Open Education Resource: MOODLE Quiz on Java Programming

Work done as part of AICTE approved FDP on Pedagogy for Online and Blended Teaching-Learning Process

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Contents

Open Education Resource: MOODLE Quiz on Java Programming

About the OER

This open education resource is from the domain Computer Science and Allied. It consists of set of MOODLE quizzes in the subject – Java Programming. There are six quizzes as part of this OER, each dealing with a core concept of programming in Java. The topics on which the quizzes are prepared are as listed below:

Quiz 1: Classes and Objects

Quiz 2: Methods and Constructors

Quiz 3: Static Members

Quiz 4: Inheritance

Quiz 5: Packages and Interfaces

Quiz 6: Exception Handling

Please note that:
- OER document is downloadable from https://punmblog.wordpress.com/oer/
- OER quizzes are downloadable from https://javaprogramiz.moodlecloud.com . For login details and steps to download, refer Section 3
- Target audience: Any undergraduate course offering Core Java as one of the subjects
- Tags: Quiz, Java, Programming, Education, MOODLE
- OER was developed using moodlecloud platform
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Prerequisite

As the quiz is starting directly with core concepts of Object-oriented Programming, it is required that the student should already have taken some programming lessons and should be thorough with the following basic concepts:

1. Variables and Constants
2. Data types
3. Operators and expressions
4. Conditional Statements
5. Looping Statements

Learning Objectives

After using this OER, learner will be able to:

1. Test the understanding of a concept (on which the quiz is based)
2. Find errors in the given Java code
3. Determine output of the given Java Code
4. Write code for a given problem

Helpful Documentation for Tool Use

[1]   for design and development of Quiz in MOODLE using moodlecloud platform
      (a Freemium Tool)

Section 2: Design Decisions

Rationale behind the OER

The quizzes prepared can be used as mini-tests at the end of each topic covered in the class. The grades obtained can be considered as assignment marks or for understanding of how well students have grasped the topic. The topics for the quiz were carefully chosen, so that it covers core concepts of Object-oriented programming, and it will be easy for the teacher to align their learning objectives with the assessment.

Nature of Decisions Taken

The design decisions involved in the creation of this OER were of broadly three categories:

1. Content Decisions
2. Pedagogic Decisions
3. Technology Decisions

Content Decisions

The content decisions related to:

1. Finalizing the scope of the complete quiz – starting with classes and methods, covering up to Exception Handling
2. Based on the scope, finalizing the topics to be covered under each quiz
3. Deciding on the number of quizzes to be provided that properly covers all the topics

Pedagogic Decisions

Teachers would want to use the quiz as an assessment strategy. It was decided that the quizzes be used by the teachers as a mini-test after completion of a topic in class. For the quiz to be helpful in assessing the understanding of a student, it was decided that the questions will be of the following form:

1. General concept
2. What is wrong with the code?
3. What is the output of the given code?
4. Write the code/ Fill in the missing code

Technology Decisions

The major technology decision taken was that the quizzes would be prepared using MOODLE, in particular, the moodlecloud platform.

