

CECS 491A - Sec 6 - Quick Find

Low Level Design Document

Project Name: ArrowNav

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1. Introduction

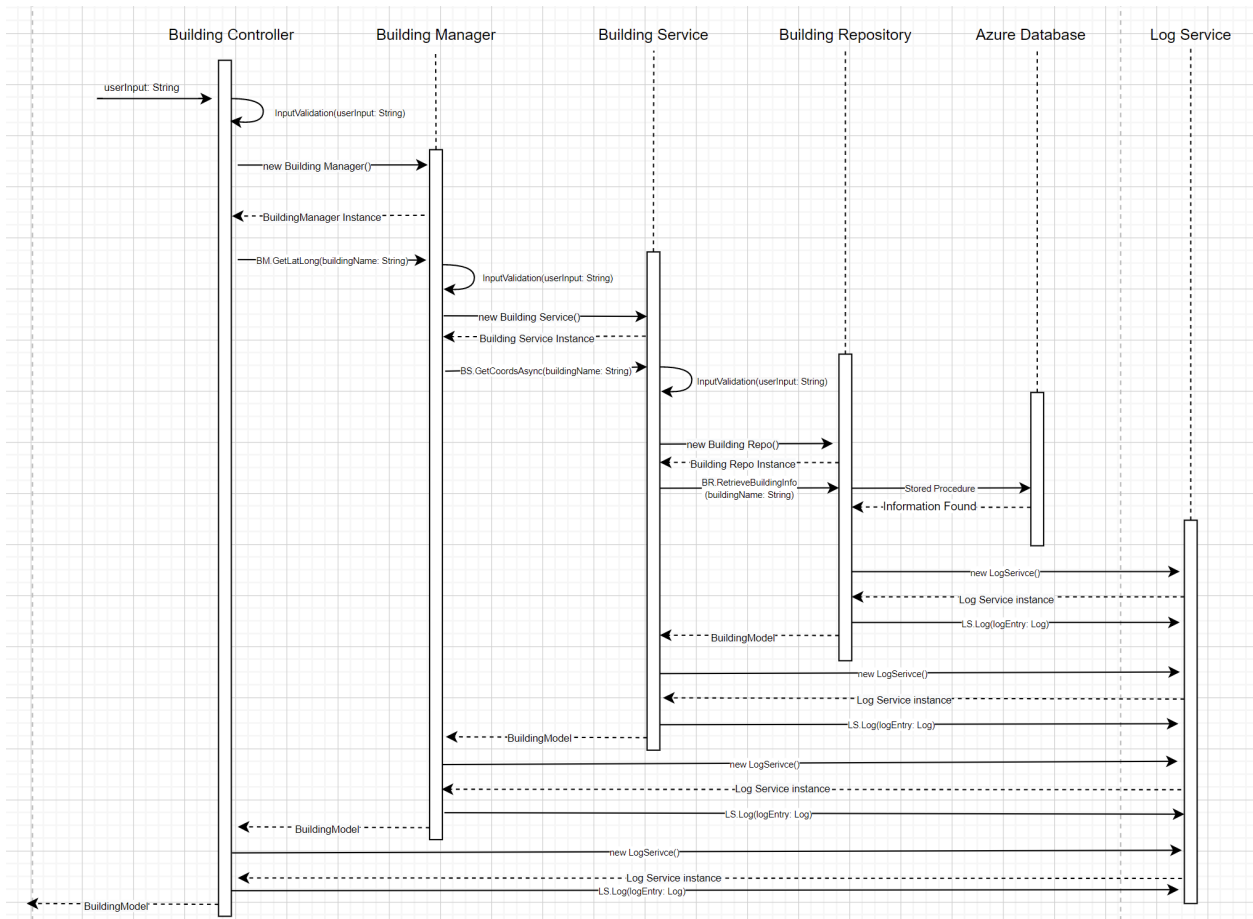
This low-level design document is intended to demonstrate how data is handled when input into the system, specifically with regard to the quick find feature. Furthermore, any error handling will be explained with its potential solutions.

2. Quick Find Feature

The user will have the option to scroll through an alphabetical list of all buildings on the campus when clicking on the search bar or be able to input the name of the building. Once having clicked the search button, it will highlight on the map where the location of said building via the use of a marker. It will also display buttons where the user selects a specific route generation depending on their mode of transportation.

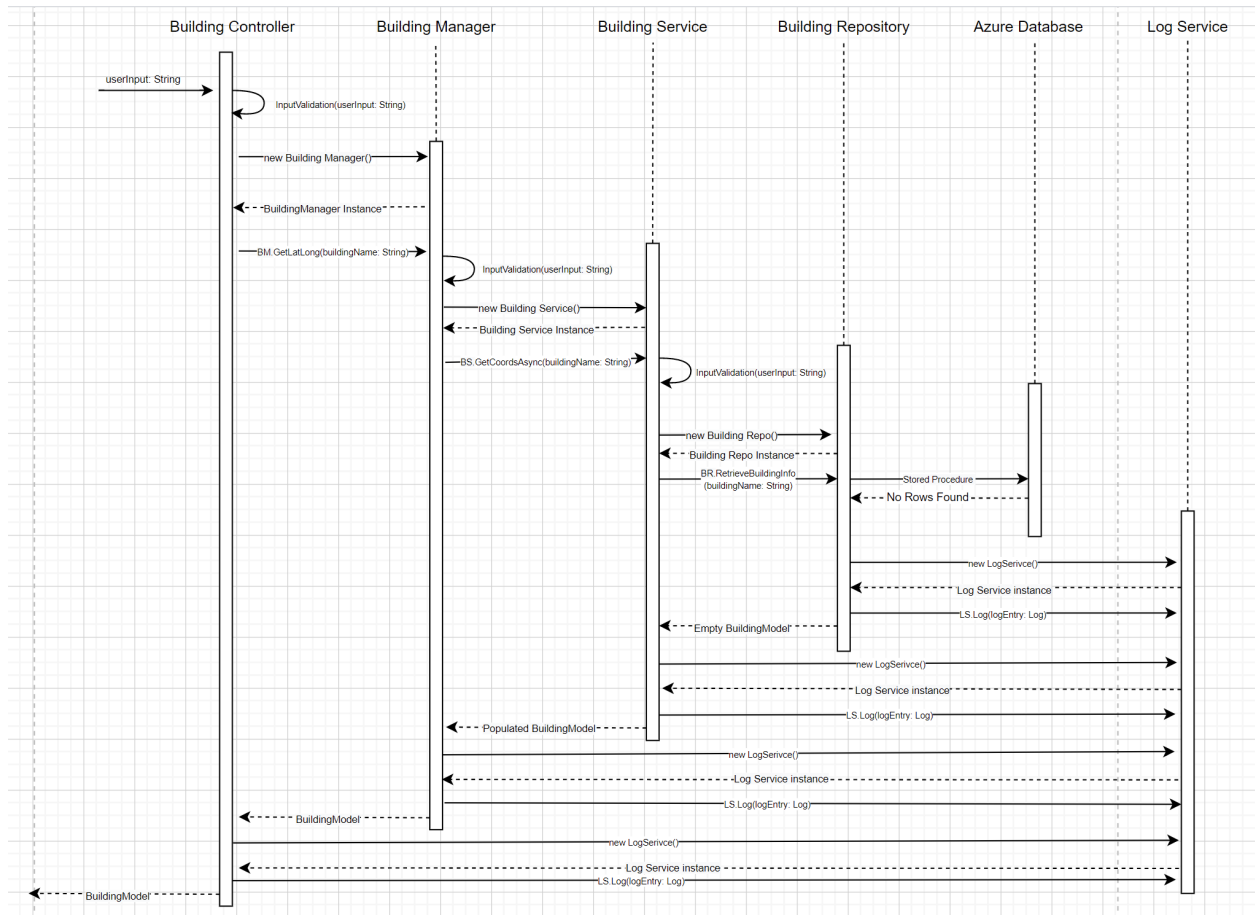
2.1 Low-Level Design

This diagram shows the flow of control when a user inputs a valid building name into the quick search. What the quick search does is it retrieves the information of the building such as the latitude and longitude that are necessary to place a marker on the map as well as obtaining the route information from Mapbox's API. As it reaches our building controller the user's input which is a string is run through the inputValidation method where it will be checked for certain characters. After validating the input, the controller instantiates a new BuildingManager which will call the GetLongLong method which takes in the user's input as a parameter. Just as in the controller, the manager will also validate the input of the user before proceeding. After which it will instantiate a building service where the user input will also go through another round of validation. It will then access an extension of a repository interface, a building repository, as part of the data access layer. This repository will handle retrieving building data from our SQL server data store and log the success of the method being called. A building model with all the building's information will then be sent back through each layer where each layer will then log the success of the operation.



