As the Internet and its services are more importance in our daily life, two issues have been addressed. First one is proposing design patterns for web applications and the second one is proposing architectural patterns.

Chapter 1 presents the Research contributions, Organization of thesis etc.

Chapter 2 presents about a detailed review of literature on various architectural patterns that contributed to improve performance of web applications.

In Chapter 3, an architectural pattern, based on MVC is proposed with underlying design patterns. The architectural pattern is named as eXtensible Web Application Development Framework (XWADF) which is extensible in nature and intended to get enhanced incrementally.

In Chapter 4, the details of incremental enhancements made to XWADF are provided. The details include different design patterns that can withstand faults in web applications at application level.

In Chapter 5, our architectural pattern XWADF is enhanced further by incorporating the design patterns identified for promoting scalability and availability of web applications into the architectural pattern.
In Chapter 6, results, case studies and discussions are provided. The details include results on response time, throughput, fault tolerance, scalability and availability of two case studies HMS (Hospital Management System) and LMS (Library Management System).

In Chapter 7, conclusions are drawn. These conclusions provide research outcomes with respect to the aims of the study. It also provides directions for possible future enhancements to be made.