

# Moodle quizzes for exams

Marcel Graf  
([marcel.graf@heig-vd.ch](mailto:marcel.graf@heig-vd.ch))

# Content

- Background
- Moodle quizzes — what for?
- Student experience of a quiz
  - Question types
- Workflow for creating, administering and marking an exam
  - Authoring questions
  - Creating a quiz
  - Marking a quiz

# Background

- I am teaching large classes (40 - 50 students) and I was looking for more efficient evaluations.
  - I wanted to go beyond pure multiple-choice exams and permit also open-ended questions.
  - I have been using Moodle quizzes in two classes for Travaux Écrits since last year (non-remotely) and I am happy with the results.
- How to mitigate cheating in remote exams is an open question.
  - In a non-remote setting students take the exam in the classroom. You have to verify that all students are present in the classroom and do not attempt to take the exam at home. You also have to monitor their screens to verify that no forbidden communication is taking place.
  - In a remote teaching setting you cannot control forbidden communication channels.
    - Proctoring is too expensive.

# Moodle quizzes — What for?

**Formative** (help students test their understanding)

- Multiple attempts
- Duration not limited
- May impose loose time limit for completion (e.g., evening before class)
- Immediate feedback (after each question or at the end of attempt)
- Automatic and manual marking

- Single attempt
- Duration strictly limited (e.g., 45 minutes)
- Time window strictly limited (e.g., from 14:00 to 15:00)
- Feedback only after marking and grading
- Automatic and manual marking



focus of this  
presentation

**Summative** (exams)

# Student experience of a quiz

maximum number of points obtainable

student may flag a question to return to it later

The screenshot displays a quiz interface. On the left, a sidebar for 'QUESTION 7' shows it is 'Not yet answered', 'Marked out of 1.0', and includes 'Flag question' and 'Edit question' options. The main area contains the question: 'Lequel des modèles de données suivants décrit le mieux le modèle utilisé par Google Datastore?' with five radio button options: 'a. Column family', 'b. Key/value', 'c. Document-oriented', 'd. Graph-oriented', and 'e. Relational'. Navigation buttons for 'PREVIOUS PAGE' and 'NEXT PAGE' are visible. At the bottom, a 'QUIZ NAVIGATION' bar shows a sequence of 17 question numbers, with number 7 highlighted in a blue box.

navigate freely between questions

# Question types

I found useful

- **Multiple choice:** Allows the selection of responses from a pre-defined list.
  - Single answer
  - Multiple answers
- **Short answer:** Allows a response of one or a few words that is graded by comparing against various model answers, which may contain wildcards.
- **Matching:** The answer to each of a number of sub-questions must be selected from a list of possibilities.
- **Drag and drop markers:** Markers are dragged and dropped onto a background image (no visible drop zones).
- **Drag and drop onto image:** Like *drag and drop markers*, but with visible drop zones.
- **Embedded answers (Cloze):** Embed into a text several *multiple choice* or *short answer* questions.

# Question types

## Others

- True/False
- Numerical
- Calculated
- Essay
- Random short-answer matching
- Calculated multi choice
- Calculated simple
- Drag and drop into text
- Kprime (ETH)
- Select missing words

## Multiple choice - single answer

**QUESTION 10**

Not yet answered

Marked out of 1.0

Flag question

Edit question

Lequel des modèles de données suivants décrit le mieux le modèle utilisé par Google Datastore?

Select one:

- a. Relational
- b. Document-oriented
- c. Column family
- d. Key/value
- e. Graph-oriented

⇒ choices possibly in random order



# Multiple choice - multiple answers

## QUESTION 12

Not yet answered

Marked out of 1.0

Flag question

Edit question

Quelle-s est/sont la/les caractéristique-s commune-s des bases de données NoSQL?

Select one or more:

- a. Permettent de stocker les données sans définir un schéma.
- b. Sont conçues pour tourner sur un cluster.
- c. Offrent en plus du modèle de données relationnel d'autres modèles, comme le modèle clé-valeur.
- d. Ne supportent pas des requêtes SQL.
- e. Sont seulement disponibles comme service cloud.

# Short answer

## QUESTION 5

Not yet  
answered

Marked out of  
1.00

Flag  
question

Pour les bases de données dans le cloud il y a différents modèles de service, notamment il y a des bases de données uni-locataire (single tenancy) et multi-locataires (multi-tenancy).

Donner un avantage important d'une base de données multi-locataires.

Answer:

*adaptable size*

# Matching

**QUESTION 4**

Not yet answered

Marked out of 1.0

Flag question

Edit question

Apparenter les concepts d'Ansible avec les descriptions correctes.

