

SW Engineering CSC648/848 Fall 2022

Project Name: New SFSU Student Center

Team Number: 05

Milestone 2

Date: 10 November 2022

Student Name	Roles	Email
Zhenyu Lin	Team Lead, GitHub Master	zlin4@mail.sfsu.edu
Christopher Alan	Backend Lead	cyee12@mail.sfsu.edu
Michael Harrison	Frontend Lead	mchang9@mail.sfsu.edu
Elisa Hsiao-Rou	Team Member	echih@mail.sfsu.edu
Steven Paul Fong	Team Member	sfong10@mail.sfsu.edu
Cameron	Team Member	cyee10@mail.sfsu.edu

Milestone/Version	Date
M1V1	09/21/2022
M1V2	10/05/2022
M2V1	10/19/2022
M2V2	11/10/2022
M3V1	11/10/2022

Contents

Data Definitions	3
Functional Requirements.....	22
Priority 1:.....	22
Priority 2:.....	24
Priority 3:.....	25
Wireframes Based on your Mockups/Storyboards V2	27
High level database architecture and organization	33
Database Requirements:	33
Database Management System:.....	33
Media storage Strategy:	33
Search/filter architecture and implementation:.....	34
ERD	34
EER:	34
High Level Diagrams	35
High Level UML Diagrams.....	35
High Level Application Network and Deployment Diagrams	36
High Level Application Network Diagrams.....	36
High Level Application Deployment Diagram	37
Detailed list of contributions	38

Data Definitions

I. Data definitions

1. Student - Our end users. Can enroll in course sections.

1.1. Date Enrolled

1.1.1. Month - Month in which they started enrollment

1.1.2. Day - Day in which they started enrollment

1.1.3. Year - Year in which they started enrollment

2. Transfer Student

2.1. Current Year

2.2. Transfer information - A student that came from another college.

Has a special student record called 'past transcripts' for courses taken at other colleges.

2.2.1. Past Transcript

2.2.1.1. Name of previous college

2.2.1.2. Dates they were enrolled at previous college

2.2.1.2.1. Month - Month in which they started enrollment

2.2.1.2.2. Day - Day in which they started enrollment

2.2.1.2.3. Year - Year in which they started enrollment

2.3. Dates Enrolled

2.3.1. Month - Month in which they started enrollment at current university

2.3.2. Day - Day in which they started enrollment at current university

2.3.3. Year - Year in which they started enrollment at current university

3. Undergraduate Student - A student that has not yet graduated with a degree.

3.1. Dates Enrolled - When the student started enrollment

3.1.1. Month - Month in which they started enrollment at current university

3.1.2. Day - Day in which they started enrollment at current university

3.1.3. Year - Year in which they started enrollment at current university

4. Graduate Student - A student that has graduated with a degree.

4.1. Previous University

4.1.1. Name - Name of previous university

4.2. Dates Enrolled

4.2.1. Month - Month in which they started enrollment at current university

4.2.2. Day - Day in which they started enrollment at current university

4.2.3. Year - Year in which they started enrollment at current university

4.3. Graduate Program

4.3.1. Major

5. Full-Time Student - A student that is taking enough units that would be equivalent to a full-time job.

5.1. Credits - Amount of credits being taken

6. Part-Time Student - A student that is taking less units than would be equivalent to a full-time job.

6.1. Credits - Amount of credits being taken

7. Personal Information

7.1. Name

7.1.1. First Name

7.1.2. Middle name

7.1.3. Last name

7.2. Address

7.2.1. City

7.2.2. State

7.2.3. Country

7.2.4. Zip Code

7.3. Age

7.3.1. Date of Birth

7.3.1.1. Month

7.3.1.2. Year

7.3.1.3. Day

8. Course (sometimes referred to as “Class”) - The main product for the student.

8.1. Course Information

8.1.1. Times - Lists the duration of class length

8.1.1.1. Start time - When class begins

8.1.1.2. End time - When class ends

8.1.2. Start Date - Month and day when class begins

8.1.3. End Date - Month and day when class ends

8.1.4. Instructor - Lists name of instructor

8.1.4.1. Last name

8.1.4.2. First name

9. Credit (sometimes referred to as “Unit”) - A unit of measurement for the time/effort of a course. A student needs a certain amount to graduate.

10. Course Section (sometimes referred to as “Section”)

11. Online Section

11.1. Times - Lists the duration of class length

11.1.1. Start time - When class begins

11.1.2. End time - When class ends

11.2. Start Date - Month and day when class begins

11.3. End Date - Month and day when class ends

11.4. Instructor - Lists name of instructor

11.4.1. Last name

11.4.2. First name

12. Synchronous Section

12.1. Times - Lists the duration of class length

12.1.1. Start time - When class begins

12.1.2. End time - When class ends

12.2. Start Date - Month and day when class begins

- 12.3. End Date - Month and day when class ends
- 12.4. Instructor - Lists name of instructor
 - 12.4.1. Last name
 - 12.4.2. First name
- 13. Asynchronous Section
 - 13.1. Times - Lists the duration of class length
 - 13.1.1. Start time - When class begins
 - 13.1.2. End time - When class ends
 - 13.2. Start Date - Month and day when class begins
 - 13.3. End Date - Month and day when class ends
 - 13.4. Instructor - Lists name of instructor
 - 13.4.1. Last name
 - 13.4.2. First name
- 14. Hybrid Section
 - 14.1. Times - Lists the duration of class length
 - 14.1.1. Start time - When class begins
 - 14.1.2. End time - When class ends
 - 14.2. Start Date - Month and day when class begins

- 14.3. End Date - Month and day when class ends
- 14.4. Instructor - Lists name of instructor
 - 14.4.1. Last name
 - 14.4.2. First name
- 15. Subject
 - 15.1. Major - The
- 16. Time Slot (sometimes referred to as “Date & Time”) - An attribute of course sections that details when it takes place.
 - 16.1. Building
 - 16.2. Room Number
- 17. Time Slot (sometimes referred to as “Date & Time”)
 - 17.1. Start Time - Time in 24 hours format as to when class starts
 - 17.2. End Time - Time in 24 hours format as to when class ends
 - 17.3. Duration - The length in hours minute seconds of the class.
- 18. Component - An attribute of a course section describing the kinds of learning activity the student would be doing. (e.g. Lecture, Lab, Self-Study, etc.)
 - 18.1. Lecture - Class where a professors convey information to the student

