Software Structured Design & Architecture

Assignment 2

(18 Points)

You are responsible to complete an individual task related to software quality attributes and architecture patterns. Each student has to independently complete the task described below and compile his/her report.

DEADLINE: 11:59pm on (Thursday) January 10, 2019

Task: Architecture Patterns vs. Quality Attributes & Tactics (18 points)
Analyze the relationships between common architecture patterns (i.e. *layered, broker, MVC, pipe-filter, client-server, P2P, service-oriented, publish-subscribe, shared-data, multi-tier,* and *map-reduce*) and quality attributes (*availability, interoperability, performance, security, testability,* and *usability*) introduced in the lectures by identifying their possible impacts on different quality attributes. Use a table (matrix) with rows of Architecture Patterns for each Quality Attribute to show the tactics applied in the pattern (an example for Modifiability as below), followed by the analysis of the possible benefits and penalties of the impacts on the quality attribute that may come with each pattern. Discuss the tactics that might be not associated with most patterns.

	Modifiability									
	Increase Cohesion		Reduce Coupling					Defer Binding Time		
Pattern	Increase Semantic Coherence	Abstract Common Services	Encapsulate	Use a Wrapper	Restrict Comm. Paths	Use an Intermediary	Raise the Abstraction Level	Use Runtime Registration	Use Startup-Time Binding	Use Runtime Binding
Layered	X	X	X		X	X	X			
Pipes and Filters	X		X		X	X			X	
Blackboard	X	X			X	X	X	X		X
Broker	X	X	X		X	X	X	X		
Model View Controller	X		X			X				X
Presentation Abstraction Control	X		X			X	X			
Microkernel	X	X	X		X	X				
Reflection	X		X							

(3 point per quality attribute)

Assignment Deliverable:
The assignment deliverables should be submitted individually. Each deliverable contains about no more than 8 pages (A4 size) including a cover page.