Chapter 6

Conclusion

Thesis work has explored software development process and its impact on software quality. Here, a main finding of thesis work has been summarized. The aim of thesis was to address various aspects of software development process and software quality. The work of thesis has been motivated from the real world application of software products briefly covered in Chapter 1. In addition to this, chapter 2 covers the importance of software process to achieve quality in finished product using literature review. Chapter 2 analyzed situational factors which affect software process internally. Situational factors categorize as: software development models and standards, software development cost estimation, software development risk, software development success, and software development environment. All five factors are important to consider at the time of development but risk management is more important factor to consider because risk management manages resource effectively, minimize risk, and develop quality product within time and cost.

Further provide the impact of software development process on software quality where requirement, design, coding, and testing are analyzed to see its impact on software quality. Analysis shows that every phase of software development is important for software quality however software design is more important than other phase. Software design is used to capture the set of requirements and create architecture of software which realized the broad class of requirements. Finally impact of software evolution on software process has been analyzed from several
perspective and changing nature of software products. It is necessary to measure and formalize the software evolution with respect to changing environment.

Chapter 3 covers software process model and knowledge management. In this chapter proposed hybrid spiral model has been discussed which is integration of spiral model and knowledge management. Proposed hybrid spiral model uses tacit and explicit knowledge. It has been illustrated with example and compare with spiral model. If we use tacit knowledge in requirement and design phase then output is quality product.

Chapter 4 is based on design pattern and software coding. In this chapter proposed method has been discussed to assess design pattern. Proposed method is a combination of quantitative and qualitative analysis to evaluate quality attributes. Abstract factory pattern is use to illustrate the applicability of method to assess quality attributes. Design patterns do not always improve the quality attribute. Each and every attribute affected by design pattern as positively and negatively. Further impact of software coding on software quality has been analyzed using various programming languages: C, C++, Java, Python, and Mathematica which is illustrated with various programs. Analysis shows that every programming language has its own characteristics and importance which impact on various attributes of software quality. Selection of programming language affects software product and its quality.

Chapter 5 explains integration of usability through software process with proposed questionnaire. To integrate usability through software process usability framework is proposed. It has been illustrated in library management system to explain the applicability of usability framework. Analysis shows that user satisfaction, performance, accuracy, usefulness, and efficiency are most important usability attribute from user point of view.

Conclude that situational factors are important to consider during software development to develop quality product. Software process affected through various situational factors internally. Quality of software product depends on various phase of software development process. Every phase have an individual impact on software quality. Software product evolves over their lifetime because evolution of software product is a continuous and natural process. It is necessary to measure and formalize
the software evolution with respect to changing environment. At present knowledge management is an area where quality product is developed. Software design is the one of the most essential phase of software development process to achieve quality in software product. Design patterns are reusable solutions to general design problems that are estimated to improve various quality attributes. Software programming languages are having important role to develop quality product. It is essential to choose programming language based on software requirement. Success of software product directly related to users who use the software. Usability of software product is the one of the most important quality attribute for user. Usability of software product can be achieved using software process.