

# HW 3 (team): Architecture Assignment

## Overview

In this assignment, your team will design the architecture for your system.

You must turn in a PDF document containing the following parts:

- Give a dataflow diagram showing a high-level architecture of your system (approx 1 page)
- Give a dataflow diagram showing an alternate high-level architecture of your system; this alternate architecture should have a different architectural style than your first architecture (approx 1 page)  
Identify the key quality attributes for your system and assess how well each of the two architectures supports each quality attribute; the quality attributes should be selected from the list that I discussed in my first lecture (approx 1 page)
- Identify two failure modes; for each mode, draw a fault tree and explain which of your two architectures is probably more prone to failure (and why) (approx 2 pages)
- Based on the quality and failure assessment, select one of your two architectures for further decomposition. Identify two important elements in your selected architecture, and for each element, give a lower-level dataflow diagram (approx 2 pages)
- Validate your selected architecture: walk through the use cases (from HW2) and succinctly describe how the architecture supports each use case (approx 1 page)
- Explain the implications: how would you revise your selected architecture based on the results of the validation and verification? And how would this impact the quality attributes and potential for failure? (approx 1 page)
- Briefly summarize the contribution of each of your team members.

## Some comments

Your work will be graded based on whether you appear to have produced an architecture that is valid (that meets the requirements) and verified (that follows good design principles). The page estimates above total 9 pages, but you may turn in up to 15 pages at your discretion.

You can divide this work however you like among your team, but here is a suggested approach that would complete the assignment very efficiently...

- Tuesday, two team members each create a dataflow diagram showing a high-level architecture. They email these two "candidate" architectures to the entire team.
- Wednesday, two team members meet to identify quality attributes. They then evaluate the candidate architectures and write up the results, which they email to the entire team.
- Wednesday(simultaneously), two other team members meet to identify failure modes. They evaluate the candidate architectures and write up the results, which they email to the entire team.
- Thursday, two team members meet to choose an architecture for decomposition. They each decompose one architectural element. They email results to the entire team.
- Friday, two team members meet to validate how well the architecture supports the use cases. They write up and email results.
- Friday (simultaneously), two other team members meet to verify the architecture's conformance to design principles. They write up and email results.
- Saturday, one person combines the results into a single document and adds the final page explaining how the architecture should be modified.

## Submission

Your homework must be submitted as PDF files and submitted in Canvas by the due date.