Implementasi SHACL Constraints Checking Menggunakan Rule Engine VLog = SHACL Constraints Checking Implementation With VLog Rule Engine

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Abstrak

SHACL constraints checking merupakan proses validasi suatu RDF data graph terhadap suatu SHACL shapes graph. Pengembangan SHACL constraints checking pada umumnya menggunakan rule engine yang tertanam di dalam inti implementasinya. Penelitian ini bertujuan untuk menginvestigasi apakah program SHACL constraints checking dapat dibangun di atas rule engine yang independen. Penelitian ini dilakukan dengan melakukan implementasi pembuatan program SHACL constraints checking yang dibangun di atas rule engine Vertical Datalog (VLog). Program yang diimplementasikan pada penelitian ini dibangun menggunakan bahasa pemrograman Java serta menggunakan library Rulewerk dan Apache Jena. Berdasarkan implementasi yang telah dilakukan, program SHACL constraints checking dapat dibangun di atas rule engine VLog dengan melakukan serangkaian transformasi SHACL shapes graph dan RDF data graph menjadi rule syntax. Namun, pada penelitian ini program SHACL constraints checking yang dibangun hanya dapat memvalidasi SHACL Constraint sh:class, sh:datatype, sh:nodeKind,sh:minCount, sh:maxCount, sh:equals, sh:disjoint, sh:not, sh:and, sh:or, sh:xone, sh:node, sh:property. SHACL constraint lainnya tidak dapat diimplementasikan karena membutuhkan operasi regex dan perbandingan antar literal yang sulit untuk ditranslasi menjadi rule syntax.
..... SHACL constraints checking is a process to validate an RDF data graph againts a SHACL shapes graph. The development of SHACL constraints checking program usually use rule engine embedded on its own implementation. This research was aimed to investigate whether SHACL constraints checking program can be built on top of independent rule engine or not. This research will conduct the implementation of building SHACL constraints checking program on top of VLog Rule Engine. The program implemented in this research was built in Java programming language and was using Rulewerk and Apache Jena library. According to the implementation conducted in this research, SHACL constraints checking program can be built on top of VLog rule engine by transforming SHACL shapes graph and RDF data graph into rule syntax. But, the program can only validate SHACL constraint as follows: sh:class, sh:datatype, sh:nodeKind,sh:minCount, sh:maxCount, sh:equals, sh:disjoint, sh:not, sh:and, sh:or, sh:xone, sh:node, sh:property. Other SHACL constraints cannot be implemented in this research because those SHACL constraints requires regex operation and literal comparation which hard to be transformed into rule syntax.