ONLINE COURSE REGISTRATION

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UNIVERSITY OF ARIZONA GLOBAL CAMPUS

CST499: CAPSTONE FOR COMPUTER SOFTWARE TECHNOLOGY

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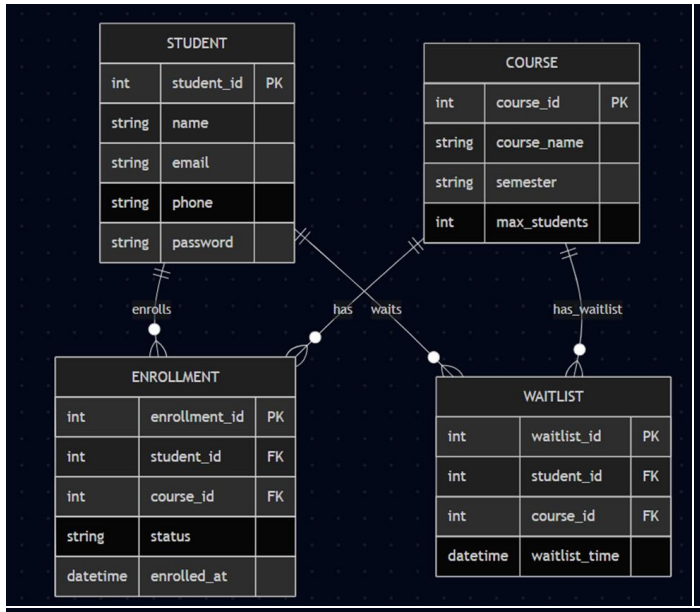
INTRODUCTION TO THE PROJECT

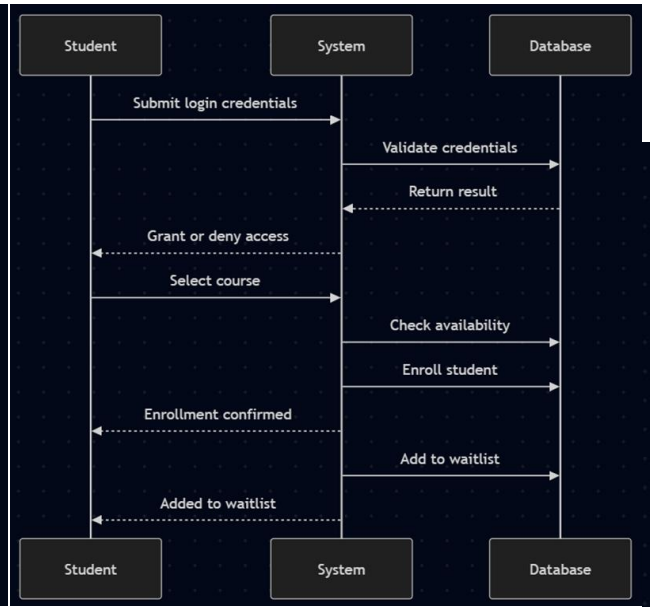
- The purpose of this project is to create a web application that will allow students to perform the following actions.
  - Log in securely using registered and safe credentials
  - Browse available courses, their availability, and how many students are currently enrolled
  - Register for classes
  - If a course is full, the student will be put on a waitlist
  - View and manage their schedules