Module	✓ Choose...
Play	Équivalent d'une commande de ligne de commande
Playbook	Outil de ligne de commande pour lancer Ansible
Role	Lie une configuration à une ou plusieurs machines
Task	Contient un ou plusieurs Plays
	Permet de modulariser les configurations en pièces réutilisables
	Décrit une partie d'une configuration complète

# Drag and drop markers

**QUESTION 3**

Not yet answered  
Marked out of 1.00

Flag question  
Edit question

Dans le répertoire courant d'un système Unix on trouve les fichiers et répertoires suivants:

Fichiers et répertoires	Contenu des fichiers
.	
├─ a	aaa
├─ b	bbb
├─ c	
│ └─ d	ddd
└─ e	
│ └─ f	fff

On exécute les commandes

```
echo ggg > a  
rm b
```

Indiquez les changements sur les fichiers et répertoires. Si des commandes échouent, indiquez-le.

Fichiers et répertoires	Contenu des fichiers
.	
├─ a	aaa
├─ b	bbb
├─ c	
│ └─ d	ddd
└─ e	
│ └─ f	fff

a b c d e f aaa bbb ddd  
fff ggg (supprimé) (commande échoue)

no visible  
drop zones  
make it more  
difficult to  
guess the  
right answer

# Embedded answers (Cloze)

## QUESTION 4

Not yet answered

Marked out of 3.0

Flag question

Edit question

Émilie veut mettre en service un base de données NoSQL. Elle a quatre serveurs aux caractéristiques identiques à sa disposition. Au cas où elle déploierait la base de données sur un seul serveur le serveur permettrait de stocker 1 TO de données et il supporterait 1000 lectures par seconde ou 1000 écritures par seconde.

Émilie déploie la base de données sur les quatre serveurs en utilisant le sharding.

La base de données pourra stocker  TO de données.

Dans le meilleur des cas la base de données supportera  lectures par seconde.

Dans le meilleur des cas la base de données supportera  écritures par seconde.

# Workflow

## ■ Before exam:

### ■ Teacher

- Authors questions in Question Bank
  - Provides initial marking criteria, can be revised later
- Creates a Quiz activity
- Hides Quiz
- Adds questions to Quiz

## ■ At time of exam:

### ■ Teacher

- Makes Quiz visible

### ■ Students

- Attempt the Quiz

### ■ Teacher

- Hides the Quiz

## ■ After exam:

### ■ Teacher

- Reviews students' answers
- Updates/adds marking criteria for automatic marking if necessary
  - Has Moodle re-grade the quiz
- Repeats as needed
- Overrides automatic marking with manual marking where necessary
  - Questions where automatic marking is not possible can be marked purely manually
- Provides feedback per question
  - Individually or for all students
- Makes Quiz visible

### ■ Students

- Review their attempt, achieved marks, teacher's feedback

# Authoring questions in Question Bank

- Recommended to author questions in Question Bank
  - Better overview
  - Reusable questions
- **Course Management > Question Bank > Question Bank**
- Questions can be grouped in *Question Categories*, which form a hierarchy

**QUESTION CATEGORIES FOR 'COURSE: 2019 HEIG-VD CLOUD COMPUTING'**

- **Défaut pour 2019 CLD (0)**  
La catégorie par défaut pour les questions partagées dans le contexte « 2019 CLD ».
- **Demo (0)**
- **Quiz (non noté) (8)**
- **Travail Écrit 1 (23)**
- **Travail Écrit 2 (16)**

**QUESTIONS** CATEGORIES IMPORT EXPORT

## QUESTION BANK

Select a category:

No tag filters applied

Filter by tags...

Show question text in the question list

Search options ▾

Also show questions from subcategories

Also show old questions

**CREATE A NEW QUESTION ...**

T	QUESTION	CREATED BY FIRST NAME / SURNAME / DATE	LAST MODIFIED BY FIRST NAME / SURNAME / DATE
<input type="checkbox"/>	Ansible basics	Graf Marcel 12 June 2019, 2:16 PM	Graf Marcel 12 June 2019, 3:16 PM
<input type="checkbox"/>	DBaaS coherent hashing	Graf Marcel 12 June 2019, 11:58 AM	Graf Marcel 29 June 2019, 4:22 PM
<input type="checkbox"/>	DBaaS data models	Graf Marcel 12 June 2019, 10:57 AM	Graf Marcel 12 June 2019, 11:02 AM
<input type="checkbox"/>	DBaaS performance 1	Graf Marcel 12 June 2019, 11:36 AM	Graf Marcel 29 June 2019, 6:52 PM
<input type="checkbox"/>	DBaaS performance 2	Graf Marcel 12 June 2019, 11:38 AM	Graf Marcel 29 June 2019, 2:50 PM
<input type="checkbox"/>	GAE	Graf Marcel 12 June 2019, 11:21 AM	Graf Marcel 12 June 2019, 11:21 AM
<input type="checkbox"/>	Kube multi-tier	Graf Marcel 12 June 2019, 1:31 PM	Graf Marcel 29 June 2019, 6:57 PM

