

## **Towards Expanding the Use of the Online Judge UnitJudge for Java Programming Exercises and Web Development Practices in Computer Science Education**

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**Abstract :** Online judges have proven their utility in partial auto-evaluation of programming short exercises in the last decades. UnitJudge online judge has the advantage of facilitating the evaluation of separate units to provide more segregate and meaningful feedback to students in complex exercises and practices. This paper discusses the use of UnitUdge in advanced Java object-oriented programming exercises and web development practices. This later usage has been proposed by means of the Selenium Java library and classes to provide the web address. Consequently, UnitJudge is an online judge system that can be applied in several subjects, and therefore, many other students would take advantage of self-testing their exercises. This paper presents the experiments with a Java programming exercise for learning Java object-oriented classes with a generic type. Considering 10 students who voluntarily used UnitJudge, 80% successfully learned this concept, passing the judge exercise with correct results.

**Keywords :** online judges, programming skills, computer science education, auto-evaluation

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