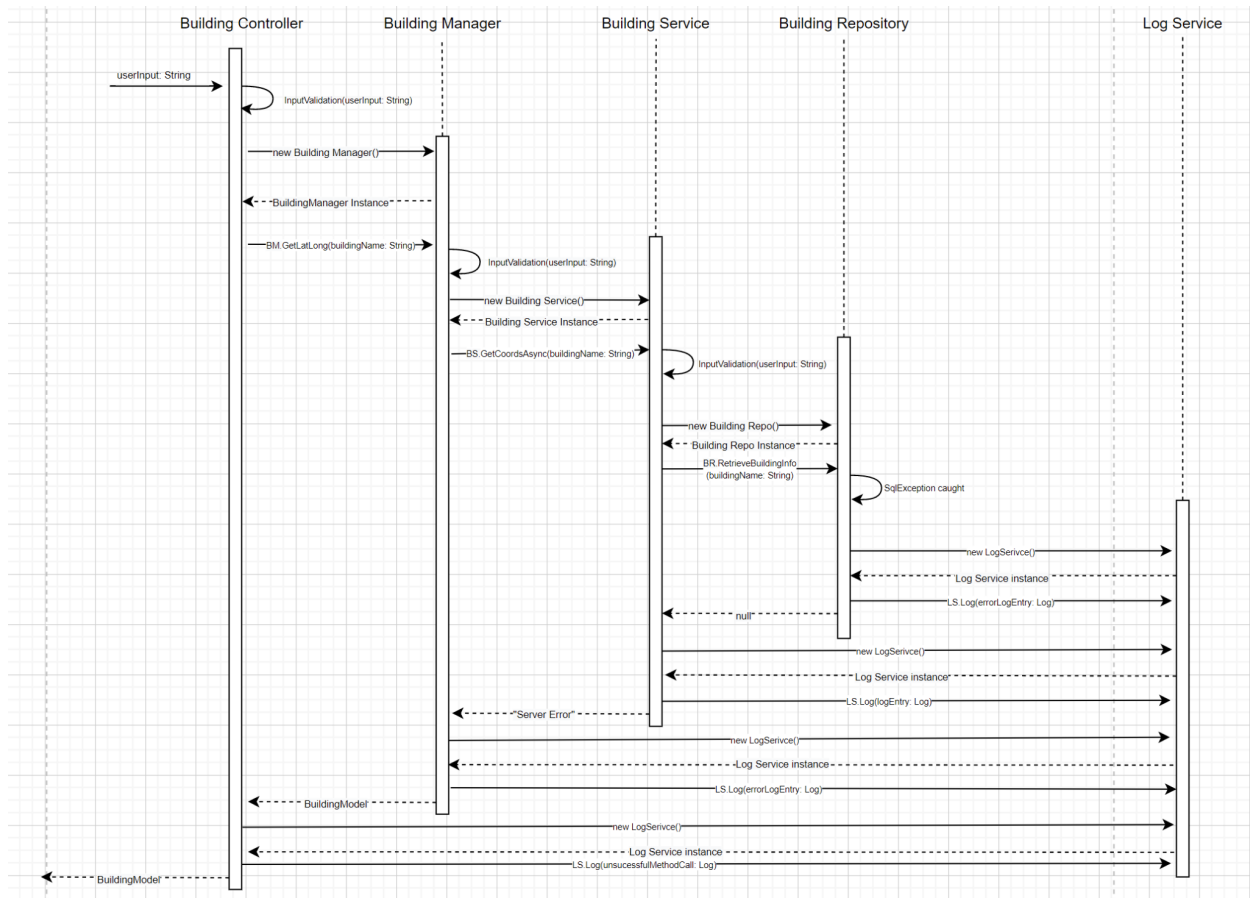
2.2 Building Not Found

The process is the same as when the building is found except now the building repository will return an empty(default) building model. In the building service, it populates it with a message about the account not being found and proceeds to log the events that transpired and return it to the manager. The manager will log the events and then proceed to return the populated building model to the controller which in part will return it to our front end.



