An Enticing Environment for Programming

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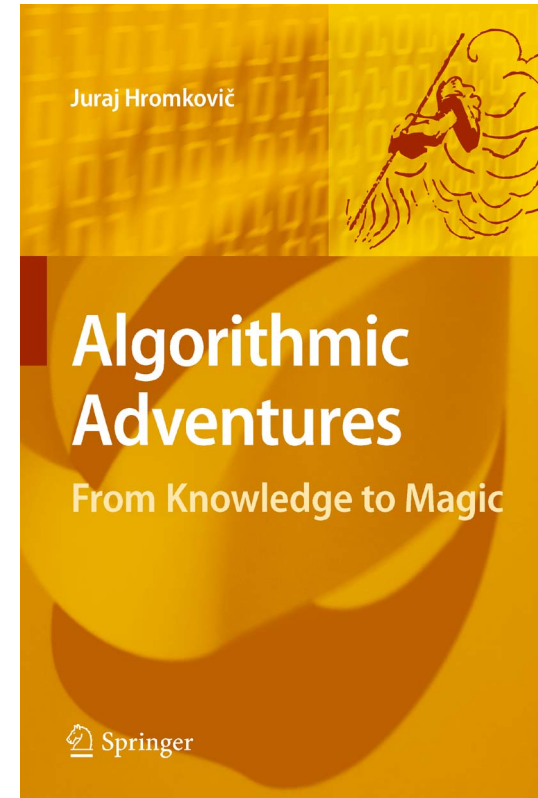
`www.win.tue.nl/~wstomv`

Algorithmic Adventures

- Honors Class

- motivated non-CS students

- wonderful book:
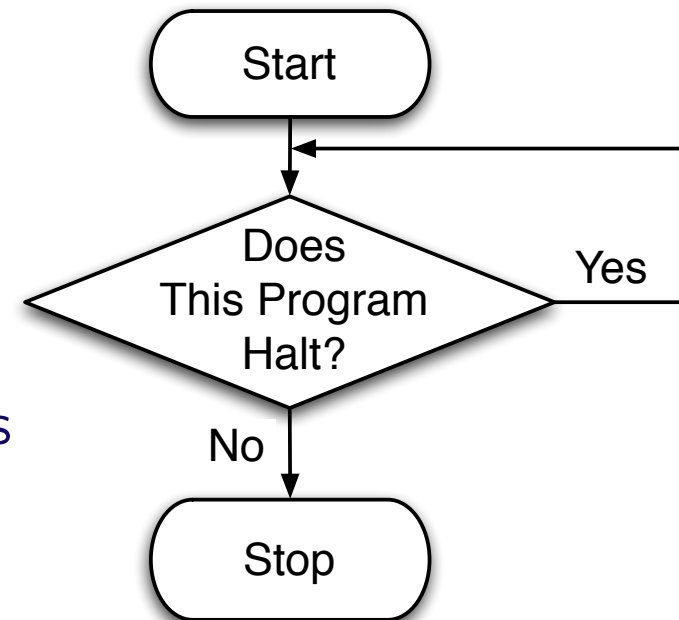
Algorithmic Adventures

by Juraj Hromkovič

Springer Verlag, 2009

`www.springerlink.com`

Topics

- History of Computer Science, Algorithmics

- Infinity, Limits of Computability, Complexity Theory

- Approximation, Randomness

- Cryptography

- DNA Computing, Quantum Computers

- How to Foil an Adversary

Programming Challenge

Write a self-reproducing program

- Instructive

  (data encoding, simple algorithms, program generation)

- Needs programming environment

  (otherwise you easily fool yourself into believing you solved it)

Tom's JavaScript Machine

Input:

abcdefgh

Program: (Run)

writeln(input.length);

Output:

8

GUI of *Tom's JavaScript Machine*: 3 text areas + *Run* button

Preparing Study Material for Tom's JavaScript Machine

_parseURI() opens web page with machine and initializes input, program, and output areas + parameters with values taken from URI:

```
.../machine.html?_program=...;_input=...
```

_machine_link() generates embedded hyperlink with given values for various machine parameters

_output_of() returns (as string) output of program given as string, (optional: input and separator)

_inject() injects given text with given background color: yellow for input, green for program, and blue for output

 Enticing Programming Environment

Low-threshold Facility for Introduction to Programming

- Tom's JavaScript Machine :

$$\texttt{www.win.tue.nl/\~{}wstomv/edu/javascript}$$

- Zero install : runs in any (modern) browser

- Easy to make teaching material with embedded programs with accompanying input/output

- Adaptable : turtle graphics, event-driven GUI, web apps (DOM)

- Includes an instructive challenge with 40^+ hints

Links

- Honors Class Informatics:

  `www.win.tue.nl/~wstomv/edu/hci`

- Tom's JavaScript Machine:

  `www.win.tue.nl/~wstomv/edu/javascript`

- Downloadable version of article:

  `www.mii.lt/olympiads_in_informatics/htm/INFOL063.htm`