

# Software Systems Design & Architecture

## Assignment 1

(20 Points)

You are responsible to complete the following individual tasks related to software quality attributes and tactics. Each student has to INDEPENDENTLY complete the task described below and compile his/her report.

**DEADLINE: 11:59pm on (Saturday) December 29, 2018**

### **Task: Quality Attribute Analysis**

Pick two pairs of quality attributes from the three candidate pairs as follows: *stability vs. reliability*, *extensibility vs. scalability*, *security vs. safety*. Do your own research on them to identify, analyze, and discuss the differences between the two attributes in each pair and their associated tactics.

1. Apply scenario-based (stimulus-response) analysis method to create their general scenarios plus two typical but distinct concrete scenario (using six-element analysis) respectively based on your research, understanding, and observations (not from the lecture notes). Your concrete scenario description must contain at least THREE response measures. Present the general scenario in the format of six-element table and the concrete scenario in the stimulus-response diagram. (6 points)
2. Analyze the relationships of and compare the differences between the two quality attributes in each pair based on your research (not from the lecture notes), elaborate them with proper examples. (6 points)
3. Discuss at least two possible strategies to improve each quality attribute; propose at least two different tactics for each possible strategy and identify their potential impacts on both the quality attributes in each pair. Use a table with columns of quality attributes and rows of strategies and tactics to describe the benefits and penalties of the potential impacts that may come with each tactic. (8 points)

### **Assignment Deliverable:**

The assignment deliverables should be submitted individually. Each deliverable contains about no more than 10 pages (A4 size) plus a cover page.