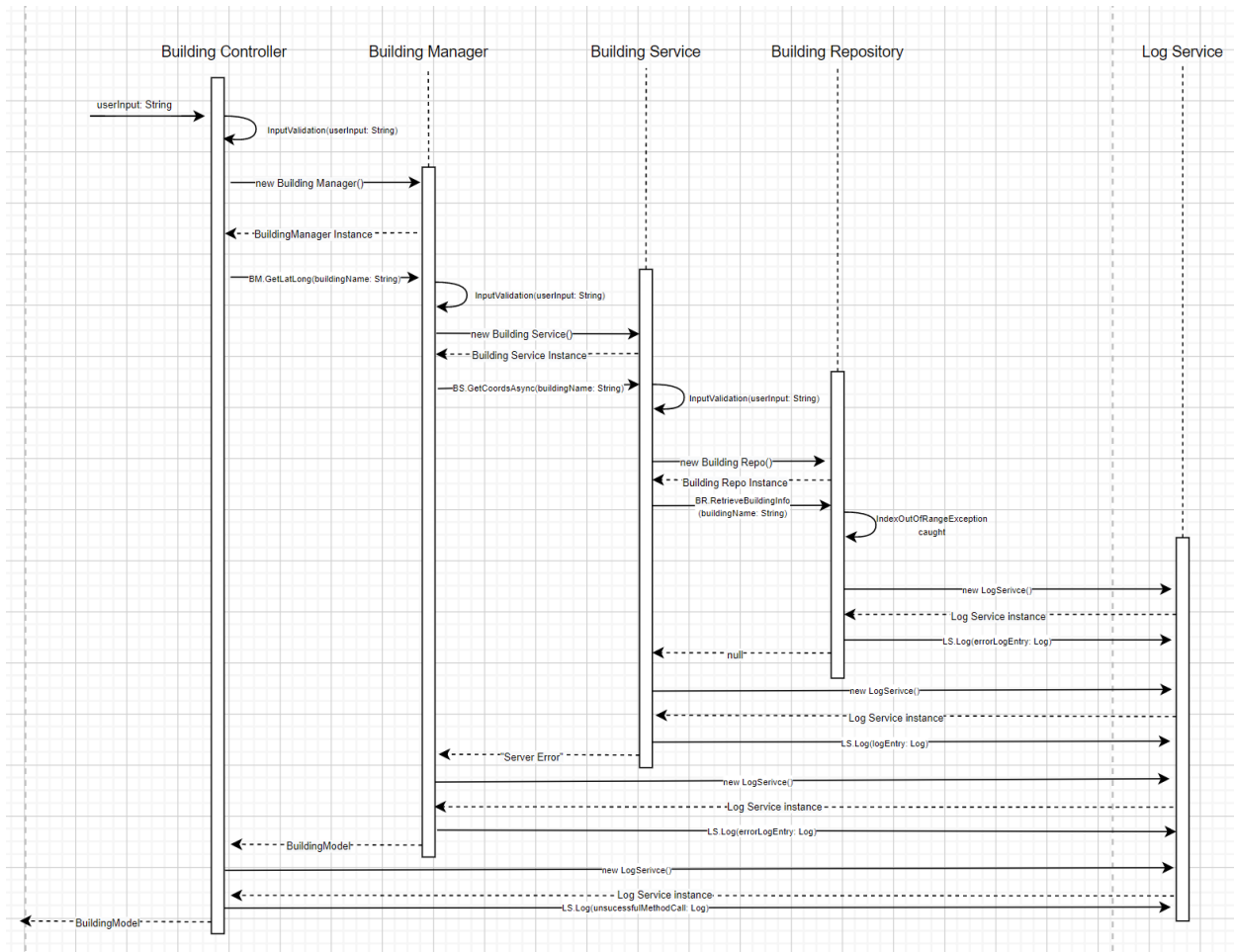
2.3 Error Handling SQL Exception

If a SQL exception were to be thrown in the building repository, a catch block will log the events with the exception message and the stack trace so that we know where the problem occurs. Following that the building repository will return null. The service layer will interpret the null response from the building repository as a server error. It will log that the service method did not run successfully as a result of the exception and will return a string containing that phrase to the manager. The manager will populate a building model with that string obtained from the service layer. It will also continue to log that the operation was unsuccessful and return a building model object. The controller will continue to log that the operation was unsuccessful and return the building model to our front end where the user will be alerted with a message about what has transpired.



