

# The Grader: Quick Start Guide

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**Abstract**—This document describes how to get started with the Grader for Lab Tests, AY2023-24, T2. Grader is designed to make the logistical part of grading the WAD lab tests as seamless as possible. It can validate the files uploaded by the students, display the files, help grade with rubrics displayed, attach comments to graded files and much more. If you want to use it, here are the quick start instructions.

Since the WAD final exam also is online starting AY2023-24-T2, Grader was modified in April-May 2024 to be able to grade the finals as well. How the final-exam mode works will be described as separate section.

## I. QUICK START: LAB TESTS

Follow these steps to install and use Grader on your PC.

- 1) Unzip Grader.zip to your Document Root (DR).
- 2) Create a folder for the lab test, for example: DR/LT2. This folder will be called \$root. It may be best to create a copy of the provided sample folder DR/LT0.
- 3) If you want to modify the way the Grader works, all the customizations can be done in \$root/config.php. A sample config.php file, set up to grade Lab Test 2, is shown below:

```
1 <?php
2 // Mode: LT (for lab test, default) or FT (final exam)
3 // If mode == FT, submission files will be extracted from
4 // an eLearn Quiz report (Attempt Details)
5 $mode = "LT";
6
7 // Exam details
8 $examShortName = trim(basename($root), "\n\t\t0.");
9 $examLongName = "WAD Lab Test 2";
10
11 // Your sections
12 $sectionNames = ["G1", "G6", "G7"];
13
14 // Files where the eLearn Grade exports are stored
15 $csvFileNamePattern = "$root/csv/IS113-$examShortName-{sectionName}.csv";
16
17 // Location of subQuestion number and marks in the CSV file header
18 // Example:
19 // LT1 Q1A Points Grade <Numeric MaxPoints:2 Weight:10 Category:Lab Test
20 // 1 CategoryWeight:20>
21 // $subQuestionName = strtolower(trim($tokens[$locSubQ]));
22 // $marks[$subQuestionName] = explode(":", $tokens[$locMarks])[1];
23 $locSubQ = 1;
24 $locMarks = 5;
25
26 // Rubric file: Ensure that its lines read like:
27 // "Q1A, 0.50, "Use of <h1></h1> for displaying the title."
28 // with the first column matching the grade items in the
29 // $csvFileNamePattern
30 $rubricFile = "$root/rubric.csv";
31
32 // Folders where the eLearn Assignments (student zip files) are
33 // stored/created
34 // Use {sectionName} and {studentName} as placeholders, if needed
35 $submissionFolderPattern = "$root/submissions/{sectionName}/";
36
37 // Will unzip the zip files to $answerFolderPattern/
38 $answerFolderPattern = "$root/answers/{sectionName}/{studentName}/";
39
40 // Folders where the emailed zip files are stored
41 $emailFolder = "$root/submissions/emails/";
```

```
40 // Solutions and resources
41 $solutionFolder = "$root/solutions/";
42 $resourceFolder = "$root/resources/";
43
44 // Questions to grade as an array (so that the instructors can divide the
45 // labor)
46 $gradeQuestions = [1, 2, 3];
47
48 // Autogradable question.
49 // Key = File being autograded
50 // Value = Array of files to be copied to the folder containing the
51 // autograded file
52 // The first one is expected to be the autograder, the rest helper files
53 $autoGrade = [
54     "q3.php" => ["q3/q3-autograder.php", 'q3/lt2_q3_data/tour_data.csv']
55 ];
56
57 /** AutoGrader options:
58 * The AutoGrader (meaning the value in $autoGrade above) should print
59 * out a string that can be exploded using the subQuestion names below.
60 * $marker = "$subQuestionName: ";
61 * For each subQuestion, a rubric should be defined in rubric.csv
62 * $rubricName = "$subQuestionName-1";
63 * so that the marks can be inserted into the database
64 * and manual grading can be performed
65 */
66 $autoGradeOptions = [
67     'subQuestionNames' => ['q3']
68 ];
69
70 // MySQL credentials: make $dbPass = "" for WAMP
71 $dbUser = "root";
72 $dbPass = "root";
73 $dbName = "grader_test";
74 // No need to modify anything below this line
75 /* ===== */
76 CFG::init();
77 HT::init();
```

- 4) Edit \$root/config.php to modify:

- The mode (Line 5). It should be LT for lab tests or FT for the finals.
- Your sections in Line 10.
- Your database details in Line 69. (dbPass should be left as an empty string on WAMP or as root for MAMP).
- Other configuration variables, such as file locations, autograders etc. are described in the comments and/or in this items below.

