Manual to Automated Testing: An Effort-Based Approach for Determining the Priority of Software Test Automation

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Abstract : Test automation allows performing difficult and time consuming manual software testing tasks efficiently, quickly and repeatedly. However, development and maintenance of automated tests is expensive, so it needs a proper prioritization what to automate first. This paper describes a simple yet efficient approach for such prioritization of test cases based on the effort needed for both manual execution and software test automation. The suggested approach is very flexible because it allows working with a variety of assessment methods, and adding or removing new candidates at any time. The theoretical ideas presented in this article have been successfully applied in real world situations in several software companies by the authors and their colleagues including testing of real estate websites, cryptographic and authentication solutions, OSGi-based middleware framework that has been applied in various systems for smart homes, connected cars, production plants, sensors, home appliances, car head units and engine control units (ECU), vending machines, medical devices, industry equipment and other devices that either contain or are connected to an embedded service gateway.