Some Enhancements to the Prolog Playground and ALD Notebooks for the Modern Prolog Classroom*

Jose F. Morales[1,2] Daniela Ferreiro[1,2] Manuel V. Hermenegildo[1,2]

[1] Universidad Politécnica de Madrid (UPM)
[2] IMDEA Software Institute
{josef.morales,daniela.ferreiro,manuel.hermenegildo}@imdea.org

The Prolog Playground and ALD-style notebooks (Active Logic Documents) constitute a tool set aimed directly at facilitating the task of teaching and learning Prolog. These tools allow teachers and students to develop, run, debug, verify, and test Prolog programs directly on the browser, without needing a Prolog installation. They also provide a very easy way to share Prolog code and to add click-to-run capabilities to any kind of teaching materials, such as slides or tutorials, independently of the tool used to generate them. They also greatly facilitate generating web-based materials with embedded running examples and exercises. An important characteristic of these tools, in contrast to others which are generally server-based, is that the active parts (the editors, programs, and queries) run locally on the student's browser, with no need for a server infrastructure. Arguably this has multiple advantages over the server-based approaches in scalability, low maintenance cost, security, ease of packaging and distribution, etc. Also, in this approach the sources can be developed with any editor.

In this talk we will report on and demo some recent extensions and enhancements to the Prolog playground and ALD-style notebooks, which in our experience have further increased their utility in the Prolog classroom. The new features stem from our experience in the use of these tools with several student cohorts over the last few years and include a) the possibility of developing the notebooks with embedded running examples and quizzes now directly within the playground, b) also being able to develop *slides* with such examples and quizzes as well as doing presentations within the playground, c) new facilities for student self-assessment, and d) a fully reactive mode where feedback and results are given on-the-fly, as the student types. We hope these facilities will be of interest to the PEG audience.

Keywords: Active Logic Documents, Prolog Playground, Teaching Prolog, Prolog, Ciao Prolog, Logic Programming, Webassembly, Literate Programming.

* Partially funded by MICINN projects CEX2024-001471-M and TED2021-132464B-I00, by EU Grant 101154447 NEAT, and by the Tezos foundation.