

Project Documentation

Requirement

Creation of an Web-based application to allow teachers post homeworks, course materials and setup deadlines and students submit their workings as well as communicate with their peers. Also, it should provide statistics both for teachers and students of rankings, grades and completion.

State Of The Art

An “industry grade” application that allows all the listed functionalities is [Moodle](#). It offers a model for us to build a application based on the principles:

1. Open source
2. Communication
3. Availability
4. Assisting

Of course, as any application, it has its advantages and disadvantages.

Advantages

1. It's free and opensource
2. Constant improvement, new modules, new functionalities, new users
3. It has a friendly starting interface, offering a demo, documentation

links, FAQ's and a lot of other useful information.

Disadvantages

1. Since it's a toolbox, you have to learn and research your way to using the appropriate tools best suited for you
2. As any open-source application it lacks support and requires a fair amount of technical skills and ability to get it done perfectly.
3. It has a lack of notifications on certain events
4. Most of the solutions to listed issues are plugins and many of them are not designed to be used by non-technical teachers.

Our team will be working on a simmlar application having advantages and downsides of Moodle in mind.

The following descriptions will be updated as we proceed further to developing them and will be assisted with screenshots of existing working (or not?) examples.

Functionalities

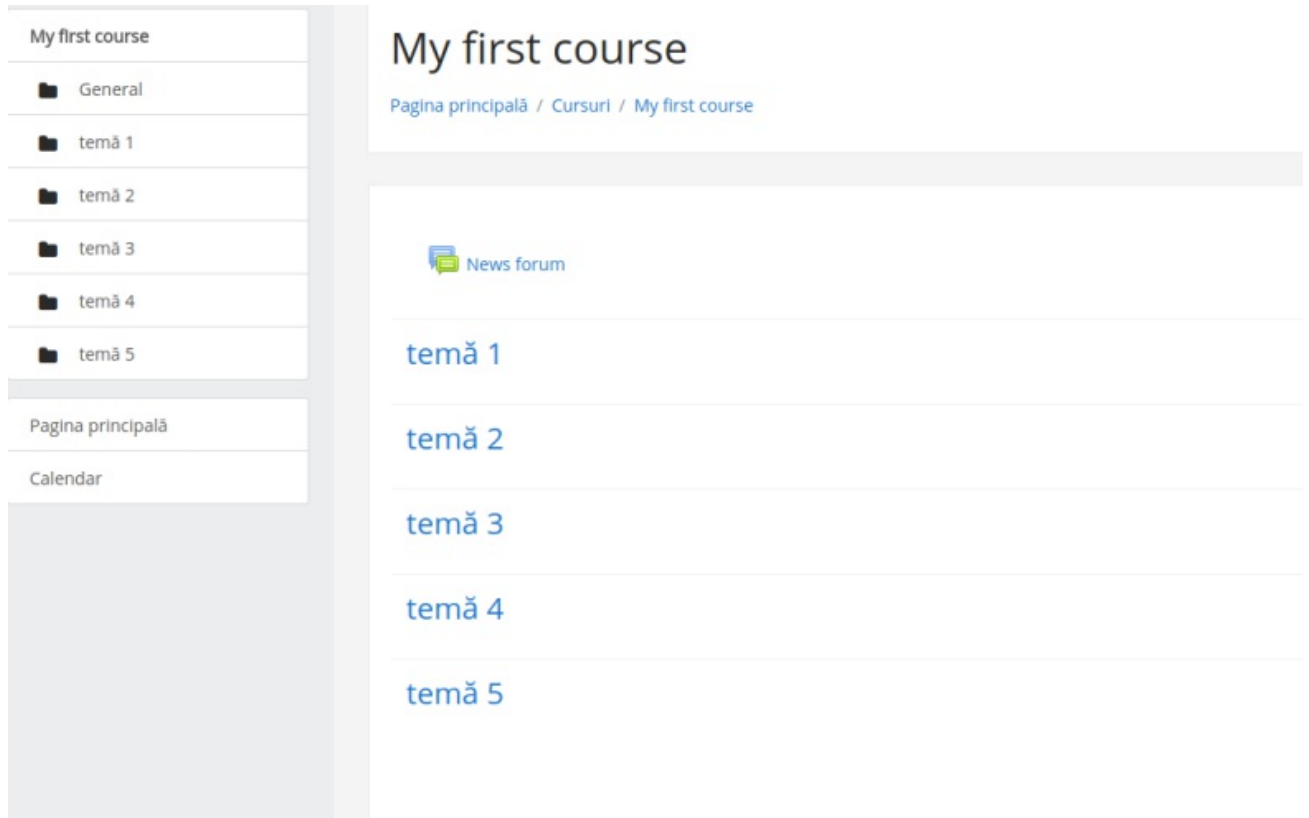
1. **Publishing homeworks and setting deadlines for students to submit.**

