# CSSE 477 – Milestone 3 – Application Server

The pluggable architecture of your application server has made it more extensible in Milestone 2. In this milestone, you will improve a few more quality attributes of the server by applying different improvement tactics.

## Requirements

Please note that when software requirements are written in English (an informal language), there is a possibility of misunderstanding the requirements. It is always a good idea to talk with your client (in this case, your instructor) to clarify the confusions before committing to an implementation. In that spirit, your instructor has been asking you to verify your design/approach during the class time on Thursday. Please feel free to meet with him earlier if there are pressing design issues. For this milestone as well, you must run your improvement tactics/design by your instructor during the class on Oct 29, 2015.

## Measuring the Server's Attributes

In this milestone, you will develop **two meaningful scenarios each** for **measuring** the following quality attributes of the application server:

1. Availability
2. Performance
3. Security

You will create test plans and carry out tests against the Milestone 2 code. The results (measurement of each scenario) serve as the baseline to compare the improvements discussed in the next section.

## Applying Improvement Tactics

You will implement **at least two tactics each** for improving the three quality attributes. Out of the **six** total tactics**, three must be unique** (one per quality attribute) and the **others can be overlaps**. As a result, you must implement **four unique tactics** at the bare minimum: one unique tactic for each the three quality attributes and one additional that applies to all three.

You will again run your test plans and measure the six scenarios after implementing the tactics. Please run the new experiments without changing the experimental condition (such as the test machine, OS, network settings, and so on).

**Note:** You can download a Java-based Denial-of-Service client from Moodle that you can use to stress test your server.

# Deliverables

## Report (pdf)

Your report must have the following sections:

1. Title Page

2. Change History

    You will update the MS2 report. Please append the changes to the **Change History** section to reflect changes in this version.

3. Architecture and Design

    3.1 Updated architecture diagram.

    3.2 Updated detailed design and a brief explanation.

4. Tactics/Feature Listing

    Show the cumulative work assignment so far in the project including the work for this milestone (who did what)

5. Architectural Evaluation and Improvements

    5.1 Availability

        A1 – A short name for availability scenario 1

            A1.1 The concrete scenario description showing Source, Stimulus, Environment, Artifact, Response, Reponse Measure

            A1.2 The test plan for A1

            A1.3 The baseline (result of the test). You must show a concrete, measurable number.

            A1.4 Improvement tactics (describe your approach in clear and concise way; use UML class diagram to show your new design where applicable). Note that it is ok if the same tactics is applicable to many scenarios as long as you have **one unique tactics for each Quality Attribute and one additional that applies to all three QAs**.

            A1.5 Compare and contrast the result of applying the two tactics against the baseline. Provide a short conclusion interpreting the difference in measured values.

        A2 – A short name for availability scenario 2

            (Similar to A1)

    5.2 Performace (See 5.1)

    5.3 Security (See 5.1)

6. Future Improvements

    Identify places where your project can be improved further and the tactics that can be used to do so.

## Code (zip)

Bundle the project and turn-it in on Moodle.

## Timeline

**On Thursday, Oct 29th, 2015, During Class** – Please verify your scenarios/tactics with the instructor. You must bring a document that shows detailed scenarios in the class.

**Monday, Oct 2nd, 2015, 8:00 am** – Please turn in your report (pdf) and the source code (zip) files on Moodle. You will show your project work to the instructor during class.