

Free software in teaching and research

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Software Livre para o Ensino e Processamento de Informação na Comunidade dos Países de Língua Portuguesa (CPLP):

Experiências, Oportunidades e Estratégias

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“Man is not something useless in a finished world, but a worker in a world under construction”

Leonardo Coimbra, 1911.

1 Advantages of Free Software in teaching and research

- Participation in the knowledge construction process, and not just a passive user role.
- Expansible to a wider audience. Fights digital exclusion.
- Equal access to new technology.
- Wiser use of resources.
- Independence from commercial monopolies.
- Wider variety of solutions
- Cost reduction.

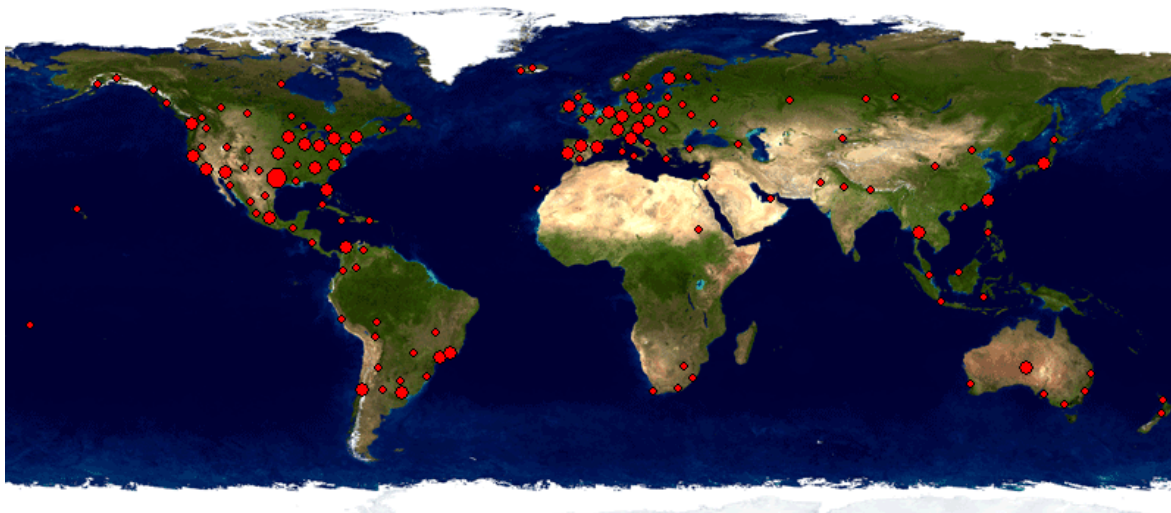
2 A few examples

High-level programming	Python, Scheme
Low-level programming	C
Databases	MySQL, Postgresql
Web services	Apache, PHP
Statistics	R
Matrix calculus	Octave
Computational algebra	Maxima

3 Moodle

A course management system (CMS). Software package designed to help educators create quality online courses.

3.1 Moodle in the world



- 50 languages.
- 2501 registered sites, in 107 countries.
- 31 registered sites in Portugal.

4 Courses

FEUPmoodle Nome de utilizador: Jaime Villate. (Sair)

FEUPmoodle » Física0 Activar modo edição

Pessoas

- Participantes
- Grupos
- Editar perfil

Atividades

- Fóruns
- Mini-testes
- Recursos

Procurar

Procurar nos fóruns

Administração

- Activar modo edição
- Configurações...
- Docentes...
- Alunos...
- Cópia de segurança...
- Restaurar...
- Escalas...
- Notas...
- Relatórios...

Lista de tópicos

Informação

As aulas começam no dia 27 de Setembro. O teste diagnóstico será no dia 24 de Setembro, entre as 15h e as 17h.



- Horário
- Calendário, programa, etc. (PDF)
- Notícias
- Forum de Física 0

Últimas notícias

Adicionar um novo tópico...

- 8 Nov, 09:48 - Jaime Villate Salas para o exame [mais...](#)
- 7 Nov, 15:48 - Soraia Castro Pimenta Aula extra - Turma 2 [mais...](#)
- 2 Nov, 09:28 - Mário Jorge Estima Dolveira Aos alunos da turma 6 - aula-extra [mais...](#)
- 28 Set, 12:12 - Jaime Villate Inscrição nos fóruns [mais...](#)
- 27 Set, 13:14 - Jaime Villate Notas da prova de aferição [mais...](#)

Atividade recente

Actividade desde Terça, 8 Fevereiro 2005, 01:06

[Relatório completo de actividade recente...](#)

Sem novidades desde o seu último acesso

Utilizadores em linha

(nos últimos 5 minutos)

-  Jaime Villate

5 Modules


 Assignments

 Forums

 Lessons

 Surveys

 Chat

 Quizes

 Wikis

 Choices

 Journals

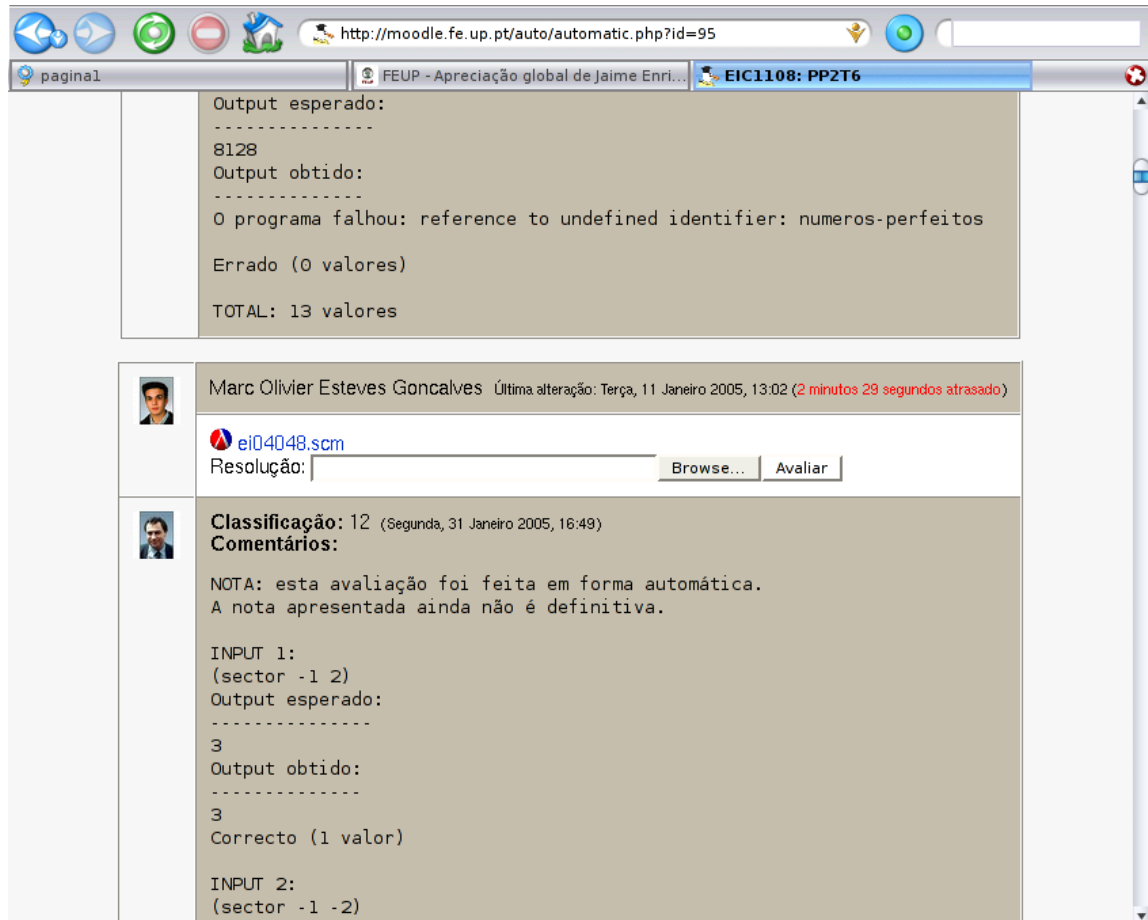
 Resources

 Workshops

 Glossaries

 Directories

6 Programming with Dr. Scheme and Moodle



The screenshot shows a web browser window with the URL `http://moodle.fe.up.pt/auto/automatic.php?id=95`. The browser tabs include "pagina1", "FEUP - Apreciação global de Jaime Enri...", and "EIC1108: PP2T6".

