

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
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**ARCHITECTURAL DESIGN SPECIFICATION  
CSE 4316: SENIOR DESIGN I  
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**TEAM 2  
RFID AUTOMATED STUDENT DISMISSAL**

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## REVISION HISTORY

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## **1 INTRODUCTION**

The project will be able to automate student pickup from school. Parents or guardians need to have a tag that will be read by RFID reader. From the RFID reader the school staffs shall be able to get the name and other information of the students. This shall expedite the process of student pickup as now parents are using a piece of paper to pick up their kids. Initial versions of the system will use a wire tether for data transfer between the RFID and processing unit. The majority of processing will be accomplished by RFID and processor.

## 2 SYSTEM OVERVIEW

The overall structure of the software system contains three layers: Student Management System, DataBase, and Queue Display System. The Student Management System is user end system which is related to administrative functionality that includes adding, removing and editing student and staff information in the system. The GUI allows the admin to add student and remove student. The DataBase System is responsible for storing the information. It also allows the user to make queries. The Queue Display System displays the information of the system and also handles the RFID listener. This is a user end system and also includes hardware. The Queue Display System and Database System communicate with each other to keep real time records of the student pickup.

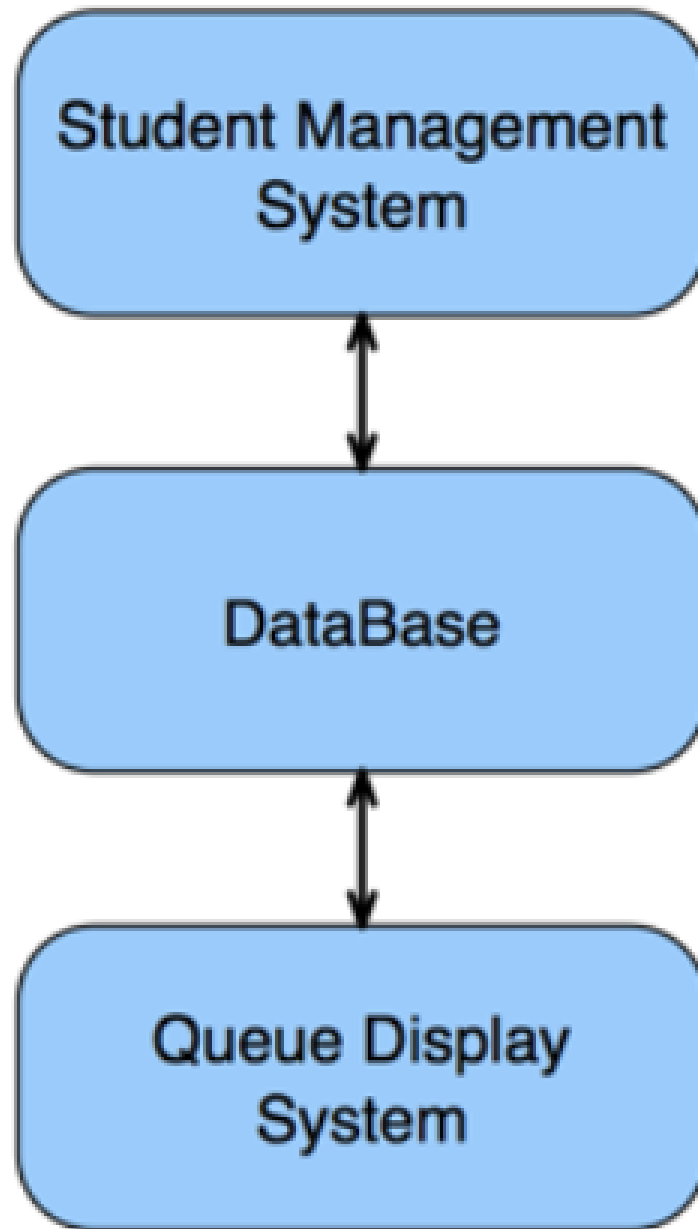


Figure 1: Overall Structure of System

## **2.1 STUDENT MANAGEMENT SYSTEM LAYER DESCRIPTION**

The Student Management System includes a control system, database control, and GUI. Control. This System directly talks with the Database System in order to store all the information about the students.