# Authoring questions — Short answer

## EDITING A SHORT ANSWER QUESTION ?

Expand all

**GENERAL**

Current category Travail Écrit 1 (22)  Use this category

Save in category Travail Écrit 1 (22)

Question name ! Com01 cat public\_html/index.html

Question text !

```
L'utilisateur Fred travaille dans une session Bash:  
  
fred@computer:~$ pwd  
/home/fred  
fred@computer:~$ ls  
-rw-rw-r-- 1 fred fred 1 Apr 12 2018 abc  
-rw----- 1 fred fred 6 Mar 22 2017 index.html  
drwxr-xr-x 2 fred fred 4096 Mar 22 2017 public_html  
-rwxrwxr-x 1 fred fred 73 Apr 12 2018 script  
fred@computer:~$ ls -l public_html  
-rw-r--r-- 1 fred fred 6 Mar 22 2017 index.html  
-rwxr-xr-x 1 fred fred 2250 Mar 22 2017 template.html
```

Continuer la session avec une commande (aussi courte que possible, sans utiliser le globbing) qui affiche le contenu du fichier ``/home/fred/public_html/index.html`` (non-interactif).

Markdown format

*students don't see this*



# Authoring questions — Short answer

Default mark	!	<input type="text" value="1"/>
General feedback	?	<p>La réponse la plus courte utilise un chemin relatif.</p> <p>write this after reviewing students' answers</p>
		Moodle auto-format ▾
ID number	?	<input type="text"/>
Case sensitivity		No, case is unimportant ▾

# Authoring questions — Short answer

Correct answers

You must provide at least one possible answer. Answers left blank will not be used. '\*' can be used as a wildcard to match any characters. The first matching answer will be used to determine the score and feedback.

▼ **ANSWERS**

Answer 1	<input type="text" value="cat public_html/index.html"/>	Grade	100%
Feedback	<div style="border: 1px solid #ccc; height: 100px;"></div>		
	HTML format		
Answer 2	<input type="text" value="cat ./public_html/index.html"/>	Grade	50%
Feedback	<div style="border: 1px solid #ccc; height: 100px;"></div>		
	HTML format		
Answer 3	<input type="text" value="cat /home/fred/public_html/index.html"/>	Grade	20%
Feedback	<div style="border: 1px solid #ccc; height: 100px;"></div>		
	HTML format		

you can provide this after reviewing students' answers

degree of correctness

initially provide only one answer

add additional answers as needed after reviewing students' answers

you can use \* wildcard to match any string

# Creating a quiz

- Turn editing on > Add an activity > Quiz

## ✓ ADDING A NEW QUIZ TO TRAVAIL ÉCRIT ?

► Expand all

▼ GENERAL

Name !


Description


HTML format

Display description on course page ?

# Creating a quiz — Settings

**▼ TIMING**

Open the quiz ? 2 ↕ April ↕ 2020 ↕ 13 ↕ 30 ↕   Enable

Close the quiz 2 ↕ April ↕ 2020 ↕ 14 ↕ 30 ↕   Enable

Time limit ? 45 minutes ↕  Enable

When time expires ? Open attempts are submitted automatically ↕

*enable  
for  
exam*

# Creating a quiz — Settings

▼ **GRADE**

Grade category ?

Grade to pass ?

Attempts allowed

*Set to 1 for exam*

# Creating a quiz — Settings

▼ **LAYOUT**

New page ?

Navigation method ! ?

*Set to Free for exam*

# Creating a quiz — Settings

*makes cheating harder*

▼ **QUESTION BEHAVIOUR**

Shuffle within questions ? Yes ⇅

How questions behave ? Deferred feedback ⇅

# Creating a quiz — Settings

▼ **REVIEW OPTIONS** ?

**During the attempt**

- The attempt ?
- Whether correct ?
- Marks ?
- Specific feedback ?
- General feedback ?
- Right answer ?
- Overall feedback ?