Section 3: OER Description

Active OER

For checking the active OER, you may access the MOODLE website http://javaprogramiz.moodlecloud.com . You can take up a quiz by using student login as mentioned below:
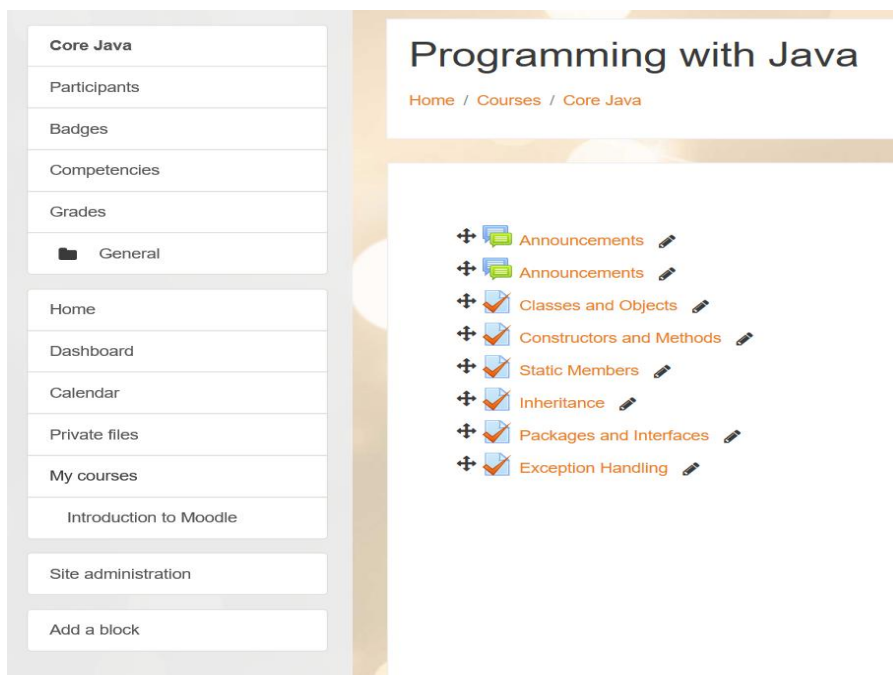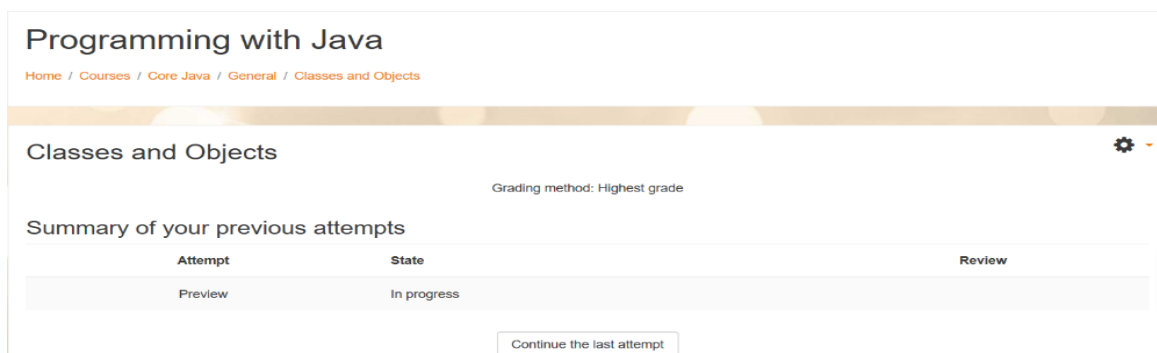
Username: student1
Password: 123456

Quiz Settings

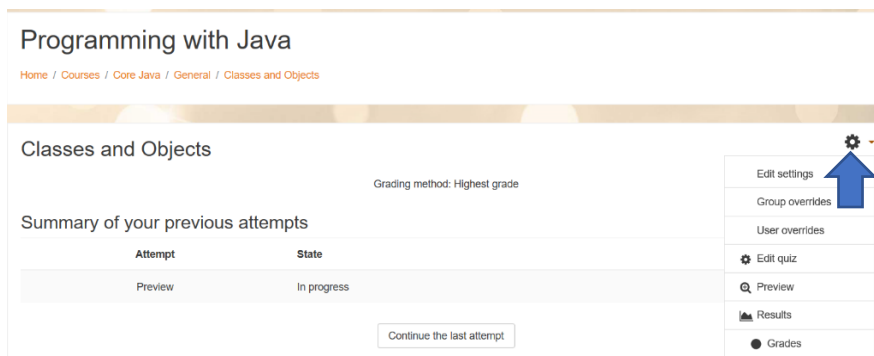Following screenshots shows the general settings of the quiz:

Screenshot 1: Appearance of the Home page after you login in your MOODLE site, where you will be offering the Java Course to your students. In the screenshot below, the MOODLE quiz OER is being used in a course "Programming with Java"