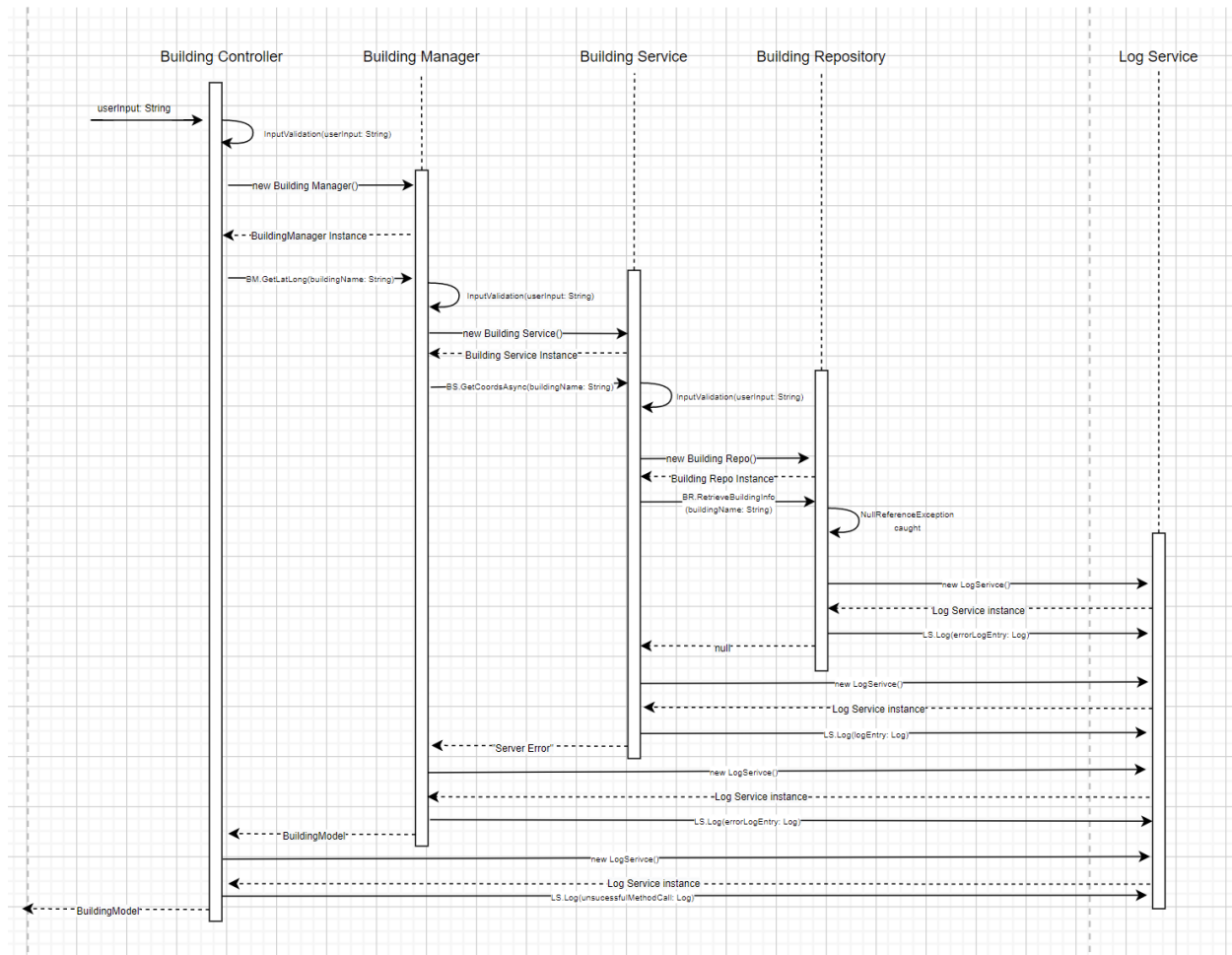
2.4 IndexOutOfRangeException Exception

If an `IndexOutOfRangeException` expectation were to be thrown in the building repository, a catch block will log the events with the exception message and the stack trace so that we know where the problem occurs. Following that the building repository will return null. The service layer will interpret the null response from the building repository as a server error. It will log that the service method did not run successfully as a result of the exception and will return a string contain that phrase to the manager. The manager will populate a building model with that string obtained from the service layer. It will also continue to log that the operation was unsuccessful and return a building model object. The controller will continue to log that the operation was unsuccessful and return the building model to our front end where the user will be alerted with a message about what has transpired.