- 18.2. Lab - Interactive setting where students have hands-on experience with the course material through experiments.
- 18.3. Self-Study - Self regulated study, with oversight by professors to determine if a student fulfilled credit requirements.
- 19. Course Materials - An attribute of a course section describing the kinds of materials the student may need to purchase to take the class (e.g. textbooks)
 - 19.1. Textbook
- 20. Major - An attribute of a student. Can determine what types of classes the student can take.
- 21. Student Record - A type of form that also acts as an attribute of students. Having certain completed records affects how the student can interact with the system.
- 22. Transcripts - A type of student record. A list of previously enrolled courses, and the grades received from them.
 - 22.1. Currently enrolled courses- Courses in which the student is currently taking
 - 22.2. Previously enrolled courses - Courses in which the student has already taken
 - 22.3. Grades - The course evaluation give to the student by the professor
 - 22.4. Semester - The time period in which the class was taken by the student

23. Student Calendar - A list of dates & time slots.

23.1. Important dates

- 23.1.1. Final day to withdraw without a W - Lists the final day a student may drop a class without receiving a W grade.
- 23.1.2. Final day to drop and receive a refund - Allows a student to drop a class and receive a refund for said credits.
- 23.1.3. Final day to change to CR/NC - Lists the date a student must change their grading option by
- 23.1.4. Payment due dates - Lists the day which all payments for tuition are due
- 23.1.5. Final day to add classes - Lists the final day in which a student can add a class without requiring a permission number
- 23.1.6. Final day to add a class via permission number - Lists the final day in which a student can add a class from a professor given permission number. After this day the student may no longer enroll in the class
- 23.1.7. Final day for faculty drops - Lists the final day that faculty may drop students enrolled in their course.

- 23.1.8. Final day to withdraw from classes or university - Lists the final day in which a student may exist from the university and receive a refund.
- 23.1.9. Holidays - Lists days in which there will be no courses taught, in which they normally would be
- 24. Class Schedule - A type of Student Calendar containing only the dates & times of the student's course sections.
 - 24.1. Name of class - The descriptive name of the course
 - 24.2. Course ID - The specific alphanumeric value of the course.
 - 24.3. Section number - Lists the more specific class the student will be in for classes which have multiple time slots.
 - 24.4. Time slot - Lists when the class will run from
 - 24.5. Professor - Lists the instructor teaching the course
- 25. Appointments - Has a date & time, and acts as an element in a calendar, just like course sections.
- 26. Prerequisite - A type, of course, that is also an attribute for another different course. The prerequisite must be completed concurrently with, or before the student takes the associated other courses.'
 - 26.1. Courses the prerequisite unlocks
 - 26.1.1. Name of the course the prereq unlocks

26.1.1.1. Name of course

26.1.1.2. Course ID

27. Professor - The teacher of a section. Can modify course section information.

27.1. Courses offered - Lists all courses that the specified teacher will be teaching.

27.2. First name

27.3. Last name

28. Advisor - An employee of the university that specializes in helping students with school-related questions.

28.1. Name of advisor

28.2. Time slots - Times in which the advisor is available

29. College (sometimes referred to as “University”) - The client organization. Uses the system to offer courses to students.

30. Department - A subsection of a college that facilitates learning for specific subject(s).

31. Campus Clinic - Site that students can visit for health-related issues.

31.1. Hours - Lists the times that the clinic is open

31.2. Location - Lists where you can find the Campus Clinic

- 32. Student Club - A school-recognized student organization. Associated with a faculty advisor.
 - 32.1. Faculty advisor Lists the faculty advisor of the student club
 - 32.2. Name - Lists the name of the specific club
- 33. Parking Permit - A form that grants students access to parking.
 - 33.1. Location - Lists the locations the permit is valid in.
- 34. Bill - A form that shows students' transactions after purchase.
 - 34.1. Amount paid
 - 34.2. Amount remaining - Tells the user how much of their bill they have yet to pay
- 35. Charge - An element on a bill. A specific amount the student owes for a specific purpose.
 - 35.1. Name of charge - Tells the user what type of charge is being levied on their account.
 - 35.2. Value of charge - Tells the user how much they must pay
- 36. Aid Form - A form that shows students' financial aid information.
 - 36.1. Loan amount granted - Tells the user the amount of money they may receive from a loan in dollars
 - 36.2. Loan amount accepted - Tells the user how much of the granted loan they have accepted in dollars

- 36.3. Grant amount - The amount quantity in dollars of a federal pell grant given to a student
- 36.4. Grant amount accepted - The amount of a federal pell grant the student has accepted in dollars
- 37. Map - An image showing the geographical layout of a location.
 - 37.1. Format - JPG
- 38. Schedule - an itinerary that you follow throughout the day.
- 39. Notification - an alert that notifies the student of an important message.
- 40. Holds - A property that prevents students from enrolling until resolved.
 - 40.1. Name of hold - Tells the student the name of a hold so they can identify the type of hold they have
 - 40.2. Date
 - 40.2.1. Date created - Tells the student when their hold began
 - 40.2.2. Due date - Tells the student when they must clear the hold by without incurring any penalty
- 41. Search Parameter - An attribute or specific value of an attribute that is used to filter/narrow down elements from a full list of elements.
 - 41.1. Session
 - 41.1.1. Semester - Lists the semester which class is offered E.g Summer, Fall, Spring

- 41.1.2. Year - Year of the course which is being offered
- 41.2. Subject - Specifies and searches for only courses of specified major E.g Statistics
- 41.3. Course number - The numerical ID attribute of the course
 - 41.3.1. Contains - Returns courses in which the value searched appears in the course number.
 - 41.3.2. Greater than or equal to - Returns courses with course number greater than or equal to the search parameters
 - 41.3.3. Less than or equal to - Returns courses with course number less than or equal to the search parameters
 - 41.3.4. Is exactly - Only searched the courses with the exact string parameter.
- 41.4. Additional criteria
 - 41.4.1. Start time - Specifies when class begins.
 - 41.4.1.1. Between - Lists courses beginning between the times specified
 - 41.4.1.2. Greater than - Lists courses with start times after the times specified, but not going further than midnight of the next day

- 41.4.1.3. Greater than or equal to - Inclusively lists courses with start times of the times specified, but not going further than midnight of the next day
- 41.4.1.4. Is exactly - Lists courses only which begin exactly when specified.
- 41.4.1.5. Less than - Lists courses beginning before the times specified, but not going further than midnight of the current day
- 41.4.1.6. Less than or equal to - Inclusively lists courses that begin before the times specified, beginning at midnight of the current day.
- 41.4.2. End time - Specifies when class ends.
 - 41.4.2.1. Between - Lists courses ending between the times specified.
 - 41.4.2.2. Greater than - Lists courses with end times after the times specified, but not going further than midnight of the next day
 - 41.4.2.3. Greater than or equal to - Inclusively lists courses with end times of the times specified, but not going further than midnight of the next day

- 41.4.2.4. Is exactly - Lists courses only which end exactly when specified.
- 41.4.2.5. Less than - Lists courses ending before the times specified, but not going further than midnight of the current day
- 41.4.2.6. Less than or equal to - Inclusively lists courses that end before the times specified, beginning at midnight of the current day.