Screenshot 2: Select one of the quiz, the following screenshot is when 'Classes and Objects' quiz is selected.
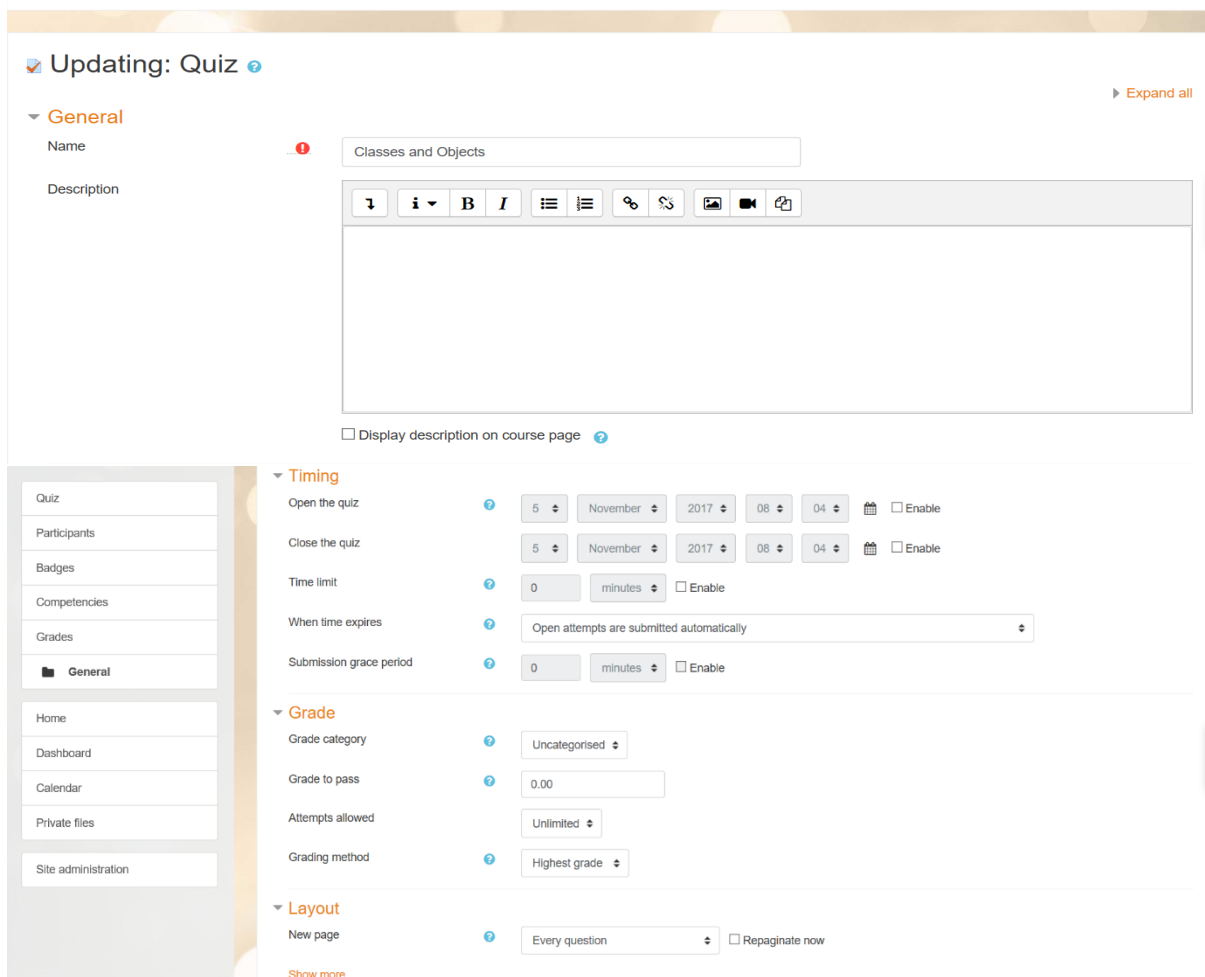
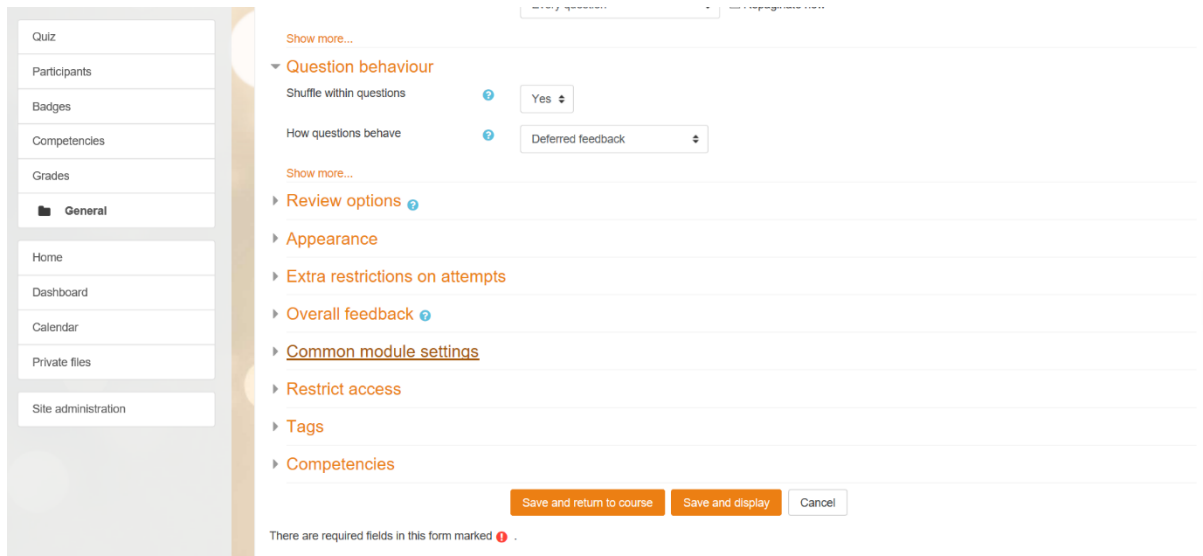Screenshot 3: The following screenshot shows settings popup menu (blue arrow)