- 5) Notice that the exam-specific config file uses the variable \$root. It is defined in the master config.php in the Grader folder, which is, for example, DR/Grader6/config.php. An example of this master config file is shown below.

```
1 <?php
2 // Folder where all your files for this lab/final test are.
3 // Grader expects to find a config.php there.
4 $root = realpath(__DIR__ . "../LT2");
5
6 // Load the config from the folder being graded
7 require_once "$root/config.php";
```

- 6) Export your Grade Book for Lab Test to CSV files like IS113-LT2-G2.csv. This \$csvFileNamePattern is specified in \$root/config.php (Line 15).
- 7) Use the export options shown in Fig. 1 and include the grade items shown in Fig. 2.
- 8) Store these CSV files in \$root/csv or as specified in \$root/config.php (Line 15).
- 9) Download the files the students submitted as zip files, and store them in \$root/submissions/G1 etc. using the
- 10) If there are emailed zip files, copy them over to \$emailFolder as specified in \$root/config.php (Line 38), with the emailed zip files containing the student id.
- 11) Open localhost/Grader in your browser and follow the online documentation.
- 12) One benefit of using the Grader is that you can verify the zip files downloaded from eLearn in no time by running it. It will make a neat summary of the errors encountered.

## Export Options

If using the "Combined Section"

Export Grade Items For

Sections

Key Field

Campus ID

Username

Both

Sort By

Grade Values

Numeric

Weighted grade

Grade Scheme

User Details

Last Name

First Name

Email

Section Membership

Fig. 1: Exporting the gradebook as a CSV file for the Grader to read in.

<input type="checkbox"/>	Lab Test 1 <input type="text" value="v"/>			20	20
<input type="checkbox"/>	LT1 Q1 <input type="text" value="v"/>	Numeric	-	6	30
<input type="checkbox"/>	LT1 Q2A <input type="text" value="v"/>	Numeric	-	2	10
<input type="checkbox"/>	LT1 Q2B <input type="text" value="v"/>	Numeric	-	6	30
<input type="checkbox"/>	LT1 Q3A <input type="text" value="v"/>	Numeric	-	4	20
<input type="checkbox"/>	LT1 Q3B <input type="text" value="v"/>	Numeric	-	2	10

Fig. 2: Grade components of LT1 (Lab Test 1).

## Complications

If you have two separate sets of tests, you have some issues on how you can use the Grader. First of all, you will have to create two exam folders (like \$root = "DR/LT2a" and \$root = "DR/LT2b", for instance). In each of the exam folders, you will have a \$root/config.php. In order to verify the student uploads, you may want to edit your gradebooks CSV files (from Quick Start step (6)) to remove the ones that are taking the second version of the test.

## II. QUICK START: FINAL EXAM

Since the final exam is administered as an eLearn quiz, the answers can be downloaded as one huge file. The Grader can read this file, locate the answer of interest, create the submission files as though they were submitted by the students and reuse the rest of the workflow to help you grade it.

The work flow is fairly similar to that of lab tests. An example final-exam folder is DR/FT0. In order to use it, you define \$root in the master config.php in the Grader folder as shown below:

```

1 <?php
2 // Folder where all your files for this lab/final test are.
3 // Grader expects to find a config.php there.
4 $root = realpath(__DIR__ . "../FT0");
5
6 // Load the config from the folder being graded
7 require_once "$root/config.php";

```

Within the final-exam folder (DR/FT0), you will have a \$root/config.php, which reads:

```

1 <?php
2 // Mode: LT (for lab test, default) or FT (final exam)
3 // If mode == FT, submission files will be extracted from
4 // an eLearn Quiz report (Attempt Details)
5 $mode = "FT";
6
7 // Exam details
8 $examShortName = trim(basename($root), "\n\t\0.");
9 $examLongName = "WAD Finals";
10
11 // eLearn Quiz report (Attempt Details) as CSV
12 $csvFileNamePattern = "$root/csv/IS113-$examShortName.csv";
13
14 // Rubric file: Ensure that its lines read like: (eg: see rubrics.csv)
15 // q14, 4, Auto-graded, q14/0lympics.php
16 // q14, -0.5, Syntax error, q14/0lympics.php
17 $rubricFile = "$root/rubric.csv";
18
19 // To reuse as much of the Grader as possible, in the "finals" mode,
20 // Grader will create zip files with the right names
21
22 // Folders where the eLearn Assignments (student zip files) are
23 // stored/created
24 // Use {sectionName} and {studentName} as placeholders, if needed
25 $submissionFolderPattern = "$root/submissions/";