41.4.3. Days of week

- 41.4.3.1. Exclude any of these days - Does not search for courses that only fall on the precisely specified days.
- 41.4.3.2. Exclude only these days - Does not search for courses that have a session on each of the precisely specified days.
- 41.4.3.3. Include any of these days - Search for courses that have a session on each of the precisely specified days.
- 41.4.3.4. Include only these days - Only search classes that have a session on the specified day.

41.4.4. Instructor name

- 41.4.4.1. Begins with - Searches instructors whose names begin with the string specified
- 41.4.4.2. Contains - Searches if a string parameter is contained within the instructor's name.
- 41.4.4.3. Is exactly - Searches for a professor whose last name is exactly the same as the search parameter.

41.4.5. Course attribute

- 41.4.5.1. GE - General education, needed by the state to graduate.
- 41.4.5.2. Upper division - Courses in which a student must have a graduate standing to take.
- 41.4.5.3. Lower division - Courses in which a student must have a undergraduate or higher standing to take
- 41.4.5.4. Graduation requirement - Courses in which are necessary to graduate, not necessarily a GE class.

41.4.6. Course keyword - Searches for a common keyword, E.g
Computer science

41.4.7. Maximum units

- 41.4.7.1. Greater than - Lists courses with credits greater than the amount of course credits specified.

- 41.4.7.2. Greater than or equal to - Inclusively lists courses with credits greater than the amount of course credits specified.
- 41.4.7.3. Is exactly - Lists courses which are exactly the amount of course credits specified.
- 41.4.7.4. Less than - Lists courses with credits less than the amount of course credits specified.
- 41.4.7.5. Less than or equal to - Inclusively lists courses with credits less than the amount of course credits specified.

41.4.8. Minimum units

- 41.4.8.1. Greater than - Lists courses with credits greater than the amount of course credits specified.
- 41.4.8.2. Greater than or equal to - Inclusively lists courses with credits greater than the amount of course credits specified.
- 41.4.8.3. Is exactly - Lists courses which are exactly the amount of course credits specified.
- 41.4.8.4. Less than - Lists courses with credits less than the amount of course credits specified.

41.4.8.5. Less than or equal to - Inclusively lists courses with credits less than the amount of course credits specified.

41.4.9. Location

41.4.9.1. On campus - Courses provided on the main campus

41.4.9.2. Off campus - Courses not provided on the main campus. May be provided at a satellite location or an Annex.

41.4.9.3. Country - Courses provided in a country foreign from the main university's country.

42. Course Requirements - a course that is required in order to take the next course.

42.1. Prerequisite - A course that must first be taken before attempting to take another course

43. Health Records - records that inform the school/doctor about one person's health information.

43.1. Name

43.1.1. First Name

43.1.2. Middle name

43.1.3. Last name

43.2. Address

43.2.1. City

43.2.2. State

43.2.3. Country

43.2.4. Zip Code

43.3. Age

43.3.1. DOB

43.3.1.1. Month

43.3.1.2. Year

43.3.1.3. Day

43.4. Allergies - Lists any potential allergies the student has to prevent an allergic reaction.

43.5. Medical conditions - Lists any medical conditions the student has.

Functional Requirements

Priority 1:

1. Student
 - 1.1. Students shall log in before accessing the system.
 - 1.2. Students shall be able to enroll in course sections.
 - 1.3. Students shall not be able to enroll in a class that would cause the student to exceed the set unit limit.
 - 1.4. Students shall not fully enroll in more than one section of the same class.
 - 1.5. Students shall be notified when they are dropped from a course section.

- 1.6. Students shall be able to search for courses.
- 1.7. Students shall be able to add courses to a shopping cart, prior to enrolling.
- 1.8. Students shall have transcripts.
- 1.9. Students shall have a class schedule.
- 1.10. Students shall not fully enroll in multiple sections that overlap on the same date & time slot.
- 1.11. Students shall have a student calendar, showing the student's class schedule and the college's academic calendar.
- 1.12. Students shall be able to drop course sections.
- 1.13. Students shall receive a Hold/Alert if they have overdue charges.
- 1.14. Students shall be notified whenever new Holds/Alerts are created on their account.
- 1.15. Students shall be dropped from a course if they cannot prove they have first taken the course's prerequisites, or are currently taking the course's prerequisites.
- 1.16. Students shall be dropped from courses if they have overdue charges after the set deadlines.
- 1.17. Students shall be able to access their student records (including transcripts and payment receipts).
- 1.18. Students shall enroll in courses with one of two grading options: CR/NC or Letter Grade.
- 1.19. Students shall be able to switch between grading options within certain date & time slots.
- 1.20. Students shall be able to view their financial aid.
- 1.21. Students shall be able to receive Financial Aid.
- 1.22. Students shall be able to leave feedback reviews for professors of course sections that the student has taken before.
- 1.23. Students shall be able to contact the department of their major.
- 1.24. Students shall be able to upload their health records.
- 1.25. Students shall be notified of payment due dates.
2. Courses
 - 2.1. Course sections shall have a number of seats.
 - 2.2. Course sections shall have a waitlist.
 - 2.3. Course sections that are full shall place enrolling students on the waitlist.
 - 2.4. Courses shall tell the students which classes are required as prerequisites.
 - 2.5. Courses shall belong to one (1) subject.
 - 2.6. Courses shall require prerequisites.
 - 2.7. Course sections shall have time slots.
 - 2.8. Course sections shall have a location. (can be online)
 - 2.9. Course sections shall have a list of the average grade received by students in past semesters.
 - 2.10. Courses shall tell the student if the class is online, in person, hybrid, synchronous or asynchronous.
3. Waitlist
 - 3.1. Waitlisted students shall be notified when they are able to fully enroll in the section.