Screenshot 4: From the popup menu choose Edit settings. The following screenshot shows various settings that can be done for the quiz

How to User the OER

Follow the steps below for using this OER:

Step 1: Download MOODLE quizzes moodle2-course-3-quiz-20171107-1847-nu.mbz from the OER moodle site http://javaprogramiz.moodlecloud.com . The teacher login details are as follows:
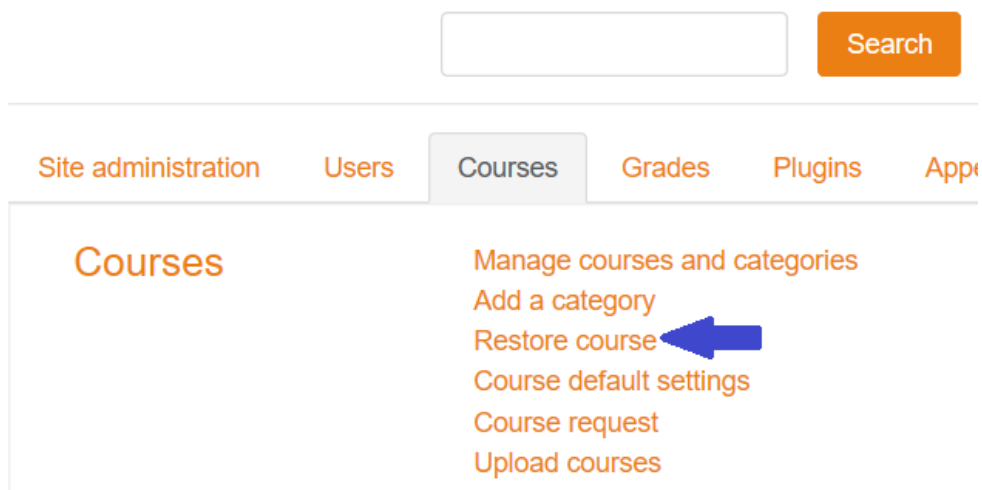
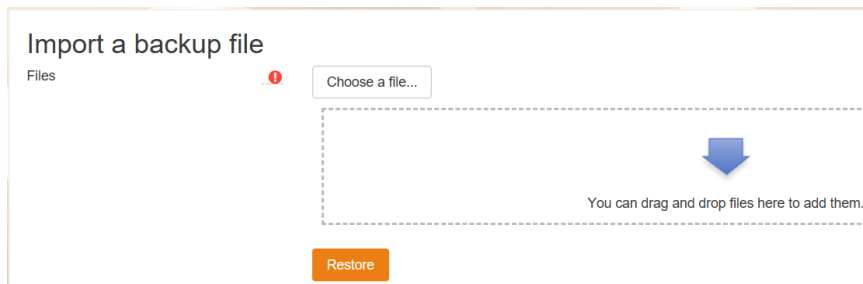Username: test1
Password: 123456