This is the most important part of the application and everything should be built around it.

Notice that Moodle uses plugins to represent different assignment types, while our approach will be a fixed list of assignment types that are available for choosing. It will reduce flexibility, but decrease the difficutly.

- a. <https://demo.moodle.net/course/view.php?id=2>

b. <https://demo.moodle.net/calendar/view.php?view=month&course=2>



My first course

Pagina principală / Cursuri / My first course

News forum

temă 1

temă 2

temă 3

temă 4

temă 5

Pagina principală

Calendar

Calendar

◀ March 2018 April 2018 May 2018 ▶

Du	Lu	Ma	Mi	Jo	Vi	Sâ
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Exportă calendar

2. Adding course/assignment participants

One of the downsides of Moodle is that users can enrol on their own and nobody gets notified. This will be fixed in our application and courses will have full and limited availability giving teachers full control over who participates in their online

courses/assignments.

3. **Assignment upload**

This will allow students to present their homeworks and has to be flexible enough to offer upload restrictions, restrictions on file types, upload count, etc.

An not so good example would be the upload option in our “PSGBD” course, that lacks not only a good design, but also security and flexibility we’re trying to achieve.

Selectati fisierul pentru upload:



4. **Automatic and manual plagiarism compare**

Moodle has multiple plugins for finding plagiarism in students' work like “Turnitin plagiarism plugin”, “VeriCite”, “UNPLAG Plagiarism Checker Plugin”. Our solution will incorporate both existing open-source plagiarism and compare suites as well as in-house developed algorithms.

Manual:

First Value

☒ Select a document:

Select File .doc / .docx / .pdf / .txt

OR enter a webpage url

☐ Enter a URL:

Enter First URL

OR Paste text below

☐ Paste a Text:

A

Enter Text

Second Value

☒ Select a document:

Select File .doc / .docx / .pdf / .txt

OR enter a webpage url

☐ Enter a URL:

Enter Second URL

OR Paste text below

☐ Paste a Text:

A

Enter Text

Compare Pages

Automatic:



PMD

An extensible cross-language static code analyzer.

[GITHUB](#)

Latest Version: 6.2.0 (26th March 2018)
[Release Notes](#) | [Download](#) | [Documentation](#)

QuickStart

See also [Getting Started](#)

Linux
MacOS
Windows
Windows (Chocolatey)

```

$ cd $HOME
$ wget https://github.com/pmd/pmd/releases/download/pmd_releases%2F6.2.0/pmd-bin-6.2.0.zip
$ unzip pmd-bin-6.2.0.zip
$ alias pmd="$HOME/pmd-bin-6.2.0/bin/run.sh pmd"
$ pmd -d /usr/src -R java-basic -f text
          
```