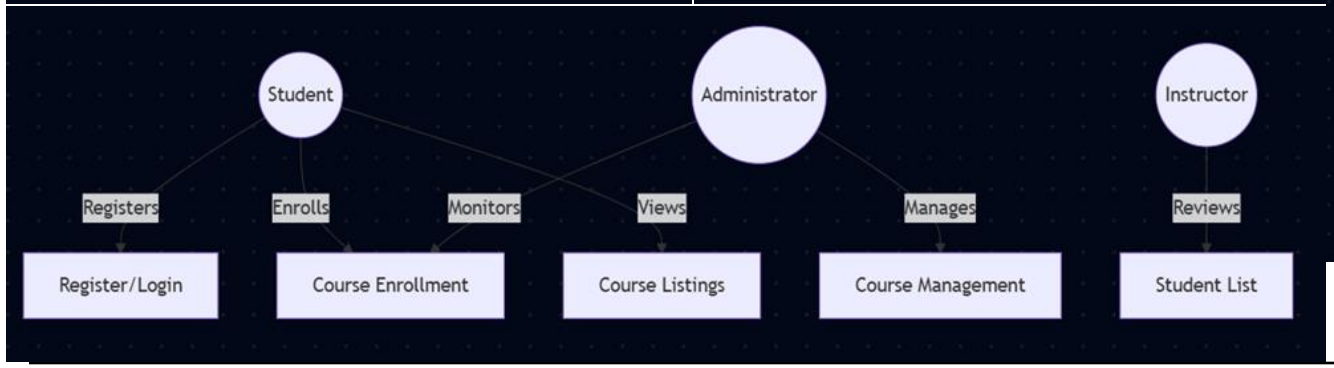
SOFTWARE REQUIREMENTS SPECIFICATIONS

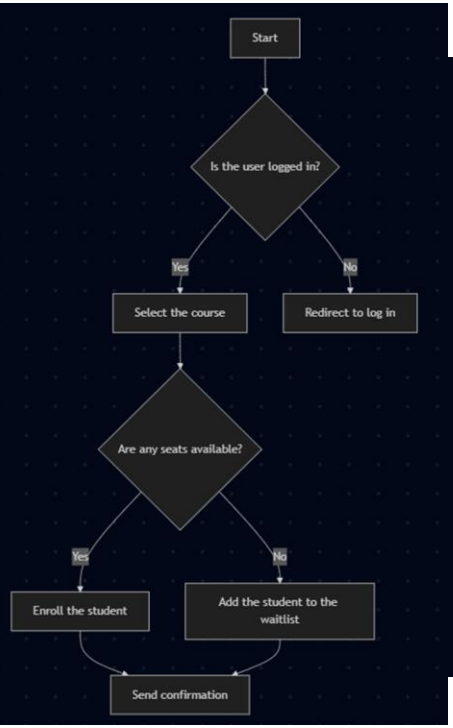
- System functionality and purpose
- Stakeholders and user roles
- Functional requirements such as registering, logging in, and waitlisting
- Non functional requirements like usability, security, and reliability

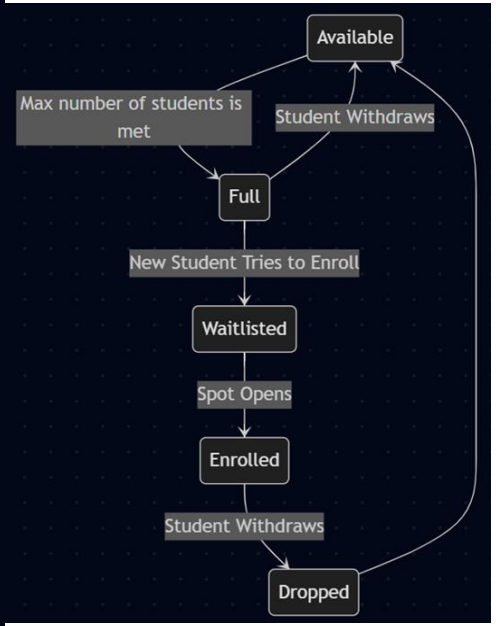
UML DESIGN


STUDENT
int student_id PK
string name
string email
string phone
string password
COURSE
int course_id PK
string course_name
string semester
int max_students
enrolls
has
waits
has_waitlist
ENROLLMENT
int enrollment_id PK
int student_id FK
int course_id FK
string status
datetime enrolled_at
WAITLIST
int waitlist_id PK
int student_id FK
int course_id FK
datetime waitlist_time


Student
System
Database
Submit login credentials
Validate credentials
Return result
Grant or deny access
Select course
Check availability
Enroll student
Enrollment confirmed
Add to waitlist
Added to waitlist
Student
System
Database


Student
Administrator
Instructor
Registers
Enrolls
Monitors
Views
Manages
Reviews
Register/Login
Course Enrollment
Course Listings
Course Management
Student List


Start
Is the user logged in?
Yes
No
Select the course
Redirect to log in
Are any seats available?
Yes
No
Enroll the student
Add the student to the waitlist
Send confirmation


Available
Max number of students is met
Student Withdraws
Full
New Student Tries to Enroll
Waitlisted
Spot Opens
Enrolled
Student Withdraws
Dropped

MYSQL DATABASE DESIGN

- There are four tables created in SQL that run this application
  - Students – student_id, name, email, phone, password (hashed)
  - Course – course_id, course_name, semester, max_students
  - Enrollment – enrollment_id, student_id, course_id, status, enrolled_at
  - Waitlist – waitlist_id, student_id, course_id, waitlist_time

WEB PAGES

- The main pages used in this project are
  - Landing Page - Welcome & navigation to other pages
  - Login and Register Pages - Session based authentication, first steps for users
  - Enroll Page - Displays all courses and the ability to enroll
  - My Courses Page - View enrolled and waitlisted classes

ENROLLMENT & WAITLIST

- Students are enrolled only if seats are available in the course. This is shown on the enrollment page
- If there are no available seats and the student selects enroll, they are added to the waitlist
- Waitlist is ordered by timestamp so it is first come first serve

DROPPING COURSES

- Enrolled students can drop courses
- System will automatically check the waitlist
- The next student is enrolled and removed from the waitlist

FINAL TAKEAWAYS

- Completed the SRS document and everything has been accounted for
- Used secure session handling using PHP
- Developed real time waitlisting logic
- Created communication between front end user interfaces and the MySQL database

REFERENCES

- Dooley, J. F. (2017). *Software development, design, and coding: With patterns, debugging, unit testing, and refactoring. (2nd ed.).* Springer Nature. https://ebookcentral.proquest.com/lib/ashford-ebooks/reader.action?docID=5162983
- GeeksforGeeks. (2025, January 2). *Unified modeling language (UML) diagrams.* GeeksforGeeks. https://www.geeksforgeeks.org/system-design/unified-modeling-language-uml-introduction/