- 3.2. Waitlisted students shall be automatically enrolled if space is available.
- 3.3. Waitlisted students shall be notified if they are dropped from the waitlist.
- 4. Class schedules
 - 4.1. Class schedules shall show a student's enrolled courses.
 - 4.2. Class schedules shall show a student's waitlisted courses.
 - 4.3. Class schedules shall show courses currently in the student's shopping cart.
- 5. Professor Reviews
 - 5.1. Professor reviews made by students shall be anonymous.
 - 5.2. Professor reviews made by students shall show the grade of the student publishing the grade.
 - 5.3. Professor reviews shall only be made by students who have completed a course section that the professor has taught.
 - 5.4. Professor reviews shall be displayed under a professor's profile, as well as within the attributes of any course section taught by that professor.
- 6. Transcripts
 - 6.1. Transcripts shall list all courses taken in the past.
- 7. Searches
 - 7.1. Searches shall have parameters, which filter the displayed courses.
 - 7.1.1. Searches can be filtered by a student's eligibility to enroll in the course.
 - 7.1.2. Searches can be filtered by the professor.
 - 7.1.3. Searches can be filtered by location.
 - 7.1.4. Searches can be filtered by date & time.
 - 7.1.5. Searches can be filtered by attribute. (online, asynchronous, lab, lecture)
 - 7.1.6. Searches can be filtered by course name.
 - 7.1.7. Searches can be filtered by course number. (not CRN)
 - 7.2. Searches shall display a list of courses.
 - 7.3. Searched course sections shall display all their important data in the listing. (CRN, professor, location, date & time, units, name)
 - 7.4. Searched course sections shall display on mouse-over, less important data in the search listing. (description, past grade averages, professor ranking, etc.)
 - 7.5. Searched courses shall be add-able to the student's shopping cart.

Priority 2:

- 1. Student
 - 1.1. Student calendars shall recommend alternative course sections in order to resolve date & time conflicts on the class schedule.
 - 1.2. Students shall be notified if a course section on their calendar has any of its attributes changed. (students should know if there's a change of professor or change of location)
 - 1.3. Students shall be notified when a change of major is fully processed, regardless of whether it is accepted or rejected.

- 1.4. Students who've recently changed majors shall have access to resources for their new major.
- 1.5. Students shall be able to swap one course for another.
- 1.6. Students shall be able to pay for courses.
- 1.7. Students shall be able to generate What-If Reports.
- 1.8. Students shall be able to save their What-If Reports.
- 1.9. Students shall be automatically dropped from waitlists of course sections that are of the same class as one that the student is fully enrolled in.
- 1.10. Students shall be automatically dropped from waitlists of course sections that cause time conflicts with a course section that the student is fully enrolled in.
- 1.11. Students shall receive a grade, upon completing a course.
- 1.12. Students shall be able to request to change their major.
- 1.13. Students shall be able to search for clubs at the university.
- 1.14. Students shall be able to schedule advising appointments.
- 1.15. Students shall be able to schedule financial aid appointments.
- 1.16. Students shall be able to make an appointment with the university clinic.
- 1.17. Students shall be notified of upcoming appointments.

2. Transferring

- 2.1. Transfer students can have a transfer credit report.
- 2.2. Transfer students shall be able to search for other colleges' courses to check if they count as being transferred.

3. What-if report

- 3.1. What-If Reports shall show students the required classes for hypothetical change of major, degree, or other academic career choices.

4. Professor Reviews

- 4.1. The system shall notify reviewers that their received grade will be displayed along with their anonymous review.
- 4.2. Professor reviews shall have tags to help students parameterize searches when filtering for professors with certain teaching styles.

Priority 3:

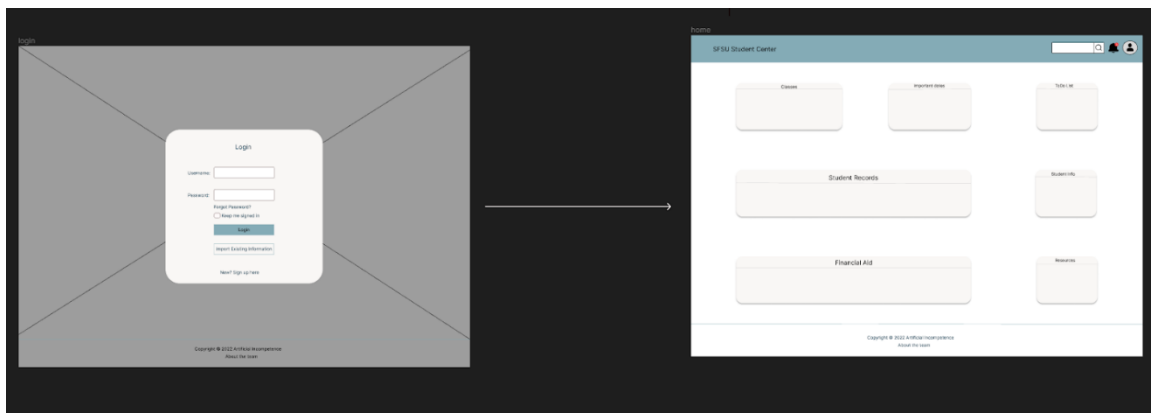
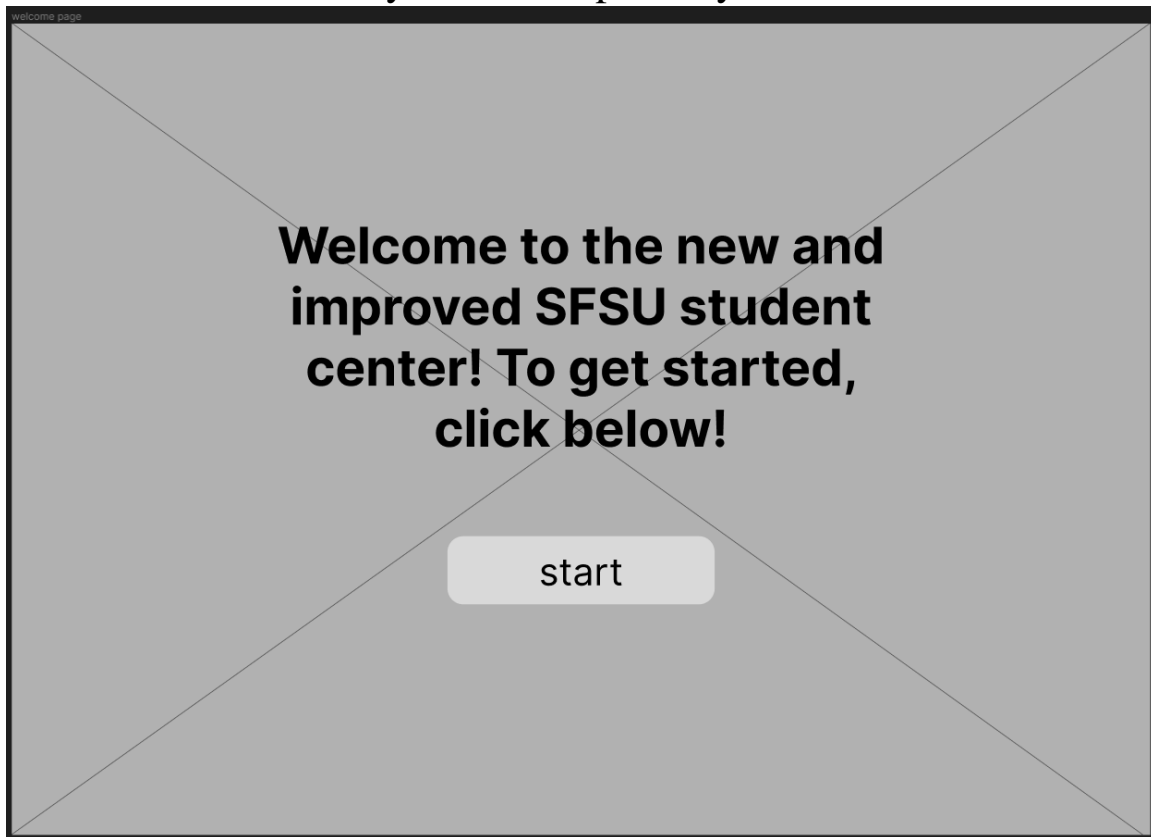
1. Student

