

Part 1: Team and Project Info

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|-----------------------|---------------------|
| Team Name: | Data Dorks |
| Product/Project Name: | Teacher's Assistant |

Team Members:

| | Name (as appears on Canvas): | Northeastern Email Address: |
|----------|------------------------------|-------------------------------|
| Member 1 | Mikhail (Misha) Ankudovych | ankudovych.m@northeastern.edu |
| Member 2 | Sophie Sawyers | sawyers.s@northeastern.edu |
| Member 3 | Laura Boelsterli | boelsterli.l@northeastern.edu |
| | | |
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Part 2: Brief Synopsis of Project/Product

Teacher's Assistant (TA) is an all-in-one class management system for college courses combined into one service, integrating capabilities like assignment posting/submission, discussion boards, TA management, course registration, office hours, and course feedback into one platform. Currently, professors, TAs, students, and administrators find themselves navigating too many platforms for essential course operations, wasting time and diverting both time and energy away from important course content. This can result in many challenges, such as professors being unable to cover their entire curriculum within the span of a semester, students missing out on potential learning opportunities, TAs feeling overworked as students come with questions about content that had to be taught quickly in class, and administrators feeling troubled by constant requests to fix backend issues on numerous platforms. By consolidating these functionalities into one place, users will only need to become familiar with one interface, and universities can be better prepared to troubleshoot issues on one technology system. While pre-existing education platforms like Canvas and Gradescope include some of the functionalities listed above, Teacher's Assistant offers a new way to streamline all necessary course management tools in one location, alleviating stress and anxiety for professors, students, TAs, and administrators all semester long.

Part 3: User Personas

Persona 1: Harry Morrison (Professor)

Biography: Harry Morrison is a professor of Computer Science at Stanford University. He has a passion for front-end coding and has taught for over 20 years. He tries to encourage all his students to embrace technology as it is growing rapidly in our society.

Age: 49

Picture:



Gender: Male

Occupation: Professor of Computer Science

Hobbies: Harry is fascinated by machine AI tools and front-end development, although he truly loves his coffee.

Likes:

- Front-end development
- Machine AI tools
- Open-source software

Dislikes:

- Inefficient communication channels
- Wasting time

User Stories for Persona 1:

1. As a professor, I would like a single page where I can easily reach out to the TAs (either as a group or individually) so I can avoid wasting time with scheduling duties/missed communication.
2. As a professor, I would like a platform where I can see everyone's schedule for the week (overall and for individual TAs) and make changes to a TA's schedule if needed so I don't need to check multiple platforms.
3. As a professor, I would like to see the hours that my TAs and I have put into the program so I can keep track of our progress and monitor our investment in students.
4. As a professor, I would like a platform where students can automatically reach out to TAs with specific office hour-related questions so I can be more available for overall course questions and concerns from students.

Persona 2: Alex Fernandez (Teaching Assistant)

Biography: Alex Fernandez is a 20-year-old undergraduate majoring in Computer Science, currently working part-time as a Teaching Assistant (TA) for the foundational Computer Science course (Fundies) while pursuing his degree full-time. With two years of experience in the TA role, Alex adeptly balances his teaching responsibilities alongside academic research and coursework. His commitment to education and personal growth is evident in his active search for ways to manage his time more efficiently, streamline communication, and ensure a balanced workload both for himself and his fellow TAs.

Age: 20

Picture:



Gender: Male

Occupation: Teaching Assistant (Part-time),
Undergraduate Student in Computer Science at Stanford
(Full-time)

Hobbies: Soccer, spending time in nature, traveling,
cooking

Likes:

- Utilizing productivity tools for efficient task management, so I can be effective and still have time for my other responsibilities and hobbies
- Having real-time access to earnings as a student is helpful for financial planning
- Gaining insights into personal performance and contributions to the team
- Flexible scheduling that aligns with his student commitments, preferring a consistent number of hours worked each week but with the flexibility to vary the specific times

Dislikes:

- Inefficiency and time wasted due to disorganized communication and scheduling
- The need for a job that dynamically fits his busy student lifestyle without making office hours/labs the focal point, emphasizing the importance of flexibility in scheduling
- Juggling TA responsibilities across multiple platforms

User Stories for Persona 2:

1. As a TA, I want to see all ungraded assignments, so I can grade them.
2. As a TA, I would like to see the office hours schedule, so I can plan for the week.
3. As a TA, I want to be able to update grades for submissions, so in case of a regrade request or a mistake it will be easily fixable.
4. As a TA, I want to be able to post on a discussion board so I can answer any questions related to the course.

Persona 3: Emily Johnson (Student)

Biography: Emily Johnson is a freshman at Stanford University majoring in Computer Science. She discovered her love for coding during high school, which prompted her to pursue it as a major. She was fascinated by the way software could solve real world problems so she dedicated herself to mastering programming languages like Python and JavaScript. Emily is very involved in the community. She is part of multiple clubs such as the coding club and has participated in her fair share of hackathons.

Age: 18

Picture:



Gender: Female

Occupation: Undergraduate Student in Computer Science at Stanford (Full-time)

Hobbies: Photography, Theatre, Cooking, Reading, Writing Novels

Likes:

- Solving complex problems whether they're related to coding challenges, puzzles, or real-life situations
- Exploring new and emerging technologies, programming languages, and frameworks
- Expanding her coding knowledge, believes that there is always more for her to learn
- Staying busy with school and other obligations but also having free time to hang out with friends and just chill

Dislikes:

- Spending hours tracking down elusive bugs or dealing with cryptic error messages
- Repetitive or monotonous tasks
- Encountering stereotypes or biases in the tech industry
- Feeling overwhelmed by school work
- Encountering poorly optimized or inefficient code
- Technical issues or system failures that disrupt workflow or cause data loss

User Stories for Persona 3:

1. As a student, I would like to see when office hours are so I can plan my schedule around going if I need help on an assignment or just have a general question.
2. As a student, I would like to look at feedback given by other students about classes so I can see what classes I would like to take based on the reviews. I would also like to add feedback for courses I have taken.
3. As a student, I would like to see other students' questions (for all assignments in the course and for individual assignments) so I don't ask repeat questions and so I can understand the content better as sometimes other students have questions I didn't think of on my own.
4. As a student, I would like to see all of my assignments and their grades for a specific course so I can see if I am doing well in the class or if I need to go talk to office hours.

Persona 4: Mary Bishop (Academic Coordinator)

Biography: Mary Bishop has been an Academic Coordinator at Stanford for seven years. She has a true passion for organization, collaboration, and education, and she loves playing a large role in helping the Computer Science department provide a positive experience for its students. Prior to being an Academic Coordinator, Mary worked as an assistant professor in data science where she taught courses on introductory programming and machine learning. She is also an advisor for the Women in Technology student organization at Stanford, and is a strong advocate for more diverse representation in the tech industry.

Age: 39

Picture:



Gender: Female

Occupation: Academic Coordinator (College of Information and Computer Sciences)

Hobbies: Running, cooking, learning new languages, spending time with her husband and two kids

Likes:

- Cross-collaboration between departments in her role at Stanford
- Backend, operational nature of her position
- Interacting with students and answering their questions
- Keeping up with new developments in the tech industry