something [4, p. 23]

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