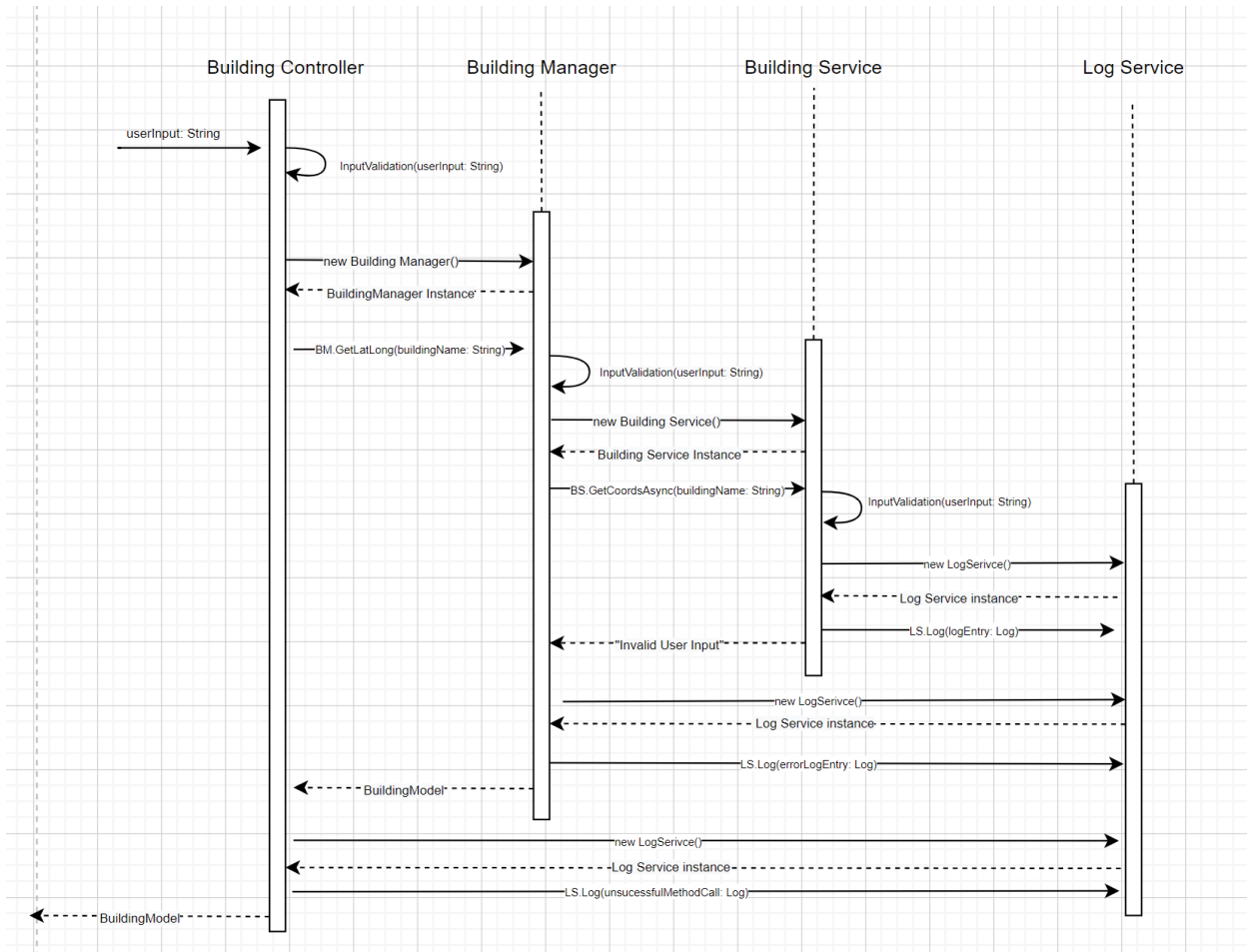
2.5 Null Reference Exception

If a Null Reference exception were to be thrown in the building repository, a catch block will log the events with the exception message and the stack trace so that we know where the problem occurs. Following that the building repository will return null. The service layer will interpret the null response from the building repository as a server error. It will log that the service method did not run successfully as a result of the exception and will return a string containing that phrase to the manager. The manager will populate a building model with that string obtained from the service layer. It will also continue to log that the operation was unsuccessful and return a building model object. The controller will continue to log that the operation was unsuccessful and return the building model to our front end where the user will be alerted with a message about what has transpired.



