Pengembangan user interface generator untuk interaction flow modeling language berbasis Delta-Oriented Programming = Development of user interface generator for interaction flow modeling language based on Delta-Oriented Programming

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Abstrak

Software Product Line Engineering (SPLE) merupakan paradigma untuk mengem- bangkan aplikasi perangkat lunak berbasis platform dan kustomisasi masal. SPLE memanfaatkan commonality antar aplikasi yang termasuk dalam satu product line dan secara sistematis mengatasi variability antar aplikasi-aplikasi tersebut. SPLE digunakan dalam mengembangkan Amanah, layanan aplikasi untuk menghasilkan situs web bagi organisasi nirlaba secara otomatis. Penelitian terdahulu mengembangkan front-end Amanah menggunakan dua plug-in: UI Generator dan FeatureIDE-WinVMJ Composer. UI Generator merupakan plug-in untuk mentransformasi pemodelan abstrak user inter- face dengan Interaction Flow Modelling Language (IFML) menjadi aplikasi React yang dipakai sebagai front-end Amanah. Namun, pemodelan IFML ini belum menerapkan konsep SPLE secara tepat karena prinsip commonality dan variability belum diterapkan antar tur Amanah. Penelitian ini mengusulkan pengubahan pemodelan IFML dengan menerapkan konsep Delta-Oriented Programming (DOP). Dengan menerapkan DOP, UI Generator juga akan diubah agar dapat mentransformasi IFML berbasis DOP. Di sisi lain, plug-in FeatureIDE-WinVMJ Composer digunakan untuk menghasilkan aplikasi back-end serta menu dan rute halaman pada aplikasi front-end. Namun, hal ini melanggar prinsip Separation of Concern sehingga dalam penelitian ini menu dan rute halaman akan diintegrasikan ke plug-in UI Generator. Perubahan pemodelan IFML dan UI Generator dianalisis dan dievaluasi dengan six quality criteria dan functional testing. Hasil dari analisis dan evaluasi menunjukkan bahwa pemodelan IFML dan UI Generator terbaru telah menerapkan konsep SPLE secara tepat serta menu dan rute halaman berhasil terintegrasi pada UI Generator.

.....Software Product Line Engineering (SPLE) is a paradigm to develop software applica- tions using common platform and mass customization. SPLE uses commonality between software applications in a product line and systematically handles its variability. SPLE paradigm is used to develop Amanah, a service to generate websites for non-pro t organizations automatically. Previous studies have succeeded to develop Amanah’s frontend using two plugins: UI Generator and FeatureIDE-WinVMJ Composer. UI Generator is a plugin to transform an abstract user interface model using Interaction Flow Modelling Language (IFML) to React application. However, the commonality and variability concept in SPLE that exists between Amanah’s features have not been implemented in this IFML model. This study proposed a change to the IFML model to implement SPLE correctly by applying Delta-Oriented Programming (DOP) concept. With DOP applied in IFML, the UI Generator also needs to be changed so that it can transform the IFML-DOP model. On the other hand, FeatureIDE-WinVMJ Composer is a plugin to generate backend application and also menu and routes in the frontend application. This two process violates Separation of Concerns Principle so this study will integrate the menu and routes generation to UI Generator. The changes made in both IFML model and UI Generator are analyzed and evaluated with six quality criteria of SPLE and functional testing. The result shows that the modi ed IFML and UI Generator has implemented SPLE correctly and the

integration of menu and routes has been applied successfully in UI Generator.