

Computer-based software for testing students in digital logic theory and design

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ABSTRACT: Computer-based education is used extensively in the undergraduate digital electronic courses lectured by the author at Griffith University, Gold Coast, Australia. In order to aid in the teaching of the required digital logic concepts, the author has previously developed a suite of digital logic tutorial and simulation modules known as *WinLogiLab*. These modules provide tutorial and simulation of the entire digital electronic curriculum of the author's undergraduate course. The final requirement of the tutorial suite was to provide for student testing. This article describes the development of a computer-based testing software module, called *LogicTester*, that presents multiple-choice, short answer and, most importantly, *digital logic circuit design* questions for unsupervised student testing. The testing software is fully interactive and requires students to input their own designed digital circuits to solve given tasks, which the input circuit is then graded for accuracy. To allow for unsupervised student testing, extensive encryption of the software data files and user results files were necessary in order to ensure no deception in the student submitted results.