

Modern kliens-szerver alkalmazások backend és frontend logikáinak konzisztencia vizsgálata formális eszközökkel

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Abstract

The leading platforms in modern software development for applications with the user interface are web and mobile platforms. In the earlier days, it was common that the purpose of the client side of these applications only display data and process interactions, while the backend ran all business logic in the background. Recently a new trend can be identified that the client apps include complex business logic as well. Modern web frameworks and mobile technologies rely on the client device's computing capacities for the maximal performance, therefore provide built-in services to cache data and run steps of the business logic on the client device. This paradigm is illustrated by the success of PWA technology and by offline applications. The user interface of modern applications is designed by UX designers, who focus rather on the ease of use and user experience than safety and soundness, which often leads to disrupting the well-defined business process by introducing new sub-steps and alternative ways. These tendencies altogether result that the client-side of modern applications also implement a lot of business logic that already implemented by the backend in a more strict, straightforward approach. In a more abstract approach, the client and the server work with the same type of documents by performing two different business processes that exist at the same time. The two layers of the application are often developed by different teams, where frontend and backend specialists work parallelly. Altogether this results in new risks that should be mitigated by continuously evaluating the consistency of the two business processes during the whole development life-cycle. This evaluation should identify if the two processes are consistent, special tools have to be introduced that ensure that after performing a particular iteration in the development roadmap, the consistency is still maintained. The goal of this paper is to introduce a formal model for this evaluation and introduce tools that can be derived from this model and can

be used in software development and testing.

Keywords: Software technology, Formal methods, Web applications, Reliability of Information Systems.

Acknowledgements. The project was supported by no. ED_18-1-2019-0030 (Application-specific highly reliable IT solutions) program of the National Research, Development, and Innovation Fund of Hungary, financed under the Thematic Excellence Programme funding scheme.