

Moodle Quiz Archiver

Plugin Showcase and Development Status Report

Niels Gandraß

Niels.Gandrass@haw-hamburg.de ✉

Björn Dittmann

✉ Bjoern.Dittmann@haw-hamburg.de



2026-03-19

Table of Contents

- Motivation
- Challenges and Existing Solutions
- The Moodle Quiz Archiver
- Plugin Architecture and Process Overview
- Upcoming Features
- The Bigger Picture
- Q&A Session

Motivation

Why do we even need a complex solution for archiving Moodle quiz attempts?



We are legally required to archive exams



Moodle backups are not suited for long-term archiving



We hate printing every attempt to PDF by hand

Challenges and Existing Solutions

Archiving Moodle quiz attempts can't be that hard, right?

Challenges

- 📁 Archives must be **readable** in 10 years
 - ... while ensuring the archived data is static and displays the same way as before
 - ... without requiring an ancient Moodle instance and long unmaintained plugins
- ☑ Archive tasks must be **complete, traceable, and correct**
- 🛡 Data must be stored **tamper-proof** and **digitally signed**
- 📦 Support for all used **question types**, including third-party plugins
 - Not only HTML, but also file submissions, (external) images, ...
 - Dynamically rendered components: MathJax formulas, GeoGebra applets, ...
- ▶ The archiving process must be **simple** to use
- 📄 Quiz reports must be **customizable**

Existing Solutions

Various ways to export quiz attempts already exist out there ...

Quiz archive report (quiz_archive)

Quizattemptexport (local_quizattemptexport)

QuizExport (quiz_export)

exportresults (quiz_exportresults)

Moodle attempt review page (manually printing to PDF)

...

Problems with existing solutions

- Dynamic content, such as MathJax formulas, is not supported, or attempts are not rendered as originally shown to the student
- Missing customization options, e.g., to export with(-out) example solutions
- PDFs must be exported manually or require additional technical knowledge
- Systems fail when quizzes have a large number of attempts
- Installation of additional software on the Moodle web server and security problems
- Archiving process is unclear or prone to human error

The Moodle Quiz Archiver

A modern Moodle plugin that archives quiz attempts as PDF files
for long-term storage independent of Moodle

Quiz archive content overview

Created quiz archives contain various data.
Contents are freely configurable.

📄 Attempt exports (attempts /)

- PDF export
- HTML source files
- Attachments

📁 Moodle backups (backups /)

- Quiz activity
- Full course

📄 Attempt metadata (.csv)

📄 Checksums for all files (.sha256)

Berechnen Sie den Flächeninhalt, der von der Kurve $f(x) = 3 \cdot x^2 - 3$ und der x -Achse komplett eingeschlossen wird.

a) Geben Sie zunächst die Grenzen des Integrals an, mit dem der Flächeninhalt berechnet wird:

Ihre letzte Antwort wurde folgendermaßen interpretiert: 5

$A = \int_{\text{$

Ihre letzte Antwort wurde folgendermaßen interpretiert: 0

b) Bestimmen Sie die Stammfunktion der Funktion $f(x)$:

$F(x) = \text{$ + C, $C \in \mathbb{R}$

Ihre letzte Antwort wurde folgendermaßen interpretiert: $3 \cdot x \cdot \left(\frac{x^3}{3}\right) - 3 \cdot x$

c) Geben Sie nun den gesuchten Flächeninhalt an:

$A = \text{$

Ihre letzte Antwort wurde folgendermaßen interpretiert: 4

✗ zu a): Die Integrationsgrenzen sind falsch.
Hinweis: Die Integrationsgrenzen sind die Nullstellen der Funktion.

✗ zu b): Die Stammfunktion ist falsch.

✗ zu c): Die Fläche ist auch unter Berücksichtigung von Folgefehlern aus a) und b) falsch.

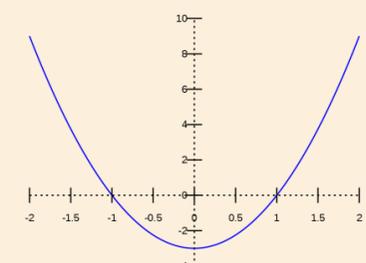
Musterlösung:
Bestimmen Sie zunächst die Nullstellen der Funktion f , diese ergeben die Integrationsgrenzen:

$$3 \cdot x^2 - 3 = 0 \Leftrightarrow x^2 = 1 \Leftrightarrow x_{1/2} = \pm 1$$

Eine Stammfunktion von $f(x) = 3 \cdot x^2 - 3$ ist das unbestimmte Integral

$$F(x) = \int (3 \cdot x^2 - 3) dx = x^3 - 3 \cdot x + C, C \in \mathbb{R}$$

Der Flächeninhalt ist das Integral von $|3 \cdot x^2 - 3|$ über x . Da die Funktion f zwischen den Nullstellen negativ ist (siehe den untenstehenden Graphen der Funktion f), kann der Faktor -1 für den Absolutbetrag verwendet werden:

$$A = \int_{-1}^1 |3 \cdot x^2 - 3| dx = - \int_{-1}^1 (3 \cdot x^2 - 3) dx = -[x^3 - 3 \cdot x]_{-1}^1 = 4$$


Eine richtige Antwort ist 1. Sie kann so eingegeben werden: 1
Eine richtige Antwort ist -1. Sie kann so eingegeben werden: -1
Eine richtige Antwort ist $x^3 - 3 \cdot x$. Sie kann so eingegeben werden: x^3-3*x
Eine richtige Antwort ist 4. Sie kann so eingegeben werden: 4

