

Iteration 3: CMS System

This iteration shows the results after going through all the steps of ADD of the design process one last time. Building on iteration 1 and iteration 2, the quality attributes can now be fulfilled and a more usable system design can be seen.

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3.2 Step 2: Establish Iteration Goal

The goal of this iteration is to focus on the quality attributes. The quality attributes being looked at are:

- QA-2 Availability: Unexpected downtimes in the system are to be fixed immediately. The system will only be brought down for maintenance during low-intensity hours.
- QA-5 Privacy: Users can only view their information. For example, students can only view their personal information and only see their grades for the course. Lecturers can only view content and students for their course(s).

3.3 Step 3: Choose Elements to Decompose

There are 2 quality attributes to be decomposed and the elements of those quality attributes will be broken down into their physical nodes from iteration 1 which are:

- Web Server/Server Side
- Database Server

3.4 Step 4: Choose Design Concepts that Satisfy the Drivers

The design decisions chosen are tactics applying to the quality attributes. They are listed and described in Table 3.1

Design Decisions and Location	Rationale and Assumptions
Availability: Introduce a <i>Rollback</i> tactic which goes back to the last functioning good state	By going back to the last good state, the system has a chance to flag the faulty part to be looked. Rolling back to a good state gives the system a chance to reattempt the function it failed on.
Privacy: Introduce the <i>Authorize Actors tactic</i> by ensuring that the authenticated actor has the rights to access and modify either data or services.	By ensuring that each person on the system is authorized through classification, data is on a need-to-know basis where those who are authorized to view certain things can and those who are not, will not have access to the information.

TABLE 3.1 Tactics to satisfy Quality Attributes

3.5 Step 5: Instantiate Architectural Elements and Define Interfaces

Table 3.2 displays the instantiation of design decisions from Step 4.

Design Decisions and Location	Rationale
Implement Rollbacks using the already integrated backup system	Backups are consistently made each time a request occurs. The backups can be brought up whenever an issue is confronted by using the most recent backup of the system prior to the issue.
Deploy Backup System on its own node.	Deploying the backup system on its own separate node will ensure that the backups are not corrupted in the event of a function failure or system failure. The backups will be kept on their own separate server and therefore untouched until it is needed.
Authorization of Actors will be implemented by the administration of the post-secondary school in a hierarchy order	<p>It is the responsibility of the administration/registration office at the post-secondary school to make sure that staff and students are classified accordingly when being entered into the system.</p> <p>This will achieve CON-2 and CON-3 as only those registered in the school can access the system.</p> <p>Credentials and authorizations must be provided from the school administration.</p> <p>This works on a need-to-know basis.</p>

TABLE 3.2 Instantiation of Design Decisions

3.6 Step 6: Sketch Views and Record Design Decisions

A refined deployment diagram is shown below in Figure 3.1 which displays the use of Rollbacks in the system.