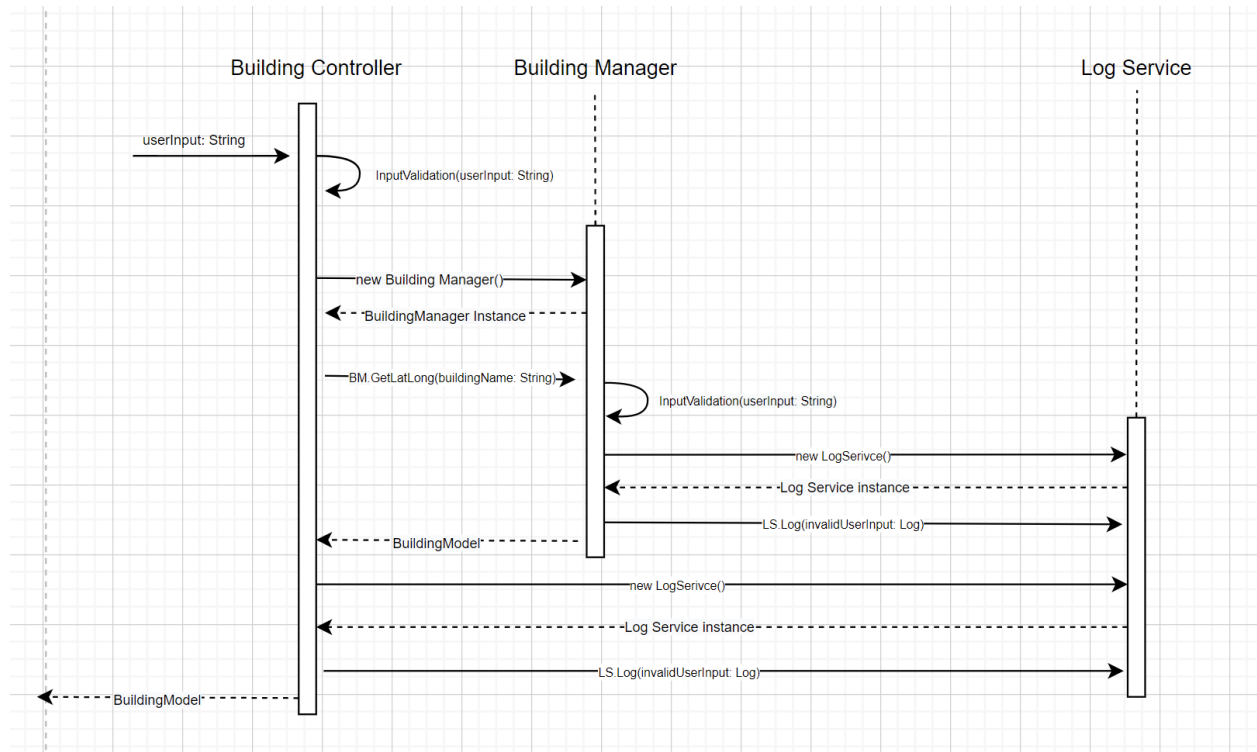
2.6 Invalid Input At Service Layer

If the user's input is invalid at the service layer, the building service will log that the user's input is invalid and return a string that contains "Invalid User Input". The manager will log that the service method was not called due to the invalid input of the user and would return a building model with that message. The controller logs the events that transpired and returns a building model that will contain a message that the front end will use to alert the user of invalid characters in their input.



2.7 Invalid Input At Service Layer

If the user's input is invalid at the manager layer, the manager will log the invalid input of the user and would return a building model with that the building name containing the "Invalid User Input". The controller logs the events that transpired and returns a building model that will contain a message that the front end will use to alert the user of invalid characters in their input.



2.8 Invalid Input At The Controller

If the user's input is invalid at the building controller, the controller will log the invalid input of the user and would return a building model with that the building name containing the "Invalid User Input" which the front end will use to alert the user of invalid characters in their input.