Attempt report examples

MM	Max Mustermann
Kurs	Example Moodle Course for Quiz Archiver (Course-ID: 31)
Test	Example Quiz (Quiz-ID: 36)
Begonnen am	Friday, 21. April 2023, 09:06
Status	Beendet
Beendet am	Friday, 21. April 2023, 10:06
Verbrauchte Zeit	1 Stunde
Bewertung	15,50 von 40,00 (39%)
Feedback	Sie haben den Test leider nicht bestanden.
Archiviert	Monday, 13. November 2023, 16:01

Information

Frage markieren

Hinweise zur Bearbeitung der Aufgaben

Zwischenspeicherung der Eingaben

Beachten Sie: Die Zwischenspeicherung Ihrer Antworten erfolgt stets durch einen Seitenwechsel.

Eingabe der Antworten

- Wie Sie Brüche, mathematische Zeichen und Funktionen eingeben, finden Sie in der Tabelle „Hinweise zur Formeleingabe“ auf der rechten Seite unterhalb der Test-Navigation.
- Die Eingabe einiger spezieller Zeichen wird in den zugehörigen Aufgaben direkt angegeben.
- In den Antworten sind in der Regel **keine Kommazahlen** erlaubt. Wenn in der Aufgabe nicht anders beschrieben, geben Sie Ihr Ergebnis stattdessen als **Bruch**, ggfs. als **Quadratwurzel** ein.
- Wenn Sie eine Antwort eingeben, wird diese interpretiert und unter oder neben dem Eingabefeld angezeigt. **Überprüfen Sie bitte genau, ob Ihr Ergebnis wie gewünscht und fehlerfrei interpretiert wurde** und korrigieren Sie es gegebenenfalls.
- Das Ausmultiplizieren und Vereinfachen von Ergebnissen ist nur notwendig, wenn explizit darauf hingewiesen wird.

Generell: **Fragen Sie, wenn Ihnen unklar ist, wie Sie Ihre Antwort eingeben sollen!**

Antworten-Rückblick

Schritt	Zeit	Aktion	Status
1	21. April 2023, 09:06:45	Begonnen	
2	21. April 2023, 09:06:50	Gesehen	
3	21. April 2023, 10:06:45	Versuch beendet	
4	25. April 2023, 19:16:58	Versuch beendet	

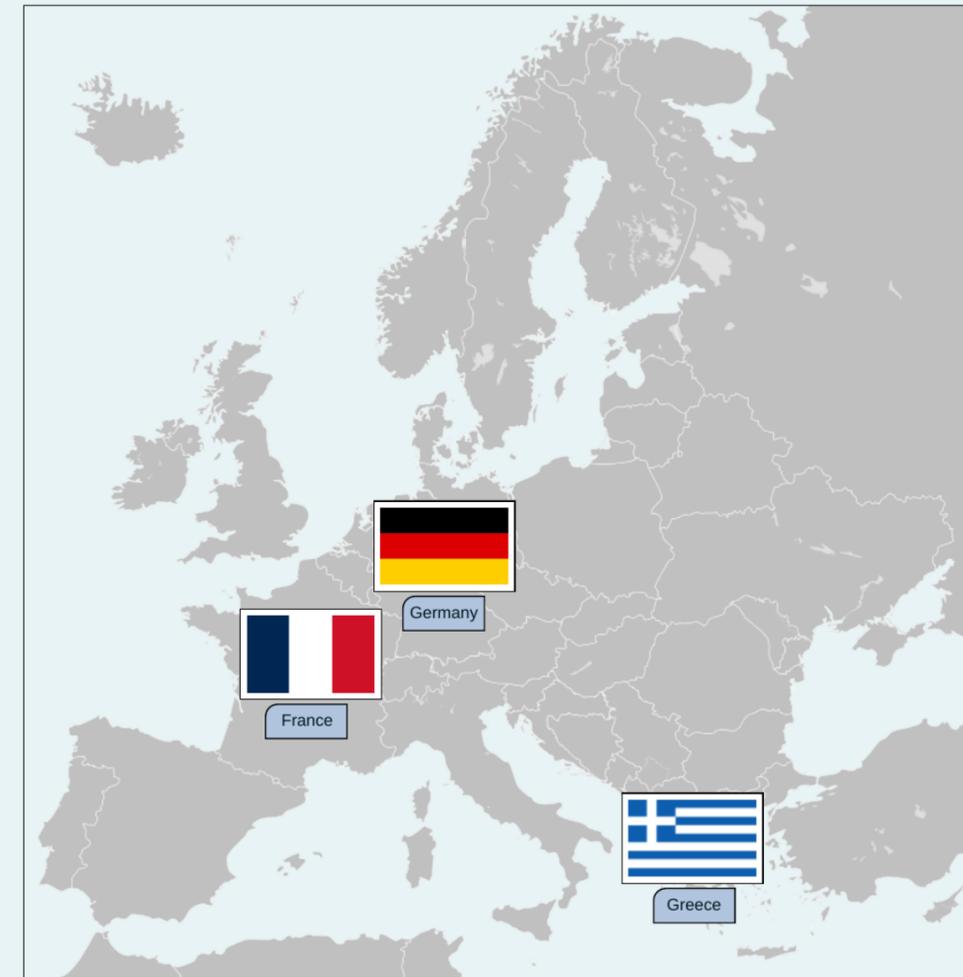
Question 13

Correct

Mark 1.00 out of 1.00

Flag question

Please drop the flags and country names into the map.



