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IMPROVING N-VERSION PROGRAMMING TECHNIQUE RELIABILITY THROUGH COMPONENT-BASED SOFTWARE

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Abstract: In applications where computer systems are used to manage critical tasks, software faults cannot be tolerated and may lead to catastrophic consequences. Thus, software fault-tolerant techniques must be implemented in systems running such applications. One of the most widely used software fault-tolerant technique is the N-Version Programming (NVP) technique. Software components are reusable units that have been independently constructed for building software applications. Component-based software is causing a sea change in how software is developed. This paper introduces a scheme called Component-Based N-Version Programming (CBNVP) scheme for improving the NVP approach reliability. The introduced approach is based on component technology and the NVP technique. Also, the work discusses the expected effect of implementing the proposed technique on system reliability.

Keywords: N-Version Programming, Component-based software, System fault tolerance.