

Algorithmic Problem Solving

Note Title

02/10/2011

- develop problem-solving skills
- focus on algorithms
- "playful" content
- introduce concepts central to computing science

The Bridge Problem

4 people want to cross a bridge.

Person 1 takes 1 minute to cross the bridge.

Person 2 takes 2 minutes to cross the bridge.

Person 3 takes 5 minutes to cross the bridge.

Person 4 takes 10 minutes to cross the bridge.

The bridge is narrow and only 2 people can cross together.

It is dark and they have only one torch. When someone is on the bridge they must have the torch with them.

When two people cross they cross at the speed of the slowest.

Show how to get everyone across in 17 minutes

Method

- Verification is easy.
- Construction is difficult.
- Focus on *method*.

Information:

<http://www.cs.nott.ac.uk/~rcb/G51ALG>
(Watch News for changes.)

Textbook:

Algorithmic Problem Solving
by Roland Backhouse

Lectures

- skeletons available from website
- come to lectures with copies of skeletons (and writing instrument !!)
- sometimes summaries will be added to website
- copies of annotated skeletons will *not* be made available.

Coursework

	Topic	Deadline	Feedback
1	Invariants	12.10	22.10
2	Graph Search	26.10	5.11
3	Logic Puzzles	9.11	19.11
4	Games	23.11	3.12
5	Induction	7.12	11.12

Although coursework is not assessed, it will be marked in order to provide feedback. A substantial proportion of the examination will be based on the coursework.

Assessment

- Unseen examination, 90 min. (100%)
3 questions from 5.
(Was 120 min., 4 from 6)

Classes/Tutorials

- Every two weeks. (Alternates with G51MCS)
- Start Wednesday, 3 October!
(Flexible arrangement with MCS, weeks 2+3.)
- Further details will be announced on the webpage.

Warnings

- The module is about solving problems. Active participation is required.
- Come to lectures prepared to take notes.
- Occasionally a register of attendance will be taken.

Knockout Tournament

In a knockout tournament there are 1234 players.
How many games are played?