Understanding and implementation of Domain-Driven Design (DDD) and Test-Driven Development (TDD) approaches through Micro Services using Node.js, Swagger and Chai/Mocha

(Gowtham Krishna Potluri, Suganya Gunanathan)

CSC 8350: Advanced Software Engineering
Department of Computer Science, Georgia State University
Spring, 2018

Background:
Eric Evans was the first person to describe the concept of Domain-Driven Design (DDD). In DDD, we basically concentrate more on the core of the application and the complexity in quantified in terms of the business domain. The core domain, which is unique to the business is differentiated from the other sub-domains, which are typical. The design efforts of the core domain carry more weightage.

Another design model is Test Driven Development (TDD). TDD is basically an implementation in a 5-step model, which are executed at several stages of the development cycle based on the need. The first step of TDD is to add a test scenario which would be just enough for the code to crash/fail. Second, a new test case is run, or we can also run the entire test set. This is done to ensure that now it does actually fail. The functionality is later modified to make it pass the new tests. In the fourth step, we re-run the test suite. Now if there are failures in this, the code will have to be updated and retested. These steps are repeated for each of the functional requirements.

Overview of the hands-on project:
The goal of this project is to understand the concepts and working of DDD and TDD through Micro services using Node.js, Swagger and Chai/Mocha.

Microservices - Microservice is an architectural style that structures an application as a collection of small, independently deployable, loosely coupled services that will serve a business goal. It also parallelizes development by the continuous delivery/deployment of large, complex applications. In this project, we will be using micro services for demonstrating DDD with the help of Node.js. Node.js uses an event-driven, non-blocking I/O model making it lightweight and efficient. Node package manager, npm, is the largest ecosystem of open source libraries. We will also be using Swagger as documentation and testing tool for micro service end points.

Along with DDD, we will implement TDD using Chai/ Mocha. Chai is a TDD assertion library for node and the browser that can be delightfully paired with any JavaScript testing framework. Mocha is a feature-rich JavaScript test framework running on Node.js and in the browser, making asynchronous testing simple.

References: