



Project Deliverable 3

CRN: 43509

Group 7

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Iteration 2: Identifying Structures to Support Primary Functionality

The focus of this section is to present the results of the activities that are performed from each step of the ADD process in the second iteration. This iteration will dive deeper into more detailed decisions that will promote better implementation which will aid the development team. As we can not predict everything, we need to be more disciplined on which decisions we make and attack them from the most significant to least significant.

Step 2: Establish Iteration Goal by Selecting Drivers

The goal of this iteration is to address the general architectural concern of identifying structures to support primary functionality. Identifying these elements is important for understanding how functionality is supported and addressing CRN-3.

Besides CRN-3, the architect considers the system's primary use cases:

- UC-1
- UC-2
- UC-6
- UC-9

Step 3: Choose One or More Elements of the System to Refine

The elements that will be refined in this iteration are the modules located in the different layers defined by the three-tier reference architectures from the previous iteration. In general, the support of functionality in this system requires the collaboration of components associated with modules that are located in the different layers.

Step 4: Choose One or More Design Concepts that Satisfy the Selected Drivers

In this iteration, the book Pattern-Oriented Software Architecture is used to select several architectural design patterns. The following table summarizes the design decisions.

Design Decisions and Location	Rationale
Create a Domain Model for the application	Before starting a functional decomposition, it is necessary to create an initial domain model for the system, identifying major entities in the domain, along with their relationships.
Identify Domain Objects that map to the functional requirements	Each distinct functional element of the application needs to be encapsulated in a self-contained building block - a domain object.
Decompose Domain Objects into general and specialized Components	Domain objects represent complete sets of functionality, but this functionality is supported by finer-grained elements located within the layers. The "components" in this pattern are what we have referred to as modules.
Using JSON programming language, handlebars, and	By using JSON which is a lightweight data-interchange format where data is able to be transferred and used through a web application.

sockets

Alongside that JSON supports many frameworks and libraries which make scalability.

By using handlebars which are functions that support GUI it makes it easier to display information from the server.

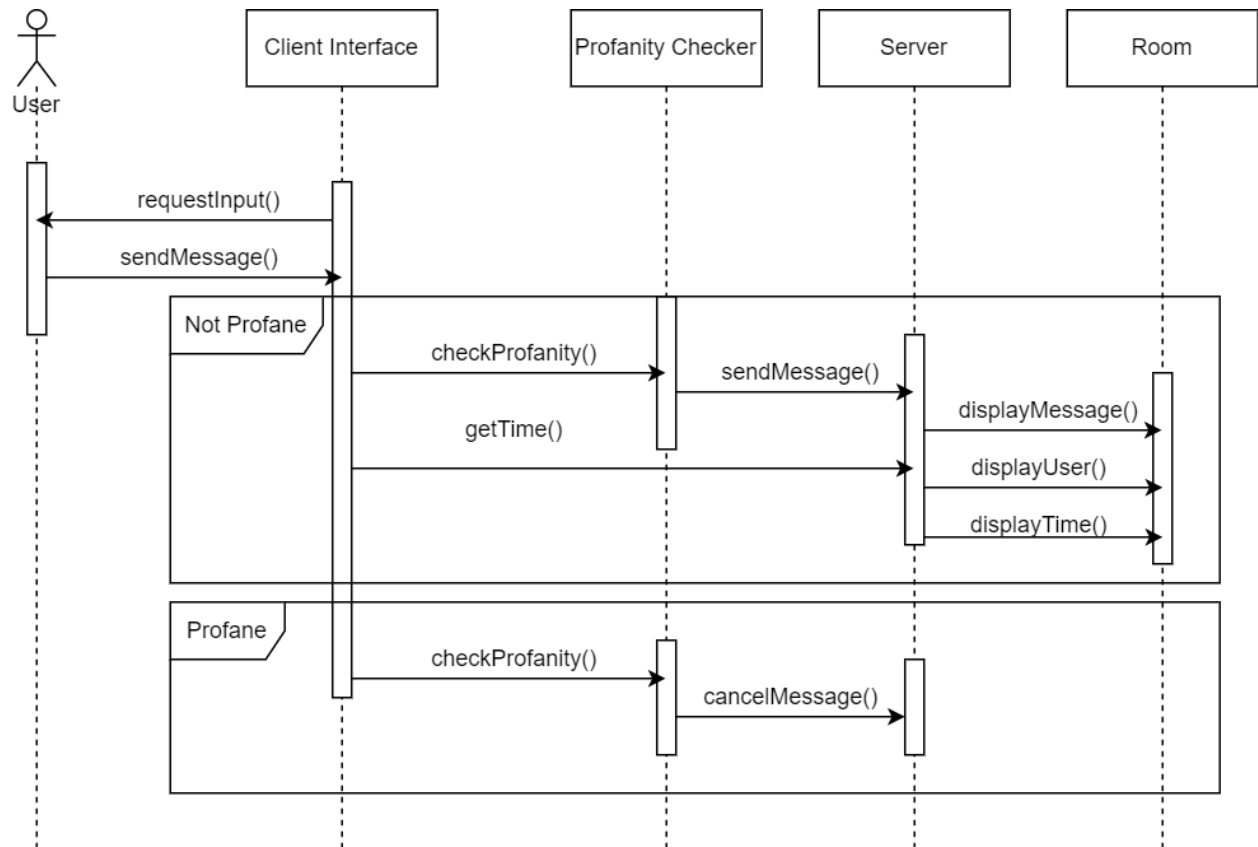
Sockets.io is a library that is a real-time web application that allows for bidirectional communication between clients and servers.

Step 5: Instantiate Architectural Elements, Allocate Responsibilities, and Define Interfaces

The instantiation design decisions made in this iteration are summarized in the following table:

Design Decisions and Location	Rationale
Create only an initial domain model	The entities that participate in the primary use cases need to be identified and modeled but only an initial domain model is created, to accelerate this phase of design.
Map the system use cases to domain objects	An initial identification of domain objects can be made by analyzing the system's use cases. To address CRN-3, domain objects are identified for all of the use cases.
Decompose the domain objects across the layers to identify layer-specific modules with an explicit interface	<p>This technique ensures that modules that support all of the functionalities are identified.</p> <p>The architect will perform this task just for the primary use cases. The rest of the team members will work on other modules, thus dividing up the work.</p> <p>A new concern will be created in which is identified below: CRN-4: Some of the modules shall be tested to determine their functionality.</p>

Step 6: Sketch Views and Record Design Decisions



Step 7: Perform Analysis of Current Design and Review Iteration Goal and Achievement of Design Purpose

The decisions made in this iteration provided an initial understanding of how the system shall function.