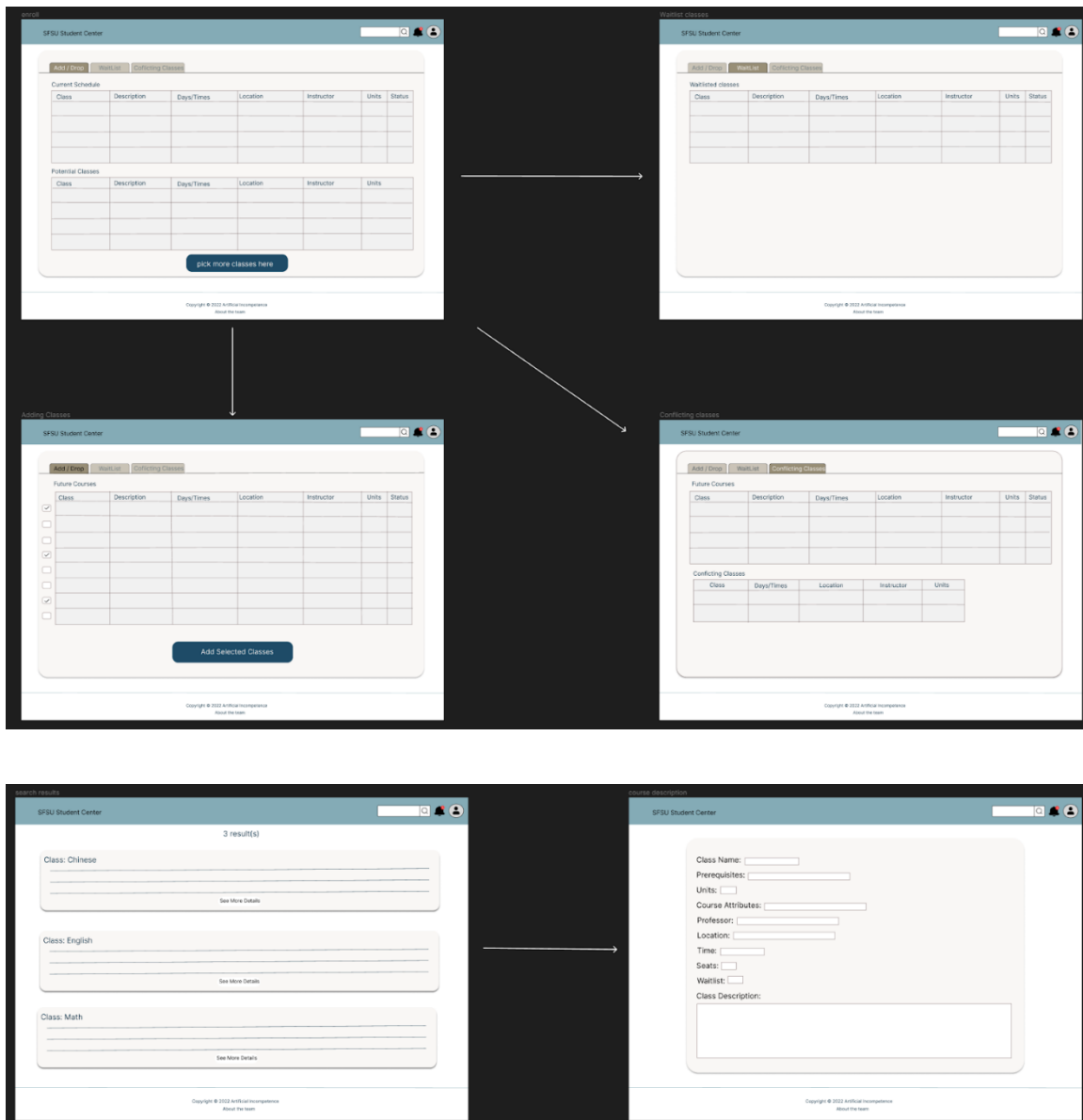
- 1.1. Students shall be able to purchase parking permits.
- 1.2. Students shall be notified if their permit purchase was approved.
- 1.3. Students shall be able to open Google Maps in the student center.
- 1.4. Students shall be able to access their payment histories.

2. Payment

- 2.1. PayPal shall be supported as a payment method.
- 3. Advising
 - 3.1. Advisors shall be able to schedule appointment time slots.
- 4. Clubs
 - 4.1. Clubs shall be displayed by the system.
 - 4.2. Clubs can provide resources to the system for students to see.

Wireframes Based on your Mockups/Storyboards V2







health records

SFSU Student Center

Student Information:

First Name: Last Name: Gender: Male ☐ Female ☐ Other ☐

Birthday: Age: Height: Weight:

Address: City: State: Zip Code:

Email: Phone Number:

Allergies: Yes ☐ No ☐

If yes, please state them here:

Ethnicity: ☐ Asian ☐ Black ☐ Hispanic ☐ White ☐ Other ☐

Mental illness: Yes ☐ No ☐ Prefer not to answer ☐

If yes, please state them here:

Copyright © 2022 Artificial Intelligence
About the team

health records filled in

SFSU Student Center

Student Information:

First Name: Last Name: Gender: Male ☒ Female ☐ Other ☐

Birthday: Age: Height: Weight:

Address: City: State: Zip Code:

Email: Phone Number:

Allergies: Yes ☐ No ☒

If yes, please state them here:

Ethnicity: ☒ Asian ☐ Black ☐ Hispanic ☐ White ☐ Other ☐

Mental illness: Yes ☒ No ☐ Prefer not to answer ☐

If yes, please state them here:

Copyright © 2022 Artificial Intelligence
About the team

health records showing results

SFSU Student Center

Student Information:

First Name: Last Name: Gender: Male ☒

Birthday: Age: Height: Weight:

Address: City: State: Zip Code:

Email: Phone Number:

Allergies: No ☒

Ethnicity: ☒ Asian

Mental illness:

Copyright © 2022 Artificial Intelligence
About the team

School Calendar

SFSU Student Center

School Calendar 2022-2023

Fall 2022

Monday, April 11, 2022
Class Schedule Available on the SFSU Website

Monday, April 25, 2022
Priority Registration Begins

Monday, August 22, 2022
First Day of Instruction

Monday, September 5, 2022
Labor Day (No classes)

Winter 2023

Spring 2023


Summer 2023


Copyright © 2022 Artificial Incompetence


About the team

Financial aid

SFSU Student Center







Important Dates

Announcements

Getting Started

Submit Documents

Verification & Form

Copyright © 2022 Artificial Incompetence

About the team

High level database architecture and organization

Database Requirements:

1. Student
 - 1.1. A student can enroll in many course sections.
 - 1.2. A student can complete many course sections.
2. Course
 - 2.1. A course can have many course sections.
3. Course Section
 - 3.1. A course section belongs to one course.
 - 3.2. A course section can enroll many students.
 - 3.3. A course section is taught by one professor.
 - 3.4. A course section can have been completed by many reviewers.
4. Reviewer
 - 4.1. The reviewer is a student.
 - 4.2. A reviewer has completed many course sections.
 - 4.3. A reviewer can review many professors.
5. Professor
 - 5.1. A professor can teach many course sections.
 - 5.2. A professor can be reviewed by many reviewers.

Database Management System:

PostgreSQL

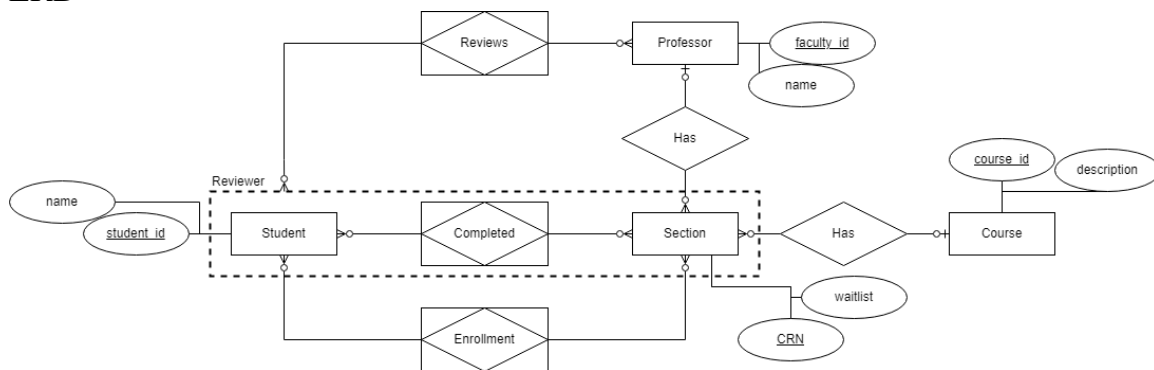
Media storage Strategy:

Our system will store the media file in a file system. The database will store the location of media. One of the unique functions of our project is the professor ranking system. Students can rank their professor and give them feedback. Therefore, the most of the storage content for our project will be text. Majority of our data will be stored on the database. Although our first priority functional requirement has the majority of text data, our second and third functional requirements need to store large files such as student transcript pdf version and school club icons. The database will take huge amount of memory for backend to acquire the data from the database if we choose to encode the large file and store them into database. To effectively use the memory and save our database bandwidth, we choose to store the large file like media file or pdf in a file system.

Search/filter architecture and implementation:

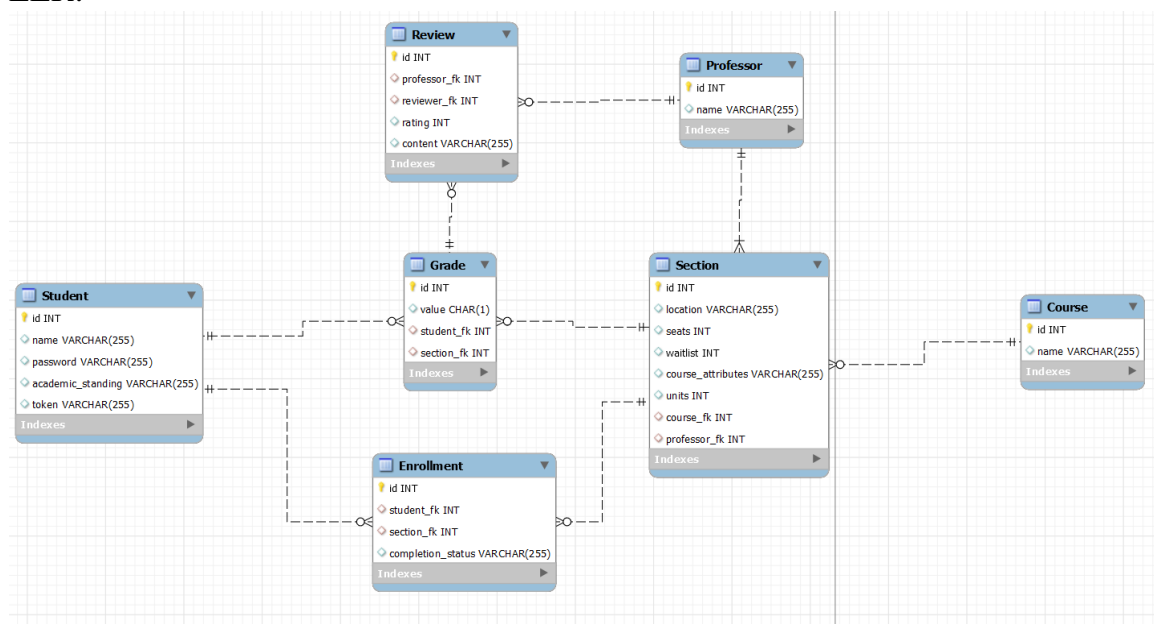
In our project, we will have one search bar across all the pages. Therefore, the search function should be searched across all of our database tables. We will ask the user about the search category first. Then let them type in the search content. The backend will base on the category and send the searching query to the database. For example, if the user wants to search about the ranking for a specific professor, the user would first choose the searching category - ranking. Then type in the search content. The backend will first process the content by an algorithm. If the user types in the course number, the backend will send a query to the course table to get the professor id and check the professor ranking. Our search strategy is to send multiple search queries to different tables in the database. Then we will combine the search results and return to the front. We will ORM to manipulate data from the database. The benefit of ORM is that it can save lots of time in development. ORM avoids writing poorly-formed SQL and a lot of stuff is done automatically. Therefore, ORM significantly reduces the development time.