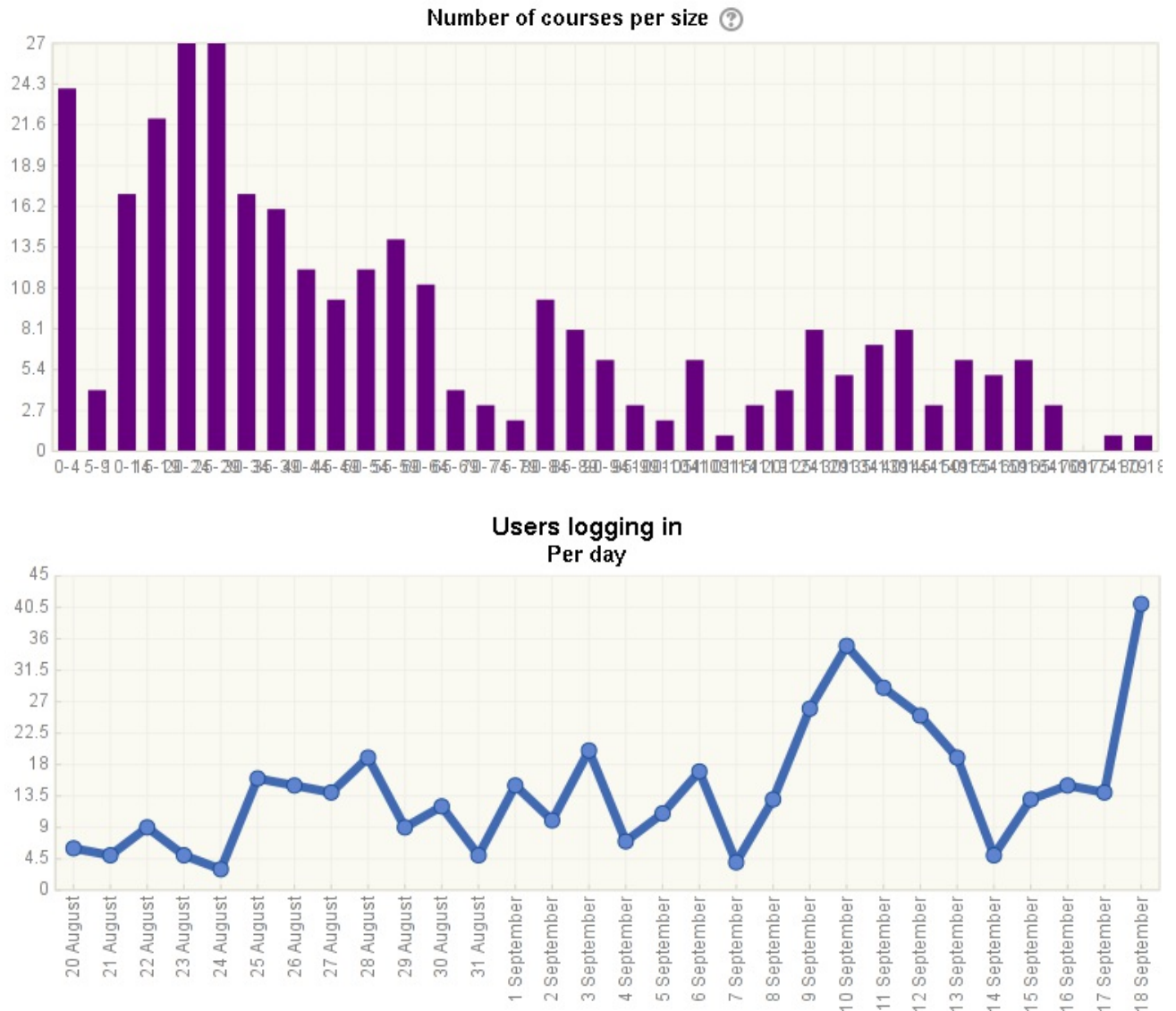
Checkout the [existing rules for Java](#).

5. Statistics for students and teachers

Moodle has a great plugin “Overview statistics” that allows users to build graph and line charts for the courses.