## **2.2 DATABASE LAYER DESCRIPTION**

This System contains the tables to store the text and image of the system. Database System directly talks with Student Management System and Queue Display System.

## **2.3 QUEUE DISPLAY SYSTEM LAYER DESCRIPTION**

This System contains control system, dbcontrol, GUI and RFID API. The RFID API helps to maintain communication between the Queue Display System and the RFID reader. The GUI displays the list of the students as their parents approach the school.

### 3 SUBSYSTEM DEFINITIONS & DATA FLOW

Will update this section later.

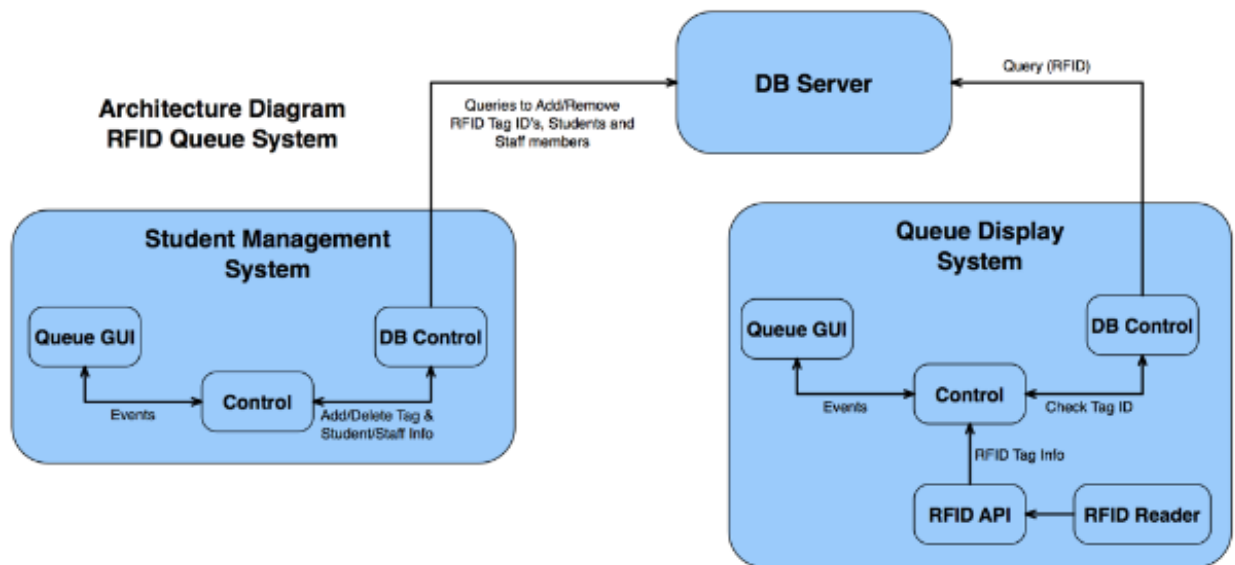


Figure 2: Data Flow Diagram



## 4 STUDENT MANAGEMENT SUBSYSTEMS

This subsystem communicates and controls database and Graphical user interface. This is needed for setting up the initial database for all the users, admin, students, etc.