Your answer is correct.

User interface

Create new quiz archive

Trigger the creation of a new quiz archive by submitting this form. This will spawn an asynchronous job which will take some time to complete. You can always check the current status on this page.

Settings

Quiz Reference Quiz (standard question types)

Attempts

- Export quiz attempts (3) ?
- Include quiz header ?
- Include overall quiz feedback ?
- Include questions ?
- Include individual question feedback ?
- Include general question feedback ?
- Include correct answers ?
- Include answer history ?
- Include file attachments ?

Backups

- Export Moodle quiz backup (.mbz) ?
- Export full Moodle course backup (.mbz) ?

Advanced settings

Paper size ? A4 ▾

HTML files Keep HTML source files ?

Archive name ? quiz-archive- $\{$ courseshortna

Report name ? attempt- $\{$ attemptid $\}$ - $\{$ usern

Automatic deletion Enable ?

Retention time ? 1095 days ▾

Archive quiz

Archives

Start time	Status	User	Job ID	Size	
2024-02-20 10:55:15	Finished	admin	259aac2-cfd6-11ee-a8d7-0242c0a88005	5.7 MB	  

Quiz archive details

Job ID 3a96745c-3a98-11ee-8d8e-0242ac150005

Status **Finished**

Course Example Moodle Course for Quiz Archiver

Quiz Example Quiz

User Admin User (admin)

Time created 14 August 2023, 1:46:38 PM

Time modified 14 August 2023, 1:48:05 PM

Quiz archive

Filename quiz_archive_cid31_cm108_qid36_2023-08-14_134804.tar.gz

Size 33.9 MB

Checksum sha256:a43f2554584c28a232e0884af2881f00b6214763fd8e2d745bf35c4430b6d715

[Download file](#)

Signature Signed on 7 November 2023, 12:38:49 PM by https://freesa.org/tsr
Download: [query.tsq](#) - [reply.tsr](#)

Settings

Number of attempts	26
Export quiz attempts	1
Include quiz header	1
Include overall quiz feedback	1
Include questions	1
Include individual question feedback	1
Include general question feedback	0
Include correct answers	0
Include answer history	1
Export Moodle quiz backup (.mbz)	1
Export full Moodle course backup (.mbz)	0

Creating a new quiz archive

Moodle Home Dashboard My courses Site administration 2 AU Edit mode

Quiz Archiver Reference Course

Course Settings Participants Grades Reports More

General Collapse all

This is a reference course that provides a quiz that contains all standard Moodle question types for testing the [Quiz Archiver](#) Moodle plugin.

If you restored this course from the provided Moodle backup (.mbz), the quiz should already contain graded attempts that you can use when creating new quiz archives. You can, of course, add additional attempts if desired :)

- Reference / Quiz (standard question types)
- Quiz with advanced Features
- Quiz with 100 attempts
- Quiz with 250 attempts
- Quiz with 500 attempts
- Quiz with 1000 attempts