ERD



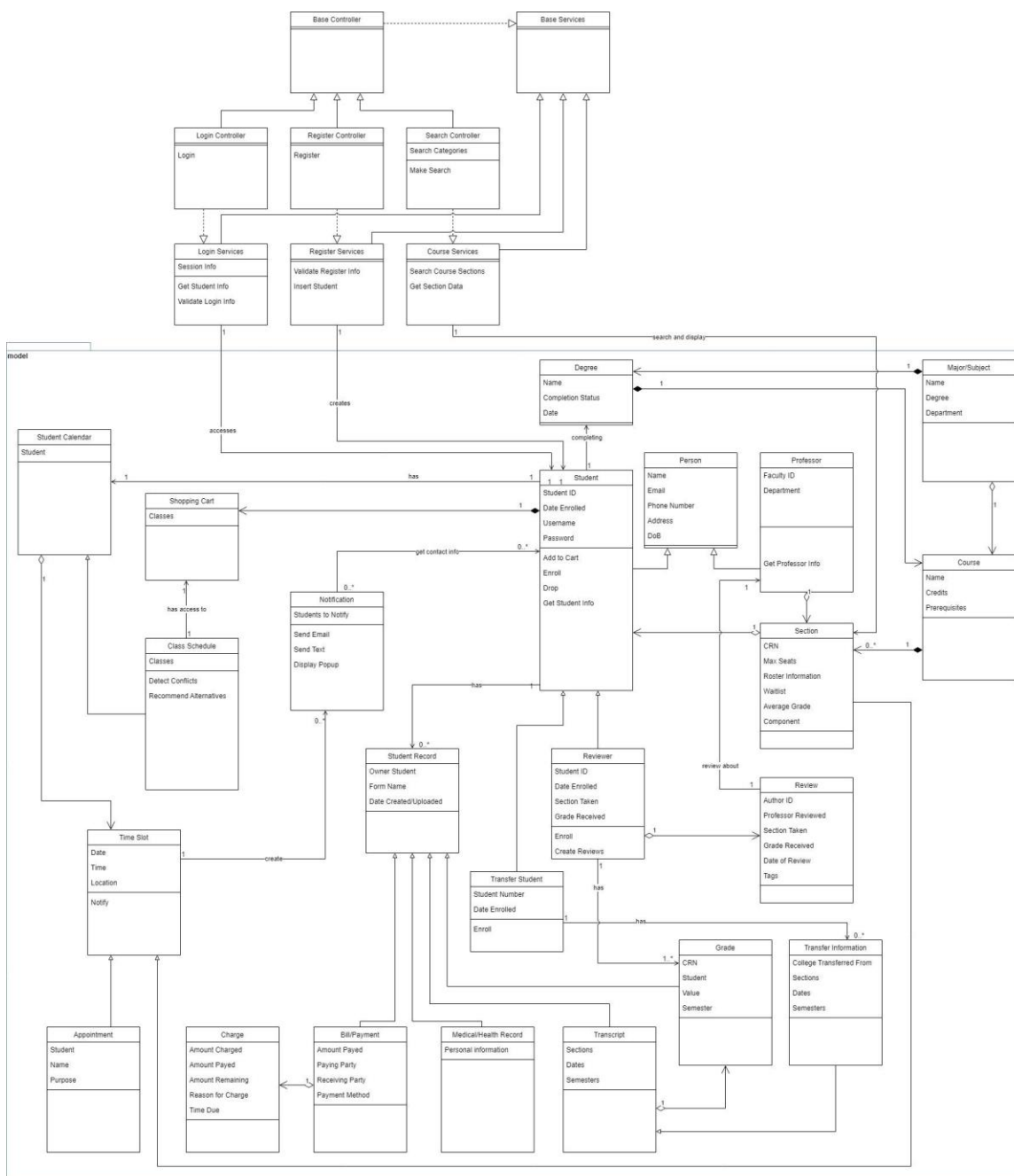
The DBMS we will be using is PostgreSQL. We are choosing to use PostgreSQL because it is reliable, is a relational database and because it is a general purpose OLTP database.

EER:



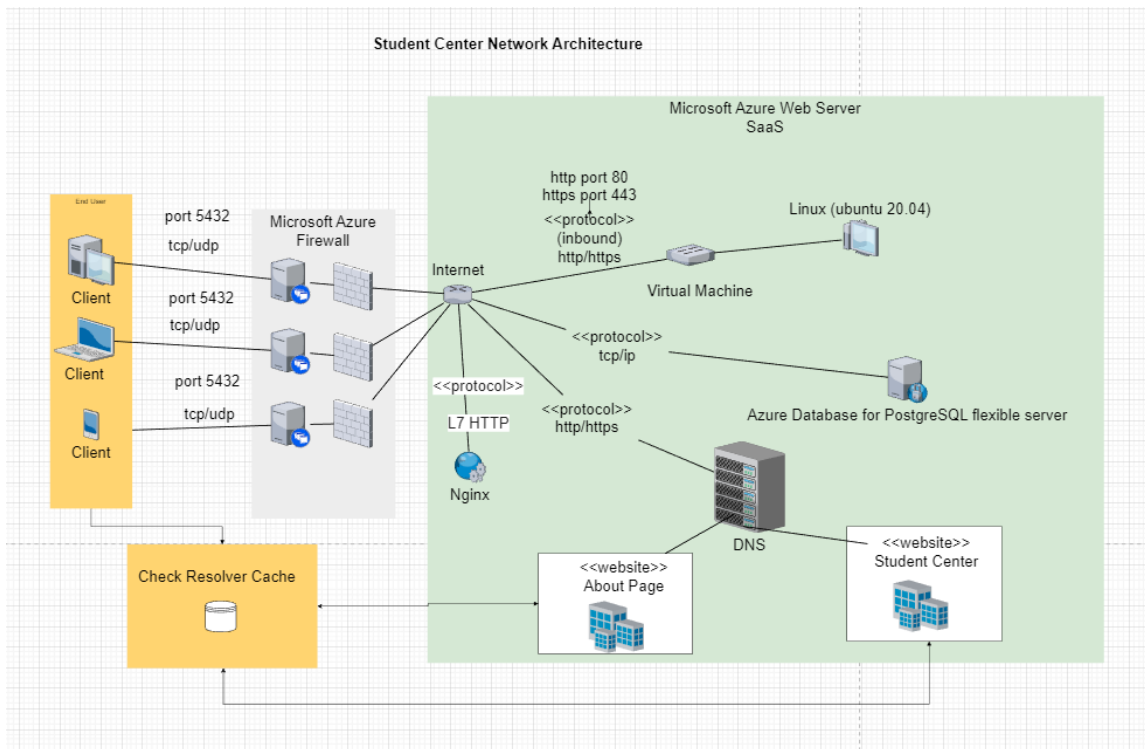
High Level Diagrams

High Level UML Diagrams



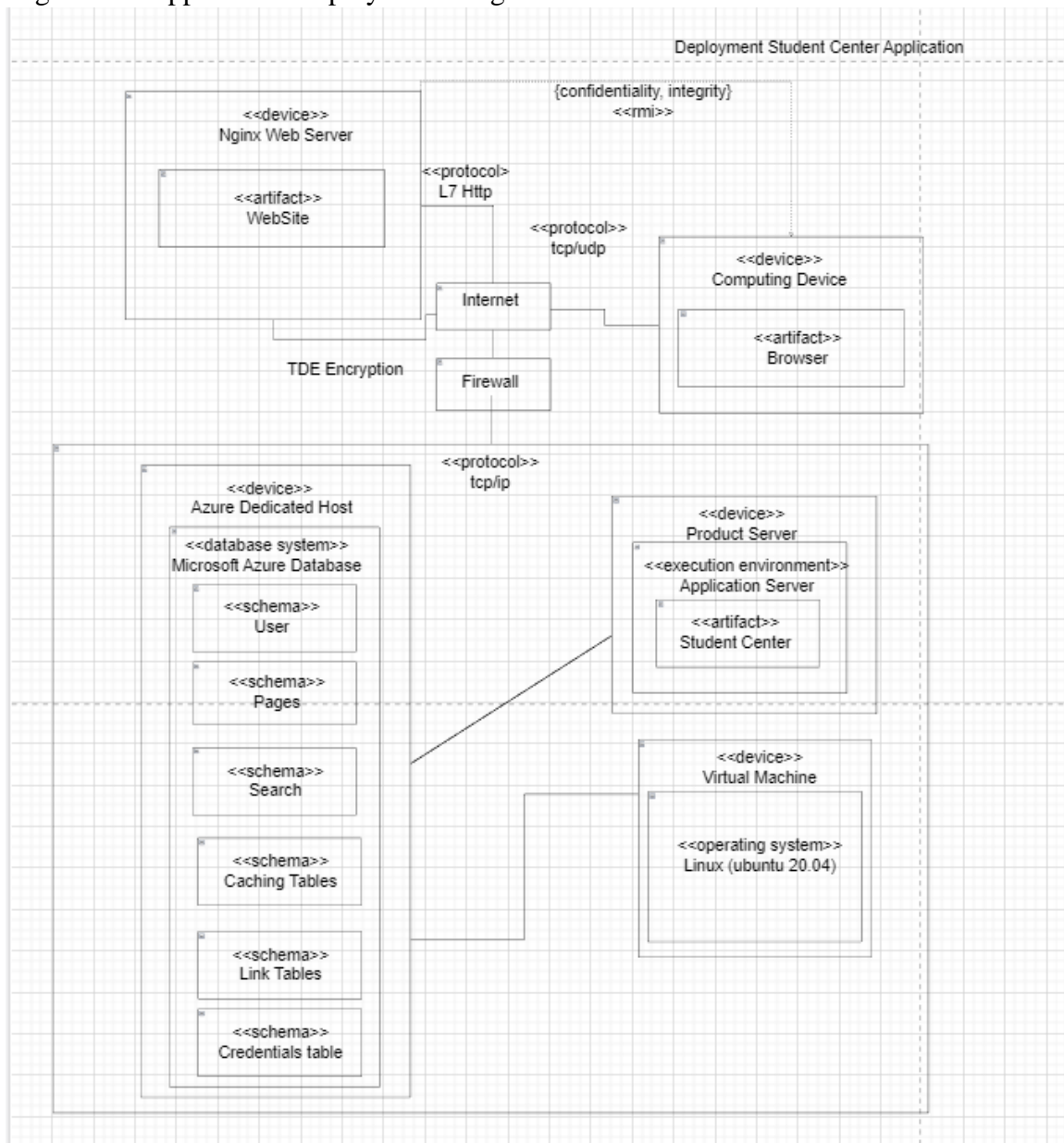
High Level Application Network and Deployment Diagrams

High Level Application Network Diagrams



Our student center network architecture lays out our secure way of connecting the client to our application. The client connects to our application via the internet through a tcp/udp connection. The Microsoft Azure Firewall ensures that only legitimate data is passed through, and ensures a secure connection. The user data requested is sent to our Azure server, and is processed. Depending on what type of information is required, a different protocol is used. To communicate with our VM, http/https is required, for our PostgreSQL server, tcp/ip is required and so on. After any request is made and accepted by the server, the relevant data is returned to the client. In cases where the relevant data is already loaded in our resolve cache, we can skip certain parts and go straight to the necessary webpage.

High Level Application Deployment Diagram



Our deployment diagram displays how our information will be connected in both its physical, and virtual components. One of the main concerns in our non-functional requirements is the guarantee that the client's information will be secure. We do so by using both a firewall, and TDE encryption for any data that is stored within our Azure server. Our Azure server will consist of our physical components, (servers, client computer) and the virtual components, (data tables, pages, search functions, operating systems, schemas and artifacts).

Detailed list of contributions

Name	Score	Contribution
Elisa Hsiao-Rou Chih	8	figma for: welcome, notifications/holds and alerts, notifications popup. updated the colors on all of the wireframes. made the front end pages for notifications/holds and alerts, health records. and did some styling on the front end pages
Steven Paul Fong	7	Figma diagrams for adding classes, school calendar, course description, transcript and implementation of school calendar and course description pages.
Cameron Michael Yee	9	revising functional requirements from m2. revising database section documentation. added EER to database section. added backend API's for the enrollment system
Michael Harrison Chang	7	made the financial aid page and the student records, set up most of the pages with the nav bar and footer for most of the pages , made the homepage , all healthrecords , all the student records, login page figma
Christopher Alan Yee	9	Updated data definitions Updated which DBMS we are using Reorganized p1, p2 and p3 Network diagram Backend API
Zhenyu Lin	8	Working on Enrollment Page and home page, Working on the Priority 1 function: Add Class to shopping cart, Add Class from shopping cart to current schedule, drop class from the current schedule. Search classes.