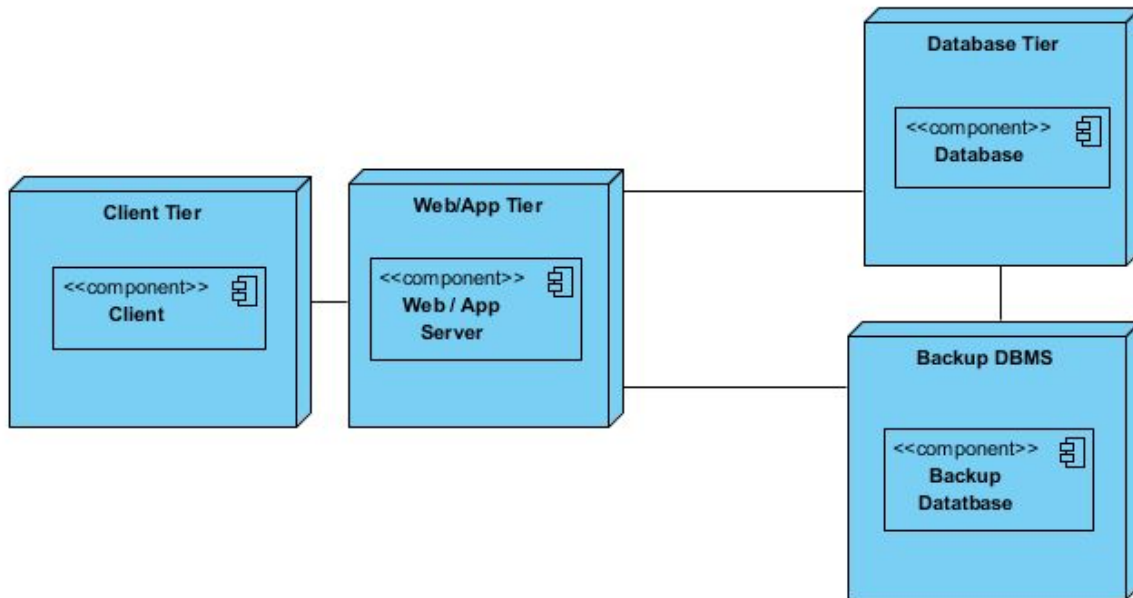


FIGURE 3.1 Deployment Diagram with Rollbacks

In Table 3.3, the new Backup DBMS node is described.

Element	Responsibility
Backup DBMS	Stores all the actions and data from the web app tier and from the main Database tier so it can be used as a backup when a restoration is needed.

TABLE 3.3

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

The following Kanban board summarizes the design progress made after the third iteration

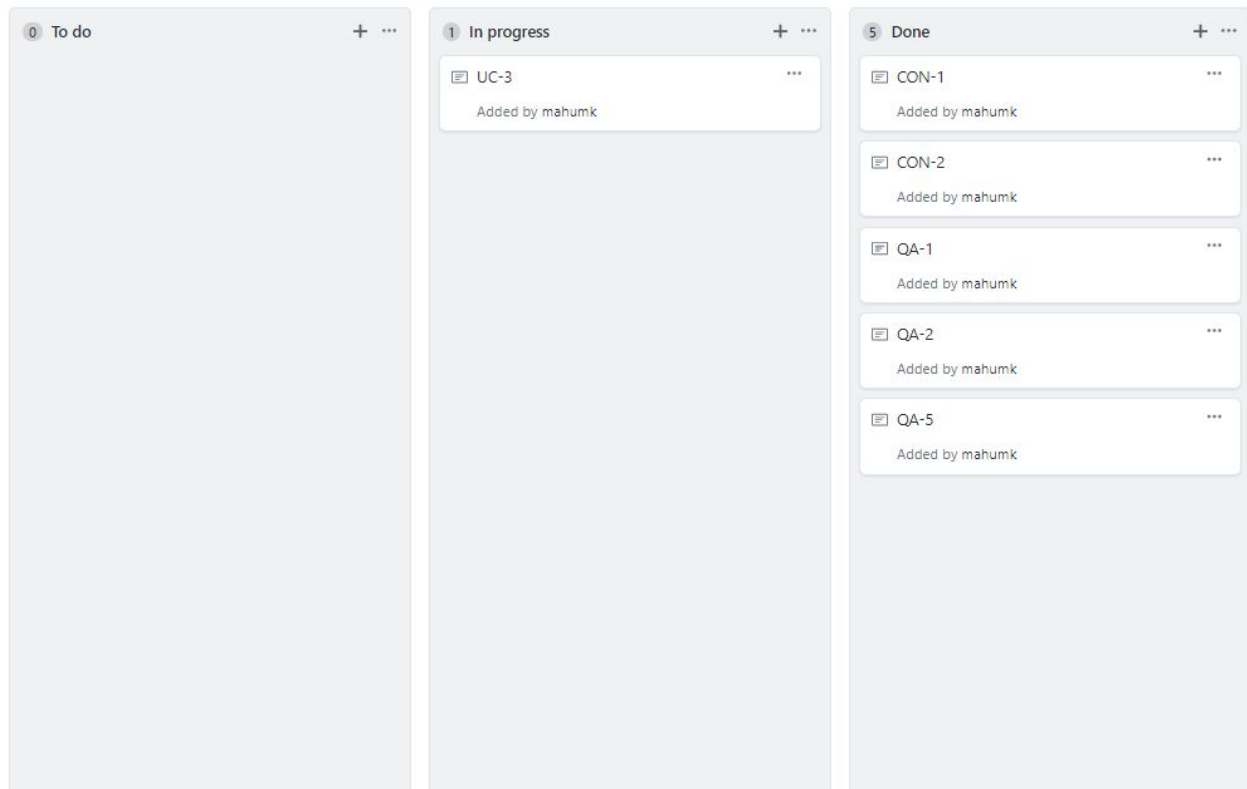


FIGURE 3.2 Kanban board after the final iteration