Purge all caches

Reactive instances ProcessMonitor CourseEditor26

0:00 / 2:00

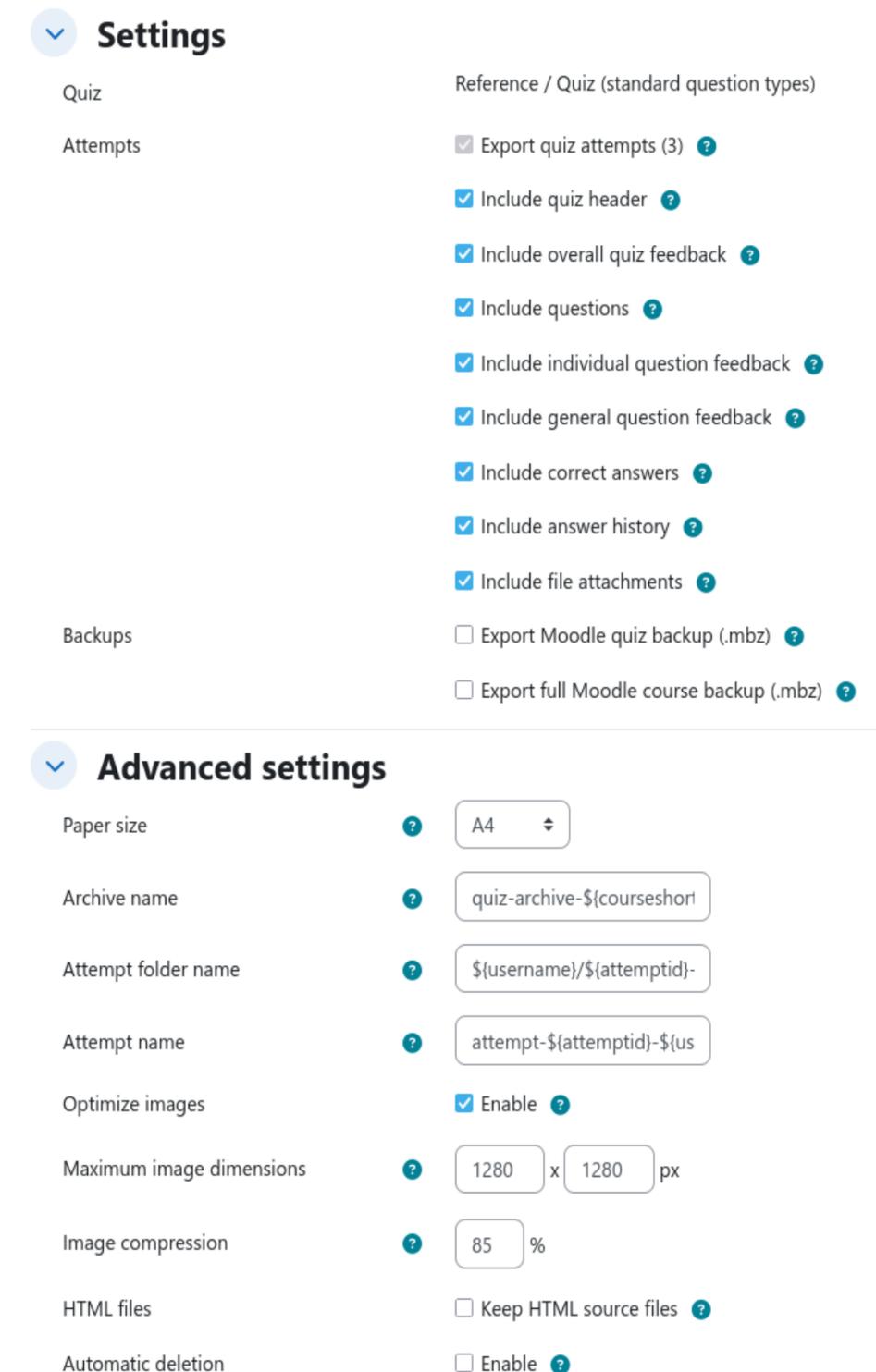
Archive settings and global presets

⚙️ Quiz archives can be customized in a variety of ways

- General and individual feedback
- Correct answers / example solutions
- Answer history
- Moodle backups and file attachments
- Paper size
- Variable based filenames
- ...

🔧 Each setting has a preset value that can be configured globally within the plugin admin settings

🔒 Individual settings can be locked to their global preset



The screenshot displays the Moodle Quiz archive settings interface, organized into sections: Settings, Advanced settings, and Backups. The 'Settings' section is expanded, showing options for 'Reference / Quiz (standard question types)'. The 'Advanced settings' section is also expanded, showing various configuration options for paper size, archive names, and image optimization.

Settings

Quiz

Attempts

Reference / Quiz (standard question types)

- Export quiz attempts (3) ?
- Include quiz header ?
- Include overall quiz feedback ?
- Include questions ?
- Include individual question feedback ?
- Include general question feedback ?
- Include correct answers ?
- Include answer history ?
- Include file attachments ?

Backups

- Export Moodle quiz backup (.mbz) ?
- Export full Moodle course backup (.mbz) ?

Advanced settings

Paper size ? A4 ⇅

Archive name ? quiz-archive-`{courseshort}`

Attempt folder name ? `{username}/{attemptid}-`

Attempt name ? attempt-`{attemptid}`-`{us`

Optimize images ? Enable ?

Maximum image dimensions ? 1280 x 1280 px

Image compression ? 85 %

HTML files ? Keep HTML source files ?

Automatic deletion ? Enable ?

Global archiving presets

<p>Include correct answers quiz_archiver job_preset_export_report_section_rightanswer</p>	<p><input type="checkbox"/> Default: Yes</p> <p>Display the correct answers for each question inside the report.</p> <p>This setting may be hidden, based on the value of quiz_archiver/job_preset_export_report_section_question.</p>	<p><input checked="" type="checkbox"/> Locked</p>
<p>Include answer history quiz_archiver job_preset_export_report_section_history</p>	<p><input checked="" type="checkbox"/> Default: Yes</p> <p>Display the answer history for each question inside the report.</p> <p>This setting may be hidden, based on the value of quiz_archiver/job_preset_export_report_section_question.</p>	<p><input type="checkbox"/> Locked</p>
<p>Report name quiz_archiver job_preset_export_attempts_filename_pattern</p>	<p><input type="text" value="attempt-\${attemptid}-\${username}_\${date}"/> Default: attempt-\${attemptid}-\${username}_\${date}-\${time}</p> <p>Name of the generated quiz attempt reports (PDF files). Variables must follow the `\${variablename} pattern. The file extension will be added automatically.</p> <p>Available variables:</p> <ul style="list-style-type: none">• `\${courseid}: Course ID• `\${coursename}: Course name• `\${courseshortname}: Course short name• `\${cmid}: Course module ID• `\${quizid}: Quiz ID• `\${quizname}: Quiz name• `\${attemptid}: Attempt ID• `\${username}: Student username• `\${firstname}: Student first name• `\${lastname}: Student last name• `\${timestart}: Attempt start unix timestamp• `\${timefinish}: Attempt finish unix timestamp• `\${date}: Current date (YYYY-MM-DD)• `\${time}: Current time (HH-MM-SS)• `\${timestamp}: Current unix timestamp <p>Forbidden characters: \ . ; * ? ! " < > </p>	<p><input checked="" type="checkbox"/> Locked</p>

Sources

The quiz archiver plugin is available on [GitHub](#)
and via the [Moodle Plugin directory](#)!



