CS 459: Software Engineering Senior Project

Spring 2025

Architecture Documentation

Project Title	HCAR Client Database
Sponsoring Company	Humboldt Community Access and Resource Center
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ABSTRACT

This document serves as the architecture documentation for the HCAR Client Database System.

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1. INTRODUCTION

The Humboldt Community Access and Resource Center (HCAR) Client Database System will be implemented as a web application with a database. The system will be composed of a Presentation Tier, an Application Tier, and a Data Tier. Planning and development of the system will be performed by Orlando Trujillo-Ortiz, Carson Gustafson,

Justin Crittenden, and Michael Goodwyn (collectively, “The Team”).

The mission of this document is to describe in high-level detail the system architecture for the HCAR Client Database (“The System”). A description of the architectural style will be provided, along with rationale for its usage. Proceeding that will be an architecture diagram depicting the 3-tier architecture. There will also be a description of any technologies involved along with valid rationales for each decision. Lastly, there will be some detail into the project accountability process being used.

2. ARCHITECTURAL STYLE USED

The HCAR Client Database is based on a classic 3-tier Web Application architecture. The first tier is the Presentation Tier, which is the visual subsystem that a user interacts with via the Internet. It will be grounded upon a traditional HTML, CSS, and JavaScript backbone. The Presentation layer is limited to only controlling the Graphical User Interface that a member of HCAR staff would access from their own web browser.

The second tier is the Application Tier, which resides on the HCAR Client Database Cloud Web Server. This subsystem is responsible for interpreting the queries submitted by users of The System and requesting the relevant data from the Cloud. HCAR business rules will be enforced for The System via this subsystem. The backend for the Web Server will be built using PHP language.

The third and final tier is the Data Tier, which comprises the two data sources for The System. With the condition that the appropriate third party can provide The Team with an Application Programming Interface (“API”), The System will utilize HCAR’s current Cloud Storage solution with Nylex. Otherwise, The System shall contract with a different third party Cloud Storage provider.