Our solution will take it as an example and focus on creating statistics for the students’ grades and progress as well as multiple

representations for the data recieved throughout the lecturer's course.



6. Report generation in multiple formats

Unfortunately, the reporting tools in Moodle are clumsy and pretty hard to find. Generating reports should be much easier and give a wide enough range of formats and options.

sample.csv - LibreOffice Calc

File Edit View Insert Format Sheet Data Tools Window Help

LibreOffice Calc interface showing a spreadsheet with the following data:

	A	B	C	D
1	Category	Amount of created courses	Used courses	% per used courses
2	All categories	6	3	50.00%
3	Department 01	3	3	100.00%
4	Department 02	1	0	0.00%
5	Department 03	2	0	0.00%
6				

Export to OpenDocument spreadsheet

View Categories and items Scales Letters Import Export Settings My preferences

OpenDocument spreadsheet PDF Document Plain text file Excel spreadsheet XML file

Options

Include feedback in export ☐

Require active enrolment ☐

Preview rows 10

Grade export display type Real

Grade export decimal points 2

Grade items to be included

test quiz1 ☒

Course total ☒

Select all/none

Submit

Click this link to get grades in PDF format

A few examples of working reporting tools are:

a. <https://github.com/Jimmy-JS/laravel-report-generator>

b Velocity (HTML)

c DOMPDF Wrapper for Laravel

d Apache POI (Word, Excel)

7. Feedback and communication between course members

Great examples are Moodle's forums

My second course

[Pagina principală](#) / [Cursuri](#) / [My second course](#) / [General](#) / [News forum](#)

News forum

General news and announcements

(Nicio știre n-a fost postată încă)

Course evaluation

Mode: Anonymous

(*)Answers are required to starred questions.

How do you rate the quality of the course materials?*

- ☐ Excellent
- ☐ Good
- ☐ Satisfactory
- ☐ Unsatisfactory

Which of these activities did you find the most valuable? You may choose more than one.

- ☐ Reading
- ☐ Writing
- ☐ Speaking
- ☐ Listening
- ☐ Blended
- ☐ Group work
- ☐ Tests

Do you have any constructive comments to make?

non respondents students (1)

User picture	First name / Surname	Status	Select
	Salvador Salva	not started	☐

Select all Deselect all

send message

Subject

Paragraph B I List Link Image Smiley Video

8. Grading system, requesting for changes and/or additions

Grading is a large part of Moodle and has a lot of options to offer.

We plan to employ a simmlar grading system with extensibility and flexibility in mind.

▼ Grade category

Category name

Aggregation  Simple weighted mean of grades 

Aggregate only non-empty grades*  ☒

Aggregate including subcategories*  ☐

Drop the lowest*  None 

[Show less...](#)

▼ Category total

Category total name*

Item info* 

ID number* 

Grade type  Value 

Scale  Use no scale 

Maximum grade 

Minimum grade 

Grade to pass* 

Grade display type*  Default (Real) 

Overall decimal points*  Default (2) 

Hidden  ☐

Hidden until*      ☐ Enable

Locked  ☐

Lock after*      ☐ Enable

[Show less...](#)

Save changes

Cancel

It has a grading history for users and many other useful statistics

Grade history

Select users

Selected users Frances Banks

Grade item

Grader

Date from ☐ ☒ Enable

Date to ☐ ☐ Enable

Revised grades only ☐

Download table data as

Date and time	First name / Surname	Email address	Grade item	Original grade	Revised grade	Grader	Source	Overridden	Locked	Excluded from calculations	Feedback text
Tuesday, 28 October 2014, 11:54 AM	Frances Banks	francesbanks231@example.com	London Tourist brochure		78.00	Brian Franklin	import	Yes	No	No	

Optional features

1. Quizzes
2. Voting systems, polls
3. Posting additional materials that are connected to the homework
4. Evaluating student code using sandboxing techniques