Programming without Code: An Approach and Environment to Conditions-On-Data Programming

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Abstract : This paper presents the concept of an object-based programming language where tests (if... then... else) and control structures (while, repeat, for...) disappear and are replaced by conditions on data. According to the object paradigm, by using this concept, data are still embedded inside objects, as variable-value couples, but object methods are expressed into the form of logical propositions ('conditions on data' or COD).For instance : variable1 = value1 AND variable2 > value2 => variable3 = value3. Implementing this approach, a central inference engine turns and examines objects one after another, collecting all CODs of each object. CODs are considered as rules in a rule-based system: the left part of each proposition (left side of the '=>' sign) is the premise and the right part is the conclusion. So, premises are evaluated and conclusions are fired. Conclusions modify the variable-value couples of the object and the engine goes to examine the next object. The paper develops the principles of writing CODs instead of complex algorithms. Through samples, the paper also presents several hints for implementing a simple mechanism able to process this 'COD language'. The proposed approach can be used within the context of simulation, process control, industrial systems validation, etc. By writing simple and rigorous conditions on data, instead of using classical and long-to-learn languages, engineers and specialists can easily simulate and validate the functioning of complex systems.

Keywords : conditions on data, logical proposition, programming without code, object-oriented programming, system simulation, system validation