

Software Reliability Analysis with time redundancy

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Software Reliability is very important factor for estimating overall system reliability, which depends on the individual component reliabilities. It differs from hardware reliability in that it reflects the design perfection. Main reason of Software Reliability problems is high complexity of software. Various approaches can be used to improve the reliability of software. The modeling methods for Software Reliability is reaching its perfection by modelling the interactions between the components using one or more of the building blocks. We focus on software reliability model in this article, assuming that there is a time redundancy, the value of which (the number of repeated transmission of information) *can be an optimization parameter*. We consider given mathematical model in the assumption that in the system may occur not only irreversible failures, but also a failure that can be taken as self-repairing failures that significantly affect the reliability and accuracy of information transfer. Main task of the given paper is to find a time distribution function (DF) of instructions sequence transmission, which consists of random number of basic blocks. We consider the system software unreliable, the time between adjacent failures has exponential distribution.

Keywords— Exponential distribution, conditional Mean Time to Failure, distribution function, mathematical model, software reliability.