Department of Electrical, Computer, and Software Engineering

Faculty of Engineering and Applied Science

SOFE 3650-Fall 2022

Software Design and Architectures

Project Description and Deliverables

This document presents a description of the project expectation, deliverables, and grading scheme.

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Objectives

The objective of this project is to demonstrate a methodological set of steps in the design of a software architecture for a set of requirements provided by your instructor. The expected design approach to take is the Attribute Driven Design (ADD) presented in some detail in the text book [1] and briefly overviewed here. Students are also expected to implement the design.

Deliverables

The expectation is to submit a set of artifacts in a GitHub classroom repository that your instructor will create for you that demonstrates the ADD steps as applied to the design and implementation of a software application.

All deliverables should be uploaded to a GitHub repository that the instructor will set up. Individual contributions in the project will be graded the based-on GitHub commitments of the deliverables and use of the KanBan project board available in GitHub. A good way to manage your project is by leveraging the Issues tagging available through GitHub and the automated KanBan project board.

Deliverable 1 – Requirements Analysis (Due Oct 19)

Prior to commencing the ADD process the use cases, quality attributes and constraint requirements of the project need to be defined based on the requirements that were provided to you. The format of these submissions should follow closely the FCAPS case example in the text book [1].

Expected artifacts are:

- Use Case models
- Quality Attributes for the application
- System Constraints for the application
- Architectural Concerns

Deliverable 2 – Project progress report (Due Nov. 9)

At this point in the project you should have gone through the 1st iteration of the ADD process for the software application choosing a principal Use Case. It would also be best if students have commenced the 2nd iteration as well as this point.

Grading Scheme

- Organization and navigation of the GitHub repository with use of README files.
- Quality of the 1st iteration of the ADD steps.
    - Choice of reference architecture along with justifications
    - Deployment diagram
    - Major components of the architecture

Deliverable 3 – Design of a Use Case (Due Dec. 6 – end of the term)

At this point the project submission should include all 3 iterations of the ADD as well as a basic prototype implementation. The implementation should follow the architectural model and it should be clear which code files are associated with the design components.

Grading Scheme

- Organization and navigation of the GitHub repository with use of README files.
- Quality of the 2nd and 3rd iterations of the ADD steps
    - Description of elements (components)
    - Architectural diagram containing the elements (components) particular for the project
    - Sequence diagrams capturing the Use Cases considered for the design
    - Description of methods or interfaces
    - Architectural decisions made to address quality attributes
    - Changes to the architecture based on these decisions
- Prototype implementation
    - Demonstration of the use case
    - Code organization and its relationship to the design

Team Assessment

As a requirement of the course there is a team assessment that should be completed. The purpose of this team evaluation is for students to understand the dynamics and roles of a team. This will be assessed using the ITP metrics tool and instructions will be posted in Canvas.

References

[1] “Designing Software Architectures: A Practical Approach” by Humberto Cervantes and Rick Kazman and covered in the course.