The State of CS Circles (cscircles.ca)

Open Source & Outreach using an Introductory Python Website

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What is CS Circles?
- Free website to teach introductory Python
- 30 lessons & 110 exercises embedded within
- Mostly programming exercises
  - automatically graded by web server
- Visualizations and other problem formats
- Paper at SIGCSE 2013

Who uses CS Circles?
- 20000 users, together solved 550000 exercises
- Individual self-learners
  - can ask “CS Circles Assistant” questions
- High school, college and university classes
  - can ask your “guru” questions
  - gurus can see student attempts/success

Problem Statistics

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Usage, by class

We gratefully acknowledge a SIGCSE Special Projects Grant from Summer 2013, which supported the open-sourcing and error analysis.

Problem Statistics

- WordPress plugin on GitHub, GPL license
- Content shared under Creative Commons
- Installed mirror in a correctional facility

"Excellent way to teach programming in a classroom without Internet access"

Top Errors

Commonest errors out of 600k events:
#1: SyntaxError: invalid syntax
#2: NameError: name ... is not defined
#3: EOFError: EOF when reading a line

Translations

- French (thanks to Brice Canvel, André Roberge, Serge Bays, Nico Westbury, Ashlyn Osborne)
- German (thanks to Bundesweite Informatikwettbewerbe)
- Dutch (thanks to Ries Kock, Joost Rijnveld)
- Lithuanian (thanks to Jurgis Pralgauskis)
- Serbian (thanks to Marija Đokić)

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Zipf-Mandelbrot distribution? \( \text{freq}_i = (t+i)^{-\alpha} \)
- ongoing research in other languages