

T. Kelly, A. Kuang, M. Lee, J. Sizoo, and M. Swartz (Group 14)

Dr. David Johnson

EECS 448

Due: Sunday, April 3, 2022

Project #3: Software Architecture (250-350 words)

Software architecture refers to the structure of a software system, including all components, their properties, and their relation to one another. The prototype our group created is a student and teacher record management system, similar in scope to BlackBoard, Canvas, or KU's Enroll and Pay program. The software architecture chosen to model this prototype is the 3-Tier software architecture. The 3-Tier model is a subsystem of the Client-Server software architecture, which provides resources to clients upon received requests. However, the 3-Tier software architecture is more specific. It is composed of three separate tiers, each describing a component of the system's functionality. These three tiers are presentation, logic, and data.

Our group knew that a student/teacher record management system would require three components to create a fully functioning system. First, the user interface would present the graphics allowing interaction with the system. This graphical interface would be dependent on background code. While users would not directly interact with this code, it governs the selections and choices they can make in the interface. Additionally, users are interacting with information pulled from a large database of total student and teacher information. The background code pulls the appropriate information from the database and presents it to the user based on the selections made. In this way, our design prototype aligns exactly with the presentation, logic, and data tiers of the 3-Tier software architecture. Our presentation tier is created using Windows Forms, the logic tier is coded in C#, and the databases are accessed using SQLite.

One advantage of the 3-Tier software architecture is that each tier exists independently. This means that changes or upgrades can be made to each tier as necessary without impacting the entire system's operation. This is an advantageous feature for our design prototype because the project may evolve as the student/teacher record management system is fully realized. If technological issues arise as the project becomes more complex, changes can be made to the impacted tier while allowing the other tiers to remain mostly operational and unchanged.