```

```

25
26 // Will unzip the zip files to $answerFolderPattern/
27 $answerFolderPattern = "$root/answers/{studentName}/";
28
29 // Solutions and resources
30 $solutionFolder = "$root/solutions/";
31 $resourceFolder = "$root/resources/";
32
33 // LOCAL: Question number to be graded. Will populate $gradeQuestions with
34 // it.
35 $qNum = 14;
36 // Questions to grade as an array (so that the instructors can divide the
37 // labor)
38 $gradeQuestions = [$qNum]; // same as $qNum, but an array
39
40 // Autogradable question.
41 // Key = File being autograded
42 // Value = Array of files to be copied to the folder containing the
43 // autograded file
44 // The first one is expected to be the autograder, the rest helper files
45 $autoGrade = [
46     "Olympics.php" => ["q14/autograder.php"]
47 ];
48
49 /** AutoGrader options:
50 * The AutoGrader (meaning the value in $autoGrade above) should print
51 * out a string that can be exploded using the subQuestion names below.
52 * $marker = "$subQuestionName";
53 * For each subQuestion, a rubric should be defined in rubric.csv
54 * $rubricName = "$subQuestionName"; (for example)
55 * so that the marks can be inserted into the database
56 * and manual grading can be performed
57 */
58 $autoGradeOptions = [
59     'subQuestionNames' => ["q$qNum"]
60 ];
61
62 // MySQL credentials: make $dbPass = "" for WAMP
63 $dbUser = "root";
64 $dbPass = "root";
65 $dbName = "grader_test";
66 // No need to modify anything below this line
67 /* ===== */
68 CFG::init();
69 HT::init();

```

- 1) Notice how the \$mode is set in Line 5 to be "FT".
- 2) You don't need the gradebook (Item (6) in the quick start for lab tests above). The corresponding variables (\$locSubQ and \$locMarks, which refer to the gradebook) do not need to be defined.
- 3) Instead, you will need to export the eLearn quiz and point to it in \$csvFileNamePattern set to "\$root/csv/IS113-\$examShortName.csv"; in Line 12. Use a report (details below) to generate it.
- 4) The most time-consuming part of the setup is to create an autograder. Use the autograder in DR/FT0/solutions/autograder.php as a sample to

generate a good autograder.

- 5) Open localhost/Grader in your browser and follow the online documentation.
- 6) It is best to run the autograder to autograde all students (by clicking on the Auto-Grade button). Once it runs well enough, you can grade each student individually to finetune.

#### How to Generate the CSV File

To generate the CSV file from the eLearn quiz (in Item (3) above), follow the steps below:

- 1) Set up a report for the eLearn quiz as shown in Fig. 3.
- 2) Select "Attempt Details" as the report type.
- 3) Ensure that Instructors can access the report, and leave all other options as default.
- 4) Run it and export it as CSV. It is going to be a big file.
- 5) Move it to \$csvFileNamePattern with the name matching the pattern.

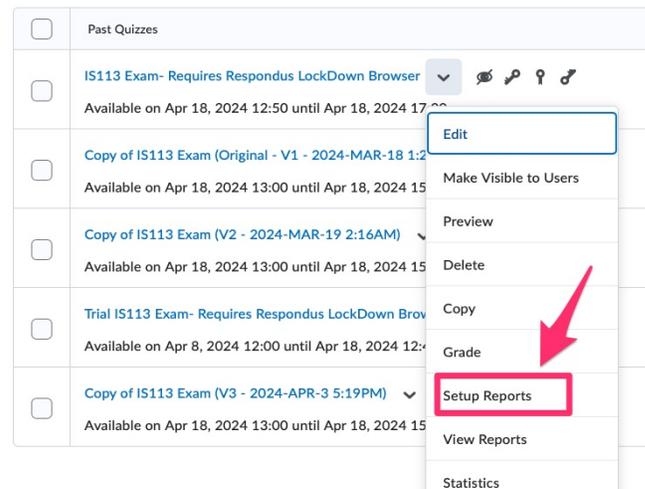


Fig. 3: Exporting the eLearn quiz (the final exam) as a CSV file: Setting up the report.

### III. MORE INFO

Much more detailed user manual and information about the Grader (but only on how it handles Lab Tests) can be found in Grader.pdf, a paper presented at EDUCON 2024.