https://moodle.org/plugins/quiz_archiver

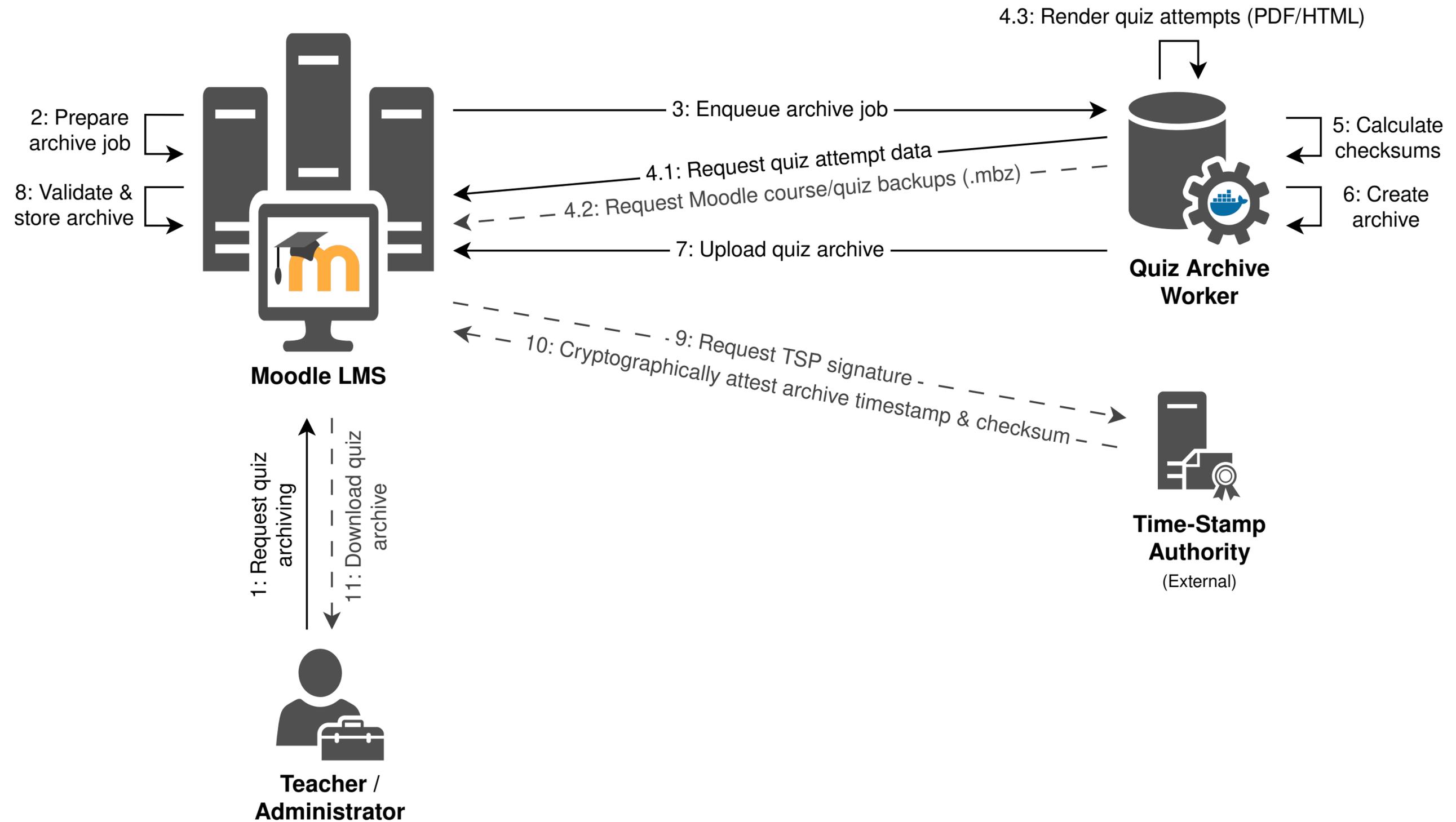


https://github.com/ngandrass/moodle-quiz_archiver

Plugin Architecture and Process Overview

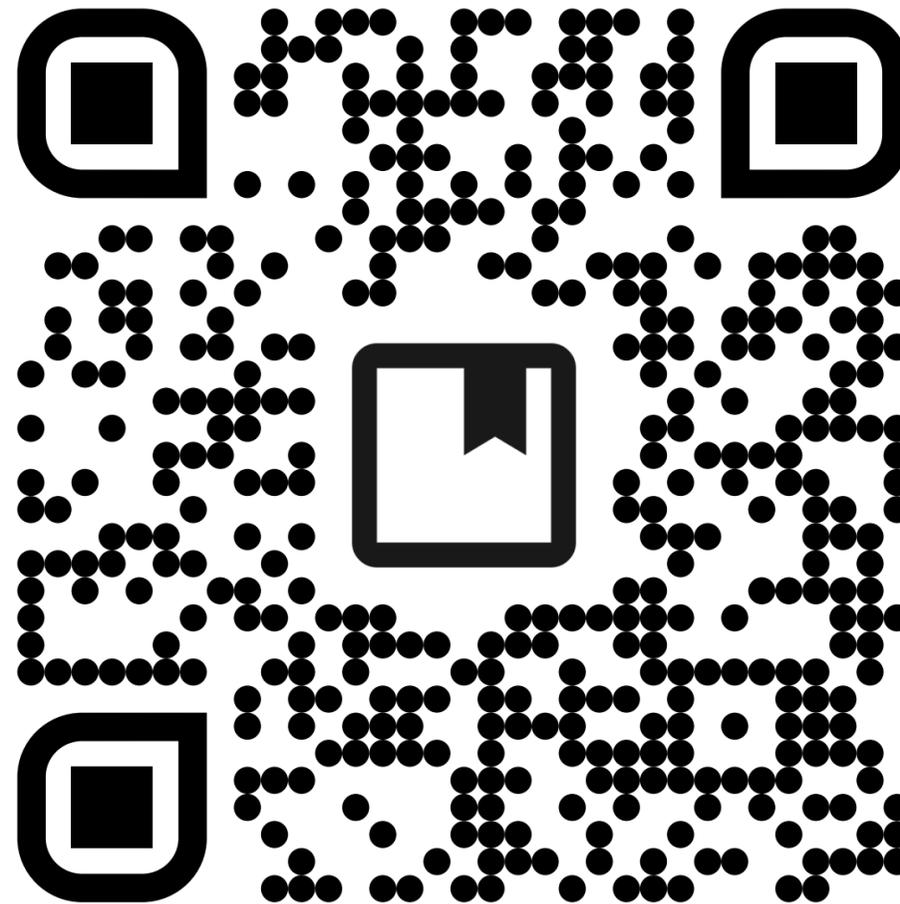
What happens when I hit the "*Archive quiz*" button?

