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**SANJAY KUMAR**

## **Abstract**

Today software development is a million dollar industry in most of the developed countries. The growing computer based lifestyle of human being help the software industries to grow as rapidly as science and technology. The development of simple and small software that is used for creating a document in personal computer, to the complex or multi-functional software that is used for managing the large system with standard quality. A small error or fault in software can cause serious hazard to property or life. The software that fulfill all the requirement of user as per required by the user in an efficient and user friendly manner without an error, then it is considered as quality software. Development of software product by reuse is the procedure in which already existing components are used in place of developing them from scratch and developing those components that are not available in software reuse libraries. The demand of software is rapidly growing as the requirement of customer is increasing day by day.

There are number of existing models for software development and quality determination. The procedural model provides only the procedure for software development whereas quality model only determine the quality of software product. In this research work, chapter 4 proposed a quality and productivity enhancement model that define the procedure for software development and also determine the quality of developed product. The proposed model enhances the software quality and productivity by removing the maximum error or faults in beginning of software development by the use of cause and effect diagram and fault prediction technique. The proposed model supports the reusability in every phase of development. The quality attributes such as reliability, correctness, completeness, portability, integrity, maintainability, reusability etc. helps to determine the product quality. Software reliability and reusability are important characteristics of software quality. As reusable components of software are already in use, so they are well tested, correct, portable and more reliable as compared to other products. So software reuse reduces the risk associated with the product and increases the quality and productivity of the software. The proposed model is compared with already existing models on the basis various features and quality characteristics.

In chapter 5, we have proposed a group of metrics that can be applied on the product during the various phases of software development. These metrics will help the developer to certify the product at the end of each phase of development. If the product does not certify the standard or not up to the level of satisfaction, then the product should be rectified at that phase of development. The metrics help to identify and collect the requirement in requirement phase, check the requirements in design phase so that they are as per the needs of the user. In testing phase a number of metrics help the developer to check the software on all its boundary conditions i.e. “what can it do and what it can’t do”. These metrics helps to reduce the product failure rate by removing the maximum error, faults or the hidden tasks during the every phase of development. A number of metrics are proposed that help the developer as well as user to certify the software product. These metrics also help in the maintenance of the product. The reuse metrics helps to determine the percentage of reuse components in each phase of software development.

In this research we have developed school management software by using the proposed model and applied the proposed metrics to enhance the quality of the product. The developed software is compared with already existing software. It is certified that the developed software is better than the already existing software. This research shows that reuse reduces the rework, development time, cost and risk associated with the developed software.in correspondence it also helps to increase the reliability, quality and productivity of software product.

Traditional focus of Software Engineering. Quality and Productivity-Oriented Software Engineering. 2. PROBLEM DOMAIN In broadening the focus of software engineering to concentrate on quality and productivity improvement [1] a number of key problems need to be addressed: We need to develop a much more mature understanding of what constitutes quality software. Environments must be developed that make all forms reuse easy to practice for computing professionals. Again object-oriented techniques only partly solve the problem. To improve the productivity of software development and software utilisation several approaches must be pursued. One approach involves focussing on key aspects of process improvement. software AND (productivity OR "development programming productivity (measured in effort per SLOC). efficiency" OR "development effectiveness" Several of the later publications use the same or a variant. OR "development performance"). Wohlin and Ahlgren describe factors and their impact on time to market in [31]. They use 10 different factors in their study, mostly factors that are covered by the publications discussed so far. They also include product complexity, methods and tools and requirements stability that could be considered technical factors. Quality, productivity and economic benefits of software reuse: a review of industrial studies. Empir. Software Eng., 12(5):471-516, 2007. So, Software reusability used here to expand quality and productivity of software. It improves overall quality of software in minimum energy and time. Main objective of this study was to present a reuse approach that discovered that how software reuse improves the quality in Software Industry. The V&V technique used for this purpose which is part of software quality management process, it checks the quality and correctness during the software life cycle. A survey study conducted as QUESTIONAIR to find the impact of reuse approach on quality attributes which are requirement specification an