Step 2: Login to your MOODLE site (where you want to use the quizzes) as an administrator. This is required because the Quizzes that you have downloaded in step 1 will be imported in the course in which you have logged in as an administrator.

Step 3: Go to *Site Administration > Courses > Restore course*

Step 4: Upload the file moodle2-course-3-quiz-20171107-1847-nu.mbz and click 'Restore'

Step 5: Confirm – Check that everything is as required and 'click' on the Continue button

Step 6: Destination – Choose whether the course should be restored as a new course or in an existing course and then click the 'Continue' button.

Step 7: In the next few pages, check all the settings and then finally click on 'Perform restore' button.

Step 8: Complete – click on continue button.

Step 9: Perform the required settings as described in the 'Quiz Settings' section. Quizzes are ready to be used.

Best Practices with Lesson Activity

Here are some of the best practices on using these quizzes:

1. Student should already be thorough with the basic concepts of programming like:
    a. Variables and Constants
    b. Data types
    c. Operators and expressions
    d. Conditional Statements
    e. Looping Statements
2. The quiz will be most effective, if it can be taken as a mini-test after the teacher completes one topic in a class.
3. The marks scored by the student can be considered as assignment marks or as a mark of a student's understanding of the topic.

Section 4: Evaluating Effectiveness of OER

The OER effectiveness can be assessed at two levels:

1. At the student level
2. At the Consumer level

Effectiveness at the Student Level

The MOODLE quiz report can be used to evaluate this effectiveness of student's learning from the quiz. Additionally, there is an option for teachers to grade essays and these marks also will be calculated. There are various types of quiz reports that a teacher can get from a MOODLE and infer the effectiveness of student's learning:

1. Grade Report: This report shows all the student's quiz attempts, with the overall grade, and the grade for each question
2. Responses Report: This is very similar to the Grades report, except that it shows the responses students gave, rather than marks obtained

Effectiveness at the Consumer Level

OER consumers are typically teachers who are teaching Java as a programming subject. Linking a survey on three main aspects of the OER – Ease of use, Concept Coverage in the Quiz and Complexity of the Quiz, can help in identifying the effectiveness of this OER from a teacher's perspective.

The survey questions will be sent to the teachers who will contact us through contact page of our wordpress site. The survey will be send to their email address.

Section 5: Consolidated Log of Team Work

The consolidated log of team work is as shown below:

Activity	Team Member	Amount of Time	Additional Logs if Any
Discussion	Poonam Pandey	10 Hrs	Plan uploaded in Google Docs
	Jijnasa Patil		
Tool Exploration	Poonam Pandey	5 Hrs	
	Jijnasa Patil		
OER Creation	Poonam Pandey	9 Hrs	Plan uploaded in Google Docs
	Jijnasa Patil	7 Hrs	
OER Documentation	Poonam Pandey	7 Hrs	
	Jijnasa Patil	5 Hrs	
Individual Diary Logging	Poonam Pandey	30 mins	
	Jijnasa Patil	30 mins	

Section 6: Building a Community of MOODLE Users for Learning Java Programming

Possible sources for Community Building

Some of the viable sources for building a community are:

- ➢ Teachers who are using MOODLE for teaching programming lessons in Java
- ➢ Teachers who wish to use quiz as the assessment strategy

Plans for Community Building

The quizzes are available as a MOODLE login. All interested teachers can be connected using a Moodle website.

Works Cited

[1] MOODLE. (2017, October) Moodle Docs. [Online]

   https://docs.moodle.org/33/en/Quiz_activity

[2] Herbert Schildt. Java The Complete Reference, Ninth Edition, McGraw-Hill Education, 2014