Quiz archiving process overview



User and administrator documentation

An extensive online documentation helps in configuring all features of the plugin and can guide users through the archive creation process.



<https://quizarchiver.gandrass.de/>

Upcoming Features

What we are currently working on!

PDF/A-3b compliance

PDF/A is an ISO-standardized version of the PDF format that is designed for long-term archiving and preservation of electronic documents

- 🔒 Required by many organizations for exam documents and theses
- 👁️ Ensures that PDF files are **displayed equally** among different PDF viewers
- 📅 Guarantees that PDF files can still be **read in 10 years**, even if software environments change
- 📖 **Includes everything** needed for displaying a PDF (e.g., fonts) inside the PDF file itself
- ⚙️ PDF output format can be **configured** within the archive worker

Parallel archive job processing

Until now, only a single quiz archive job could be processed at a time. This can lead to long waiting times when multiple archives are created at the same time.

- 🕒 Archive jobs can be **run in parallel** to increase the throughput
- ⚙️ Amount of parallel jobs is **configurable** within the archive worker and can thereby be adapted to the institutional needs
- ⚡ Resource **usage guidelines** will be available upon release

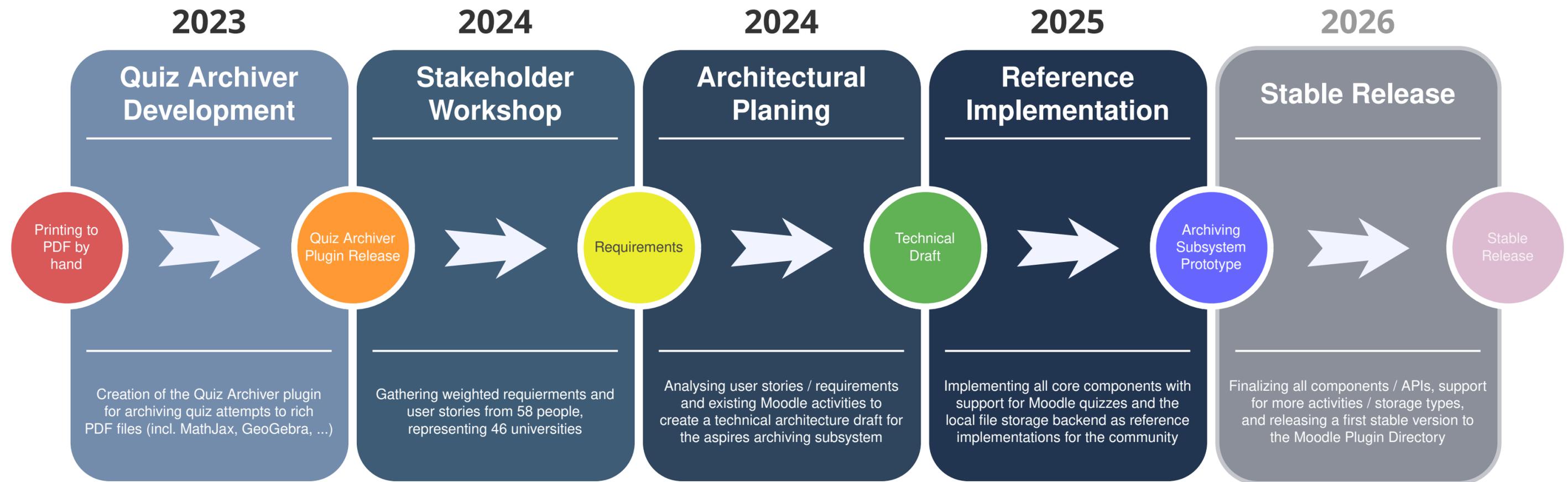
Improved file upload

Working with very large quizzes can induce challenges during the file upload process. We are currently working on improving this process to make the quiz archiver even easier to use.