The main content area displays the following text:

```
Output esperado:
-----
8128
Output obtido:
-----
O programa falhou: reference to undefined identifier: numeros-perfeitos

Errado (0 valores)

TOTAL: 13 valores
```

Below this, a user profile for "Marc Olivier Esteves Goncalves" is shown, with the last update on "Terça, 11 Janeiro 2005, 13:02 (2 minutos 29 segundos atrasado)". A file named "ei04048.scm" is listed with a "Resolução:" field and "Browse..." and "Avaliar" buttons.

The "Classificação: 12" (Segunda, 31 Janeiro 2005, 16:49) section contains the following comments:

Comentários:

NOTA: esta avaliação foi feita em forma automática.
A nota apresentada ainda não é definitiva.

INPUT 1:
(sector -1 2)
Output esperado:

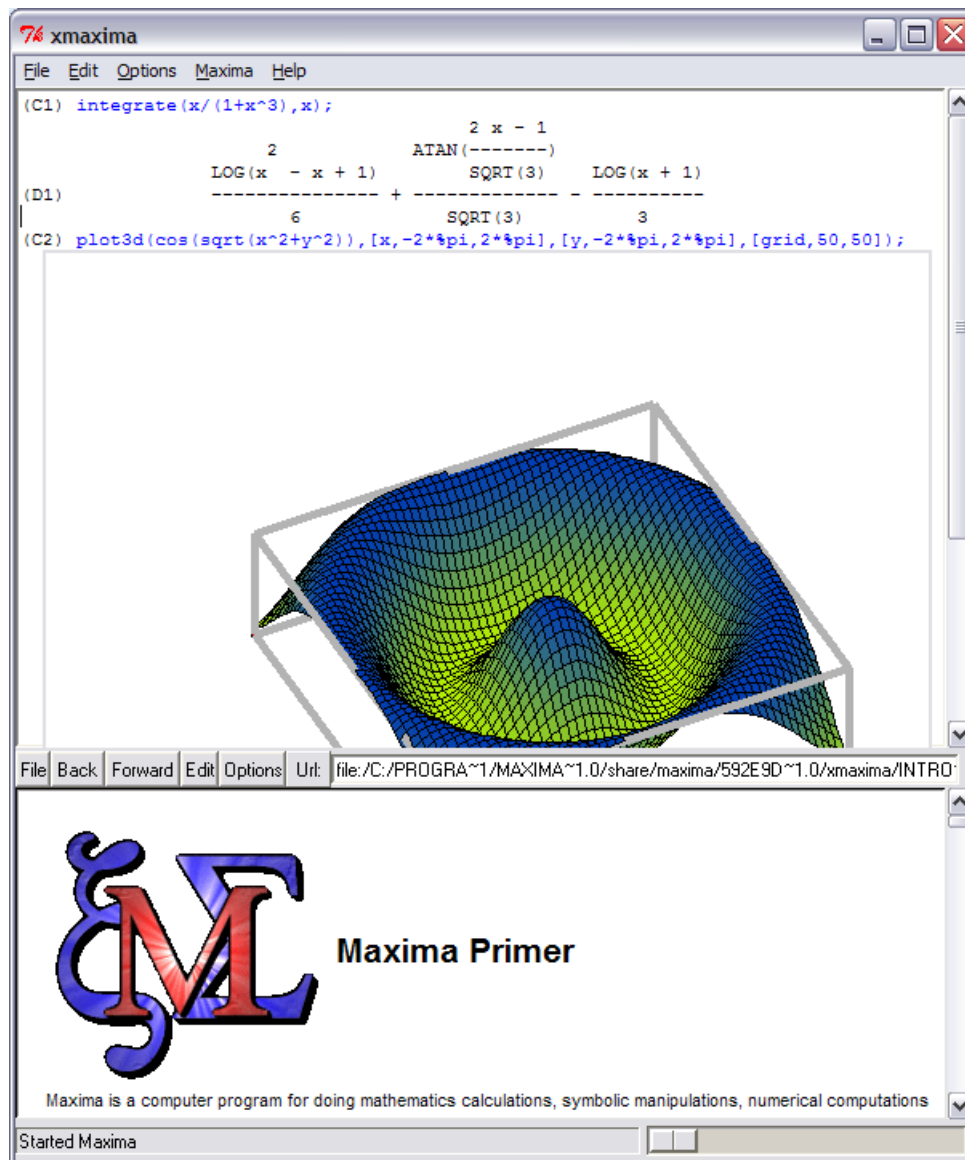
3
Output obtido:

3
Correcto (1 valor)

INPUT 2:
(sector -1 -2)

7 Maxima

Computational Algebra System (CAS).



7.1 History

- 1960-1970. Reduce, Macsyma, Derive
- 1980's. Maple, Mathematica, Maxima (version of Macsyma)
- 1998. Prof. William Schelter is authorized to distribute Maxima freely.

7.2 Advantages in mathematics teaching

- More stimulating for students
- Can embark in more advanced problems
- Forces students to think in a different way

8 Free access to knowledge

“The computer industry learned the hard way that closed software systems -based on a framework of proprietary knowledge- did not fit the world they themselves had created. The organic world of open software and open systems was the true wave of the future. Higher education must learn from this. We must create open knowledge systems as the new framework for teaching and learning.”

Charles M. Vest, 2001, M.I.T. president

9 M.I.T.’s Open Courseware

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I not only refer to OCW several times a week myself but also ask my computer science students to consult MIT OCW... Looking forward to more courses. -- quote from Sajid Latif, educator in Pakistan. [Click to read more World Reaction...](#)

"Knowledge cannot be stopped. Information should be free for everyone..." You

10 Public Library of Science



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11 Wikipedia



The image shows a screenshot of the Wikipedia Main Page. At the top left is the Wikipedia logo, a globe with letters, and the text "WIKIPEDIA The Free Encyclopedia". To the right of the logo are navigation tabs for "article", "discussion", "view source", and "history". Further right are links for "Create account / log in". Below the logo is a sidebar with a menu: "Main Page", "Community portal", "Current events", "Recent changes", "Random page", "Help", and "Donations". Below the menu is a search box with "Go" and "Search" buttons, and a "toolbox" section with links for "What links here", "Related changes", and "Special pages". The main content area is titled "Main Page" and includes the text: "From Wikipedia, the free encyclopedia. Welcome to **Wikipedia**, a [free-content](#) encyclopedia that **anyone can edit**." Below this is a link for "Other languages" with "FAQs" and "Table free" sub-links. A navigation bar lists categories: "BROWSE: CULTURE | GEOGRAPHY | HISTORY | LIFE | MATHEMATICS | SCIENCE | SOCIETY | TECHNOLOGY". Below the navigation bar are links for "Browse Wikipedia - Article overviews - Alphabetical index - Other category schemes". The "Today's featured article" section features a photo of Bryce Canyon National Park and text describing it as a national park in Utah, known for its geological structures called hoodoos. The "In the news" section lists two items: "Results in the 2005 Iraqi legislative election" with a small flag of Iraq, and "American playwright Arthur Miller" with links to his works "Death of a Salesman" and "The Crucible".

12 References

1. UNESCO Free Software Portal: http://www.unesco.org/webworld/portal_freesoft/
2. MIT OpenCourseWare (OCW): <http://ocw.mit.edu>
3. Organization for Free Software in Education and Teaching: <http://www.ofset.org>
4. The Public Library of Science: <http://www.plos.org/>
5. Wikipedia. The Free Encyclopedia: <http://en.wikipedia.org/>