Teaching C Programming Language at Scale

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How to make early beginners learning C easier? Codecast, Taskgrader and WebLinux, three innovative tools implemented in MOOCs to enhance teaching and learning of C programming with Linux.
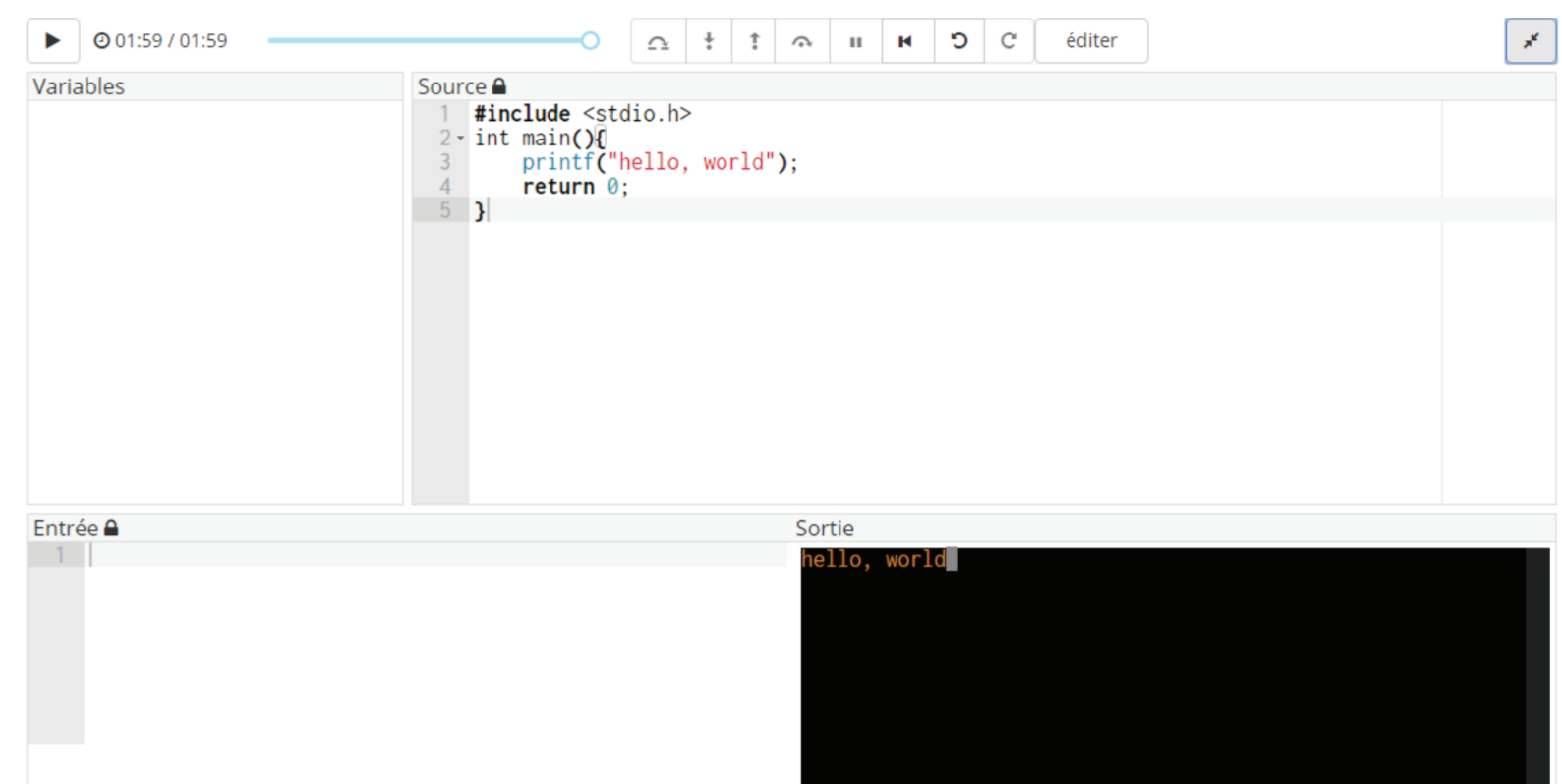
In-browser   **Open-source**   **Scalable**   MOOC of the Year 2016 ★ **Innovation Award** *MOOC of the year (Fr)*

CODECAST

- integrated development environment (IDE) with audio comments made by the instructor.
- interactive tutorial tool that enables learners to modify and test code in the instructor's tutorial itself.
- step-by-step execution.
- interactive input/output.
- ACE editor with colored syntax highlighting.
- multiple visualization modules (memory heap/stack, matrices, algorithms...).