3. ARCHITECTURAL MODEL

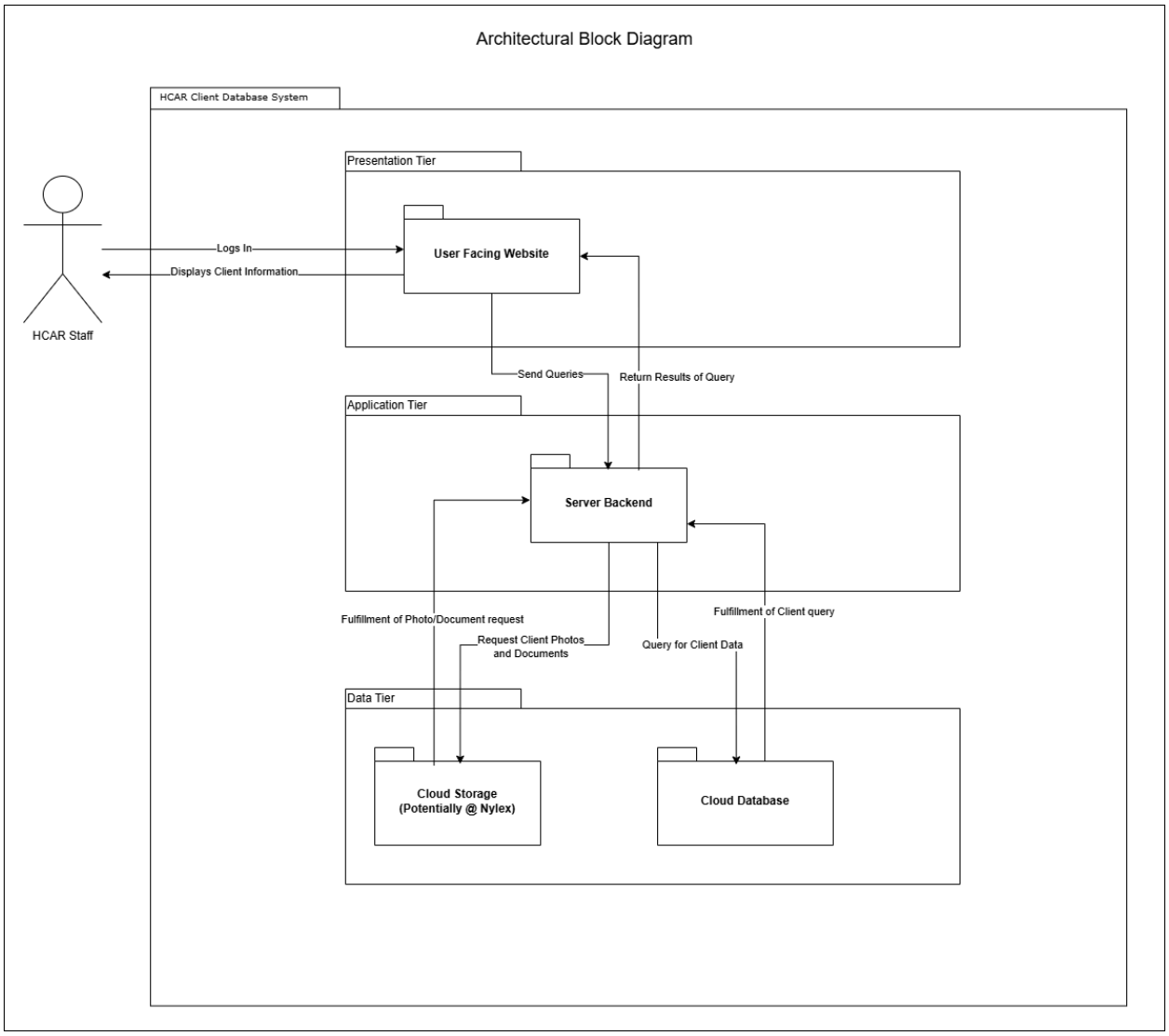

Fig. 1. HCAR Client Database Architectural Block Diagram

4. TECHNOLOGY, SOFTWARE, AND HARDWARE USED

4.1. Cloud Web Server

This project uses a Cloud Web Server to host the HCAR Client Database System. The web server is maintained by the Cloud Provider and does not need any infrastructure management. Said server is located remotely in a facility run by the Cloud Provider. The web server will host The System's public-facing HTML/CSS/JavaScript so that HCAR staff users will be able to access The

System's Internet website from any Internet browser that supports modern web-standards.

4.2. Cloud MySQL Database

This project uses a Cloud MySQL Database ("Database") to store Client data. The Database is maintained by the Cloud Provider and is located in a secure location run by the Cloud Provider. The Database has a MySQL Relational Database Management System installed that can be interacted with via an API by the Cloud Web Server. When a User sends a request for a Client's records, the Cloud Web Server will receive said request and then subsequently send an appropriately formatted query to the Database

4.3. Integration with Nylex Database / Cloud Storage Database

This project will either integrate with HCAR's current storage solution with Nylex or with a separate Cloud Storage solution provided by the same Cloud Provider for the Database. Regardless of the option finalized, the Cloud Storage will be utilized to centralize the storage of Client-related documents. Each file on the Cloud Storage will be kept track of in the Database. Upon a User's request for the list of documents related to a Client, the Web Server will first query the Database for such a list of documents using an API. Once said list is acquired, the Web Server will be able to query the Cloud Storage for any particular document that is associated with the current Client by using a separate API.

4.4. Miscellaneous Software Technologies

- 4.4.1. HTML – HyperText Markup Language
- 4.4.2. CSS – Cascading Style Sheets
- 4.4.3. JavaScript
- 4.4.4. PHP
- 4.4.5. MySQL

5. RATIONALE

WIP

6. TRACEABILITY

User Story	Subsystem

7. CONFIGURATION MANAGEMENT

WIP

8. ENGINEERING STANDARDS AND CONSTRAINTS

WIP

9. ADDITIONAL REFERENCES

WIP