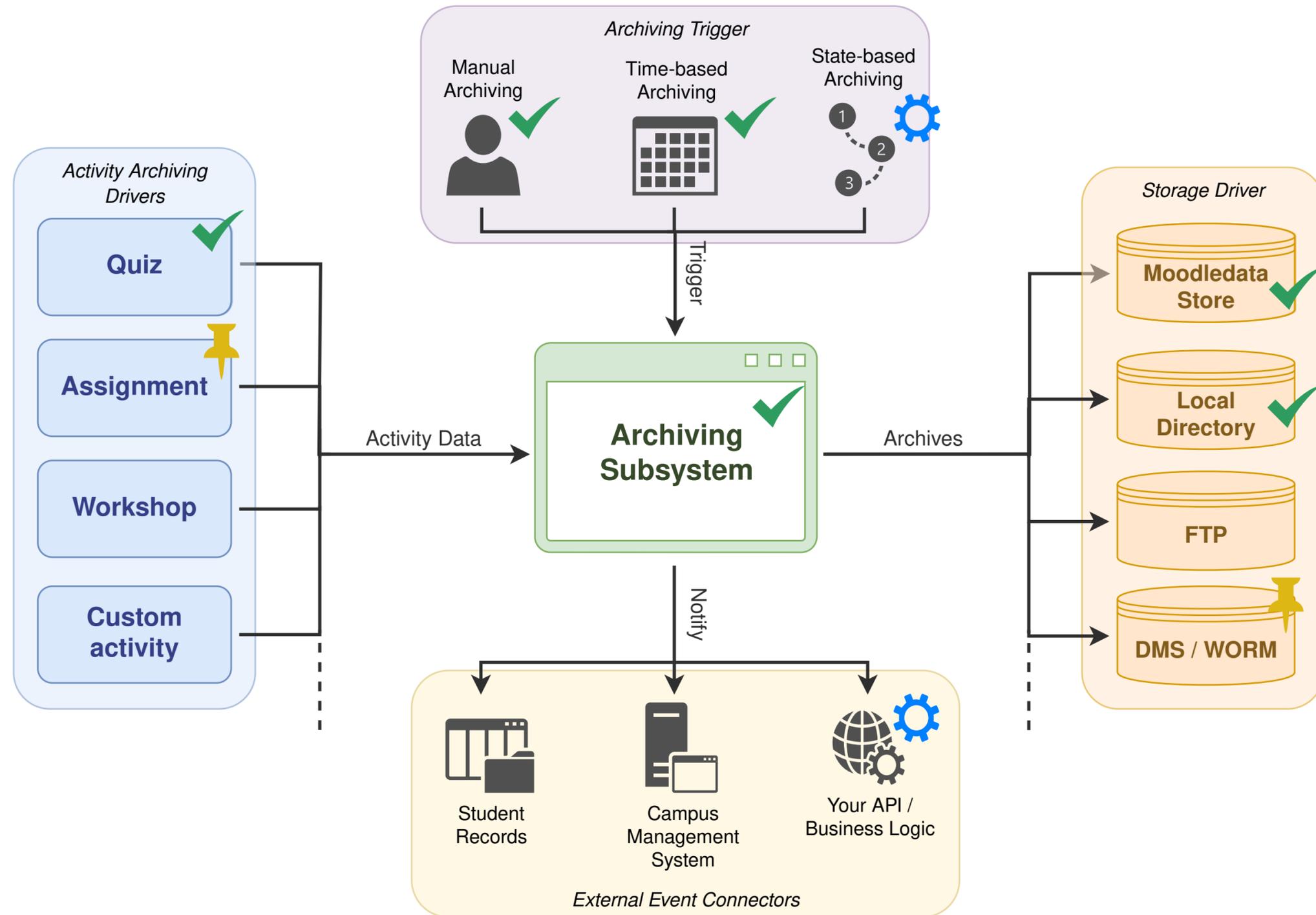
The Bigger Picture

Automation, Connection to CMS / DMS, Support for additional activities, Flexibility, ...

What we did so far ...