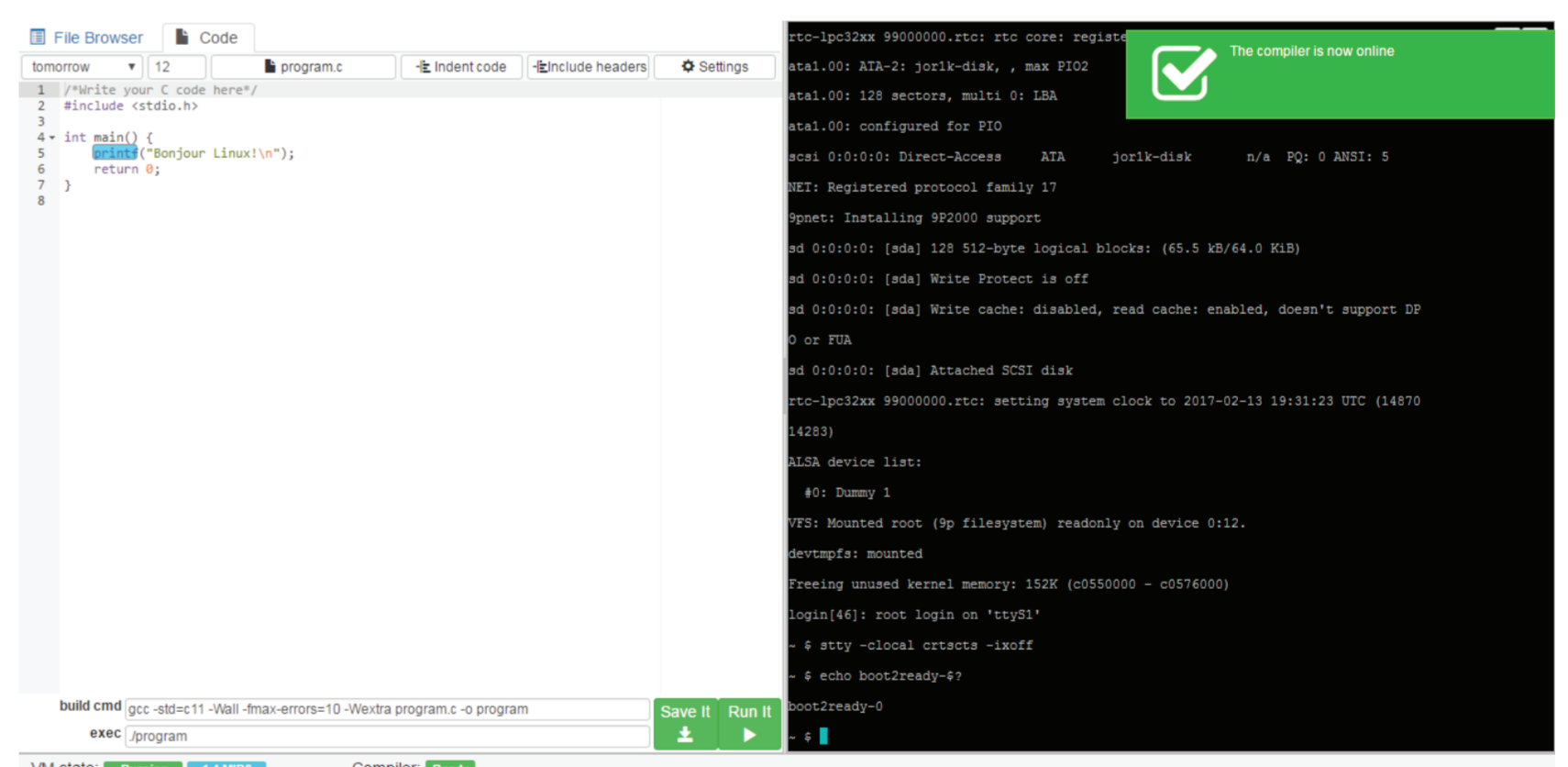ACTIVITÉ : LE JEU DES ERREURS (RESSOURCE EXTERNE) (1.0 points possibles)

TASKGRADER

- hands-on coding activities.
- a large scale grading system that uses Linux Containers to grade source codes securely.
- 3 steps: unit testing, source code parsing, performance metrics (Memory, CPU).
- integrated in Open edX using the LTI protocol.
- instructor can set up customized feedback for learners based on common errors.

WEBLINUX

- Linux OS 100% in the browser.
- no need for learners to install Linux.
- no need for instructors to provide Linux servers. 😊
- 100% client-side execution:
  - Local File Management (browserFS)
  - code editor (ACE-based)
  - a terminal with a full Linux system.

MOOC lessons'structure

CODECAST: learners are taught, experiment with the instructors's code examples and test their own code.

WEBLINUX TUTORIAL: learners are getting information through «traditional» screencasts.

TASKGRADER ASSESSMENTS: learners are asked to produce and submit a program based on a challenge. They are given unlimited attempts (mastery learning). They can ask for hints and are getting individual automated feedbacks.

FORUM: Learners are getting help from fellow learners and teaching staff.

16% overall completion rate

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