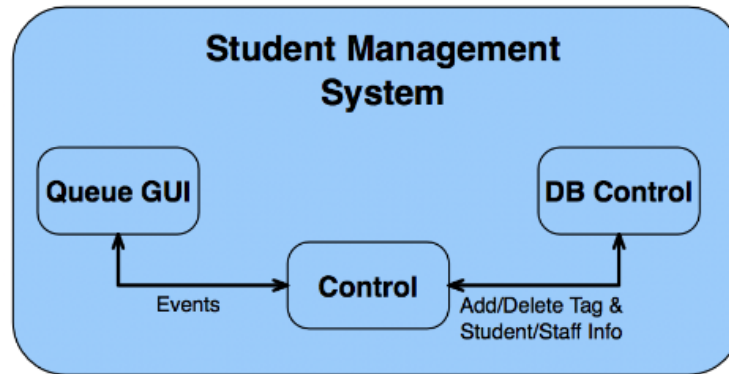


Figure 3: Student Management Subsystems

### 4.0.1 ASSUMPTIONS

The RFID tags have already been initialized or activated.

### 4.0.2 RESPONSIBILITIES

This subsystem will act as a control between the GUI and the database. When the button on the GUI is pressed the information that needs to be extracted for the database will be displayed. Adding new students or users, deleting existing students or users, and editing the information of existing students or users are some of the responsibilities of this subsystem. Admin has the responsibility to give privilege to school staffs to become an admin.

### 4.0.3 SUBSYSTEM INTERFACES

Table 2: Subsystem interfaces

ID	Description	Inputs	Outputs
#01	Queue GUI	Keyboard & Mouse	Events
		Database Results	Screen Data
#02	Control	Events	Database Query
		Database Reply	Database Results
#03	DB Control	Database Query	Query
		Response	Database Response

## 5 QUEUE DISPLAY SUBSYSTEMS

This subsystem will make various queries to the database as RFID tags become ready and display all the associated data to the Queue GUI.

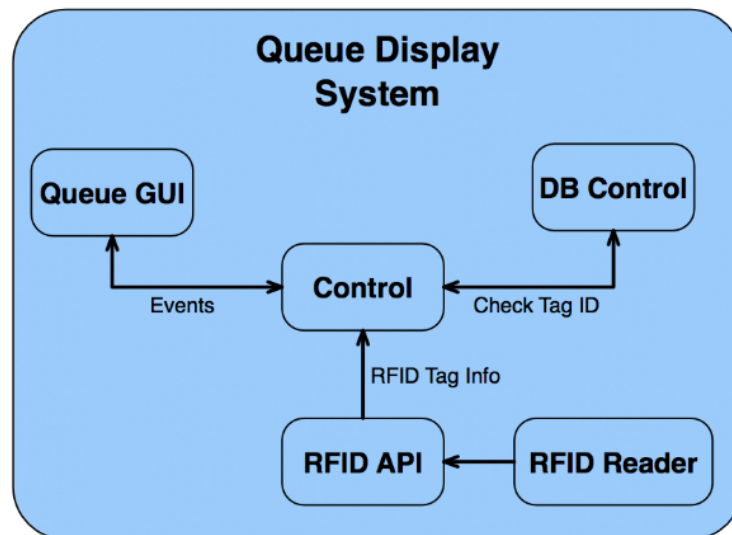


Figure 4: Queue Display Subsystems

### 5.0.1 ASSUMPTIONS

Any assumptions made in the definition of the subsystem should be listed and described. Pay particular attention to assumptions concerning interfaces and interactions with other layers.

### 5.0.2 RESPONSIBILITIES

Each of the responsibilities/features/functions/services of the subsystem as identified in the architectural summary must be expanded to more detailed responsibilities. These responsibilities form the basis for the identification of the finer-grained responsibilities of the layer's internal subsystems. Clearly describe what each subsystem does.

### 5.0.3 SUBSYSTEM INTERFACES

Each of the inputs and outputs for the subsystem are defined here. Create a table with an entry for each labelled interface that connects to this subsystem. For each entry, describe any incoming and outgoing data elements will pass through this interface.

Table 3: Subsystem interfaces

ID	Description	Inputs	Outputs
#01	Queue GUI	Keyboard & Mouse Database Results	Events Screen Data
#02	Control	Events Database Reply RFID Tag Info	Database Query Database Results Database Query
#03	DB Control	Database Query Response	Query Database Response
#04	RFID API	RFID Tag Response	RFID Tag Info