**Immediately after the attempt**

- The attempt
- Whether correct
- Marks
- Specific feedback
- General feedback
- Right answer
- Overall feedback

**Later, while the quiz is still open**

- The attempt
- Whether correct
- Marks
- Specific feedback
- General feedback
- Right answer
- Overall feedback

**After the quiz is closed**

- The attempt
- Whether correct
- Marks
- Specific feedback
- General feedback
- Right answer
- Overall feedback

uncheck everything for exam

after marking enable the ones you want to give feedback to students



# Creating a quiz — Settings

▼ **APPEARANCE**

Show the user's picture ?

Decimal places in grades ?  — set to 1

Decimal places in question grades ?

# Creating a quiz

- After creating the quiz, hide it from students.
  - Unhide it just before the exam.
- Then click on the quiz to add questions.

# Adding questions to a quiz

**2019 HEIG-VD CLOUD COMPUTING**

**DEMO**

This quiz closed on Wednesday, 1 April 2020, 4:15 PM

Time limit: 5 mins

Grading method: Highest grade

**BACK TO THE COURSE**

- Edit settings
- Group overrides
- User overrides
- Edit quiz**
- Preview
- Results
  - Grades
  - Responses
  - Statistics
  - Manual grading
- Locally assigned roles
- Permissions
- Check permissions
- Filters
- Logs
- Backup
- Restore
- Question bank
  - Questions
  - Categories
  - Import
  - Export

**CONTACT**

Cyberlearn

+41 58 900 01 17 (09.00-12.00 13.30-17.00)

cyberlearn@hes-so.ch

Careful:  
if one student made an  
attempt you can no longer  
add questions

# Adding questions to a quiz

tell students they have to add 1 to their grade

set to 5 for grades between 0 and 5

The screenshot shows a quiz editor interface. At the top, there is a search bar and a status bar indicating 'Questions: 5 | This quiz is closed'. On the right, there is a 'Maximum grade' input field set to '5.00' and a 'SAVE' button. Below this, there are two buttons: 'REPAGINATE' and 'SELECT MULTIPLE ITEMS'. The main area displays a list of questions, each with a page indicator (PAGE 1, PAGE 2, PAGE 3, PAGE 4), a question number, a title, and a weight. The questions are: 1. 'Ansible basics Apparenter les concepts d'A...' with a weight of 1.00; 2. 'DBaaS performance 1 Émilie veut mettre en...' with a weight of 3.00; 3. 'DBaaS NoSQL characteristics Quelle-s est/...' with a weight of 1.00. Each question entry has an 'Add' button to its right.

enable to make cheating harder

give weights to questions

# Previewing a quiz

- When you are finished adding questions to the quiz you can preview the whole quiz and experience it as a student would:




**Quiz** activity > (Cogwheel) > **Preview**

# Marking a quiz

- After students have attempted the quiz, you **can no longer**
  - add or remove questions,
  - change the question text;
- but in a question, you can change
  - the answers (the criteria for automatic marking),
  - the marking,
  - the feedback.



# Marking a quiz — Reviewing answers

	FIRST NAME / SURNAME	STATE	GRADE/5.0	RESPONSE 1	RESPONSE 2
<input type="checkbox"/>	 Review attempt	Finished	1.9	✓ cat public_html/index.html	✗ /home/fred /template.html
<input type="checkbox"/>	 Review attempt	Finished	3.8	☑ cat ./public_html /index.html	✓ /home/fred /public_html /template.html
<input type="checkbox"/>	 Review attempt	Finished	4.3	✓ cat public_html/index.html	✓ /home/fred /public_html /template.html

mark 100%

mark 0%

partial mark



# Marking a quiz — Updating criteria for automatic marking

Correct answers

You must provide at least one possible answer. Answers left blank will not be used. '\*' can be used as a wildcard to match any characters. The first matching answer will be used to determine the score and feedback.

▼ **ANSWERS**

Answer 1	<input type="text" value="cat public_html/index.html"/>	Grade	100%
Feedback	<div style="border: 1px solid #ccc; height: 100px;"></div>		
	HTML format		
Answer 2	<input type="text" value="cat ./public_html/index.html"/>	Grade	50%
Feedback	<div style="border: 1px solid #ccc; height: 100px;"></div>		
	HTML format		
Answer 3	<input type="text" value="cat /home/fred/public_html/index.html"/>	Grade	20%
Feedback	<div style="border: 1px solid #ccc; height: 100px;"></div>		
	HTML format		

you can provide this after reviewing students' answers

degree of correctness

initially provide only one answer

add additional answers as needed after reviewing students' answers

you can use \* wildcard to match any string

# Marking a quiz — Running an automatic re-grade

To apply the new marking criteria you need to run a re-grade:

Quiz activity > (Cogwheel) > Results > Regrade All

## TRAVAIL ÉCRIT 1

Attempts: 47

[Collapse all](#)

### WHAT TO INCLUDE IN THE REPORT

Attempts from

Attempts that are  In progress  Overdue  Finished  Never submitted

Show only attempts  that have been regraded / are marked as needing regrading

### DISPLAY OPTIONS

Page size

Marks for each question

[SHOW REPORT](#)

[REGRADE ALL](#) [DRY RUN A FULL REGRADE](#)

Only one attempt per user allowed on this quiz.

# Marking a quiz — Manual override

- You can override the the results of automatic marking at any time by providing a manual mark.
- The manual marks persist even if you run a re-grade.
- In the answers overview, click on an answer for a detail view, then click on **Make comment or override mark**.

Comment

Format

HTML format

Mark

0.75 out of 1.0

PRESTATIONS SUPPORT CONTACT

**Léonard Favre**

**Quiz** Travail Écrit 1

**Question** Fil01 mv e c

**Completed on** Tuesday, 7 May 2019, 2:00 PM

**QUESTION 14**

Partially correct

Mark 0.8 out of 1.0

Dans le répertoire courant d'un système Unix on trouve les fichiers et répertoires suivants:

Fichiers et                      Contenu des fichiers  
répertoires

Answer:

The correct answer is: mv e c

[Make comment or override mark](#)

## Marking a quiz — Giving feedback to students

- After marking the answers you can give feedback to students.
- Students can review the feedback by clicking again on the Quiz activity.
- Choose which forms of feedback you want to give by updating the review settings:

**Quiz activity > Settings > Review Options > After the quiz is closed**

After the quiz is closed

- The attempt
- Whether correct
- Marks
- Specific feedback
- General feedback
- Right answer
- Overall feedback

check to enable feedback

you probably want to show the obtained marks

# Multiple choice - multiple answers - Student review

The screenshot shows a question review interface. On the left, a grey sidebar contains the text 'QUESTION 9', 'Correct', 'Mark 1.0 out of 1.0', a flag icon, and 'Edit question'. The main area has a light blue background with the question text: 'Quelle-s est/sont la/les caractéristique-s commune-s des bases de données NoSQL?'. Below this is the instruction 'Select one or more:' followed by five options: 'a. Sont conçues pour tourner sur un cluster. ✓', 'b. Ne supportent pas des requêtes SQL. ✓', 'c. Offrent en plus du modèle de données relationnel d'autres modèles, comme le modèle clé-valeur.', 'd. Permettent de stocker les donnés sans définir un schéma. ✓', and 'e. Sont seulement disponibles comme service cloud.'. A yellow feedback box at the bottom contains the text: 'Your answer is correct.', 'The correct answers are: Ne supportent pas des requêtes SQL., Sont conçues pour tourner sur un cluster., Permettent de stocker les donnés sans définir un schéma.', and a large arrow pointing to the right.

Review option  
Marks

Review option  
Whether correct

Review option  
Whether correct

Review option  
Right answer

General feedback would go here

# Short answer - Student review

## QUESTION 2

Correct

Mark 1.0 out of 1.0



Pour les bases de données dans le cloud il y a différents modèles de service, notamment il y a des bases de données uni-locataire (single tenancy) et multi-locataires (multi-tenancy).

Donner un avantage important d'une base de données multi-locataires.

Answer: Facilement scalable (montée en taille) les données peuvent être ✖

Réponses possibles:

Avantages pour l'utilisateur

- la capacité de stockage paraît infinie, pas besoin de gérer la capacité
- on paye seulement ce que l'on utilise, pas la capacité réservée
- généralement prix plus bas à cause de la mutualisation
- généralement réplication déjà incluse dans l'offre de base, donc haute disponibilité/fiabilité, pas besoin de faire des backups
- généralement sharding utilisé dans l'offre de base, donc meilleure performance

Avantages pour le prestataire

- moins de serveurs à gérer, car les serveurs sont partagés entre clients
- généralement coûts d'exploitation plus bas

The correct answer is: plusieurs réponses possibles

Use General feedback to show possible answers

Review option  
Whether correct  
not very helpful for open-ended questions

# Tips

- To play with quizzes you can create a hidden quiz and use the preview function.
- Before using Moodle for an exam prepare a quiz (no grades) to allow students to become familiar with the interface.
- Explain beforehand in detail how you will mark multiple-choice questions.