Past, Present and Future of ICKEPS

Derek Long
University of Strathclyde, Glasgow, UK

Competition

• Benefits
  – Drives the state-of-the-art
  – Framework for comparison
  – Generates test-cases/benchmarks

• Problems
  – Sets an agenda
  – Tends to be an internal focus

Mitigating the Problems

• Rotating chairs
• Try not to let the competitor base stagnate
• Moving targets
• Encourage external participation in setting benchmarks

ICKEPS

• Problems:
  – Critical mass of researchers to make competition work
  – Evaluation framework
  – Standard for benchmarks
KE for PS

• Planning KR vs Programming
  – Rival paradigms/languages/philosophies
    • Action-centred or Timeline-based ~ Object-oriented or Functional
    • PDDL or ANML or NDDL ~ Java or C++ or OCAML
    • Control-knowledge or not ~ Procedural or declarative

• Successful programming competitions – what can we learn?

Observations

• Programming problems specified in natural language and elements of discrete mathematics....

Example Problem

British Informatics Olympiad Final
28 - 30 March, 2008
Sponsored by Lionhead Studios

Noitargetni

Noitargetni, a rather backwards type of integration, consists of taking the smallest value in a sequence and multiplying it by the length of the sequence. For example, applying noitargetni to the sequence 5 8 7 2 3 4 gives 12 (6 2). When applying noitargetni to a contiguous subsequence (i.e. a block of adjacent numbers) we use the length of the subsequence, so 5 8 7 would give 15 and 8 7 would give 14.

For any sequence we can calculate the largest value obtainable by noitargetni applied to that sequence, or one of its contiguous subsequences.

Write a program that inputs a sequence of positive integers (all between 1 and 212 inclusive) and outputs a single integer, the largest value obtainable by noitargetni. Each of the integers in the input will appear on a separate line and there will be no more than 220 lines. The input sequence will be terminated by a line containing the single number -1.

Sample Input
5
8
7
2
3
4
-1

Sample Output
15

Observations

• Programming problems specified in natural language and elements of discrete mathematics....
• ….but, evaluation uses very precise check of output against a known correct answer
• Programmers are not (usually) language designers
• Languages and support tools are only evaluated by second-order effects
  – Contribution to making programmers faster, more efficient and less error-prone
ICKEPS Future

• Reconsider the evaluation framework: specify what will be a valid plan
• Apply time constraints to the modelling process
  – Rely on second-order effects to demonstrate benefits of using a language/support tool
• Encourage broader participation (outside community) and offer all the tools without bias