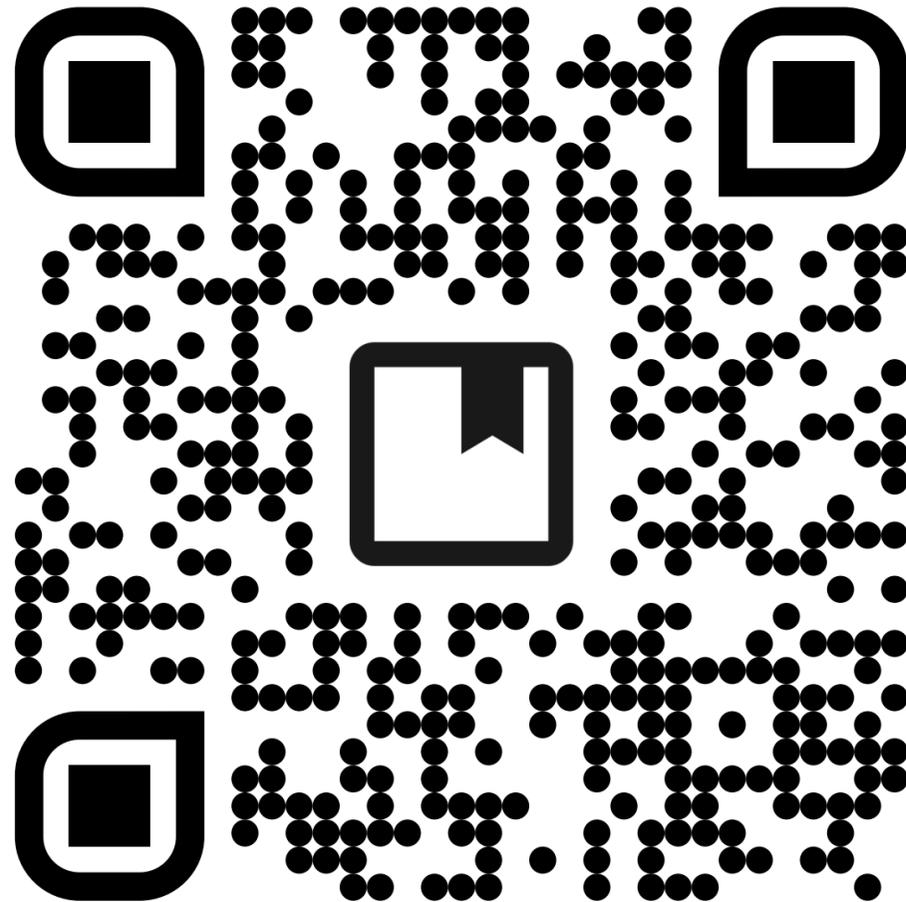


The new archiving subsystem for Moodle



Dive in and keep updated

The whole archiving subsystem, including its components and features, is well documented in our online docs. Developers moreover find extensive technical documentation.



<https://archiving.gandrass.de/>

Archiving Subsystem for Moodle

Archiving Subsystem for Moodle

release v1.0.0 PHP 8.1 - 8.4 Moodle 4.5 - 5.1 Moodle Plugin CI passing coverage 92% issues 0 open

pull requests 0 open maintained yes license GPL-3.0 PayPal donate GitHub sponsor Stars 0

Forks 0 Contributors 1

This is the official documentation for the Moodle Archiving Subsystem project. It provides a solid framework for archiving data from various Moodle activities, such as quizzes and assignments, and transferring it to different storage locations, such as the Moodle file store or external WORM storage systems.

Beta Project

This project is currently in its beta phase. Feel free to use it and provide feedback. However, please keep in mind that some aspects of this plugin might still change in future releases. Consider carefully before using it during this phase in production environments.

If you are new here, taking a look at screenshots and the component overview is a good way to familiarize yourself with the project:

Screenshots Components Overview

Quickstart

(1) Installation (2) Configuration (3) Usage

You can navigate to each section using the buttons above or jump to each document individually using the tree navigation on the left side.

Current State and Roadmap

You can find information about the current state of this project as well as an overview of already achieved milestones and their results on the [Roadmap](#) page.

Show Roadmap Changelog

Join the Discussion and Contribute

If you want to take part in the discussion and shape the future of this project, you can join us over on [Matrix: #archiving:gandrass.de](#)

Join the Matrix Chat #archiving:gandrass.de

Developer Documentation

Are you planning to contribute to the Moodle archiving subsystem? Check out our [developer documentation](#) to learn more about the system architecture, its components, and how to implement new sub-plugins.

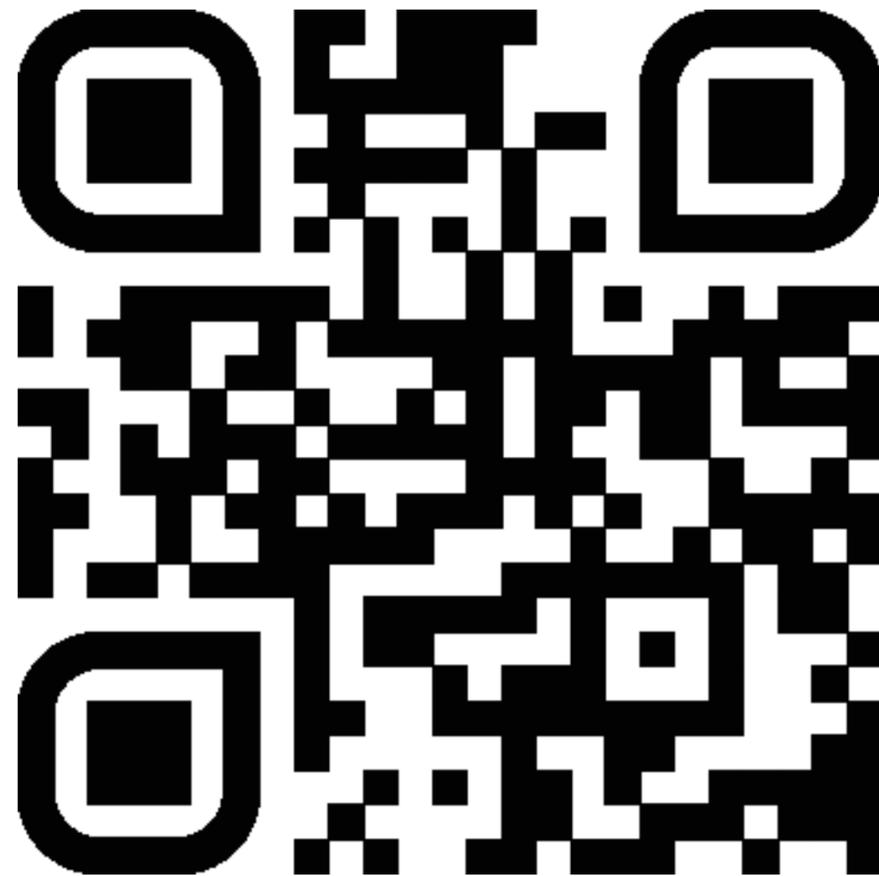
Developer Documentation GitHub Repository

License

This work is licensed under the [GNU General Public License v3.0](#).

Q&A Session

Now it's time for your questions!



You can find all slides of this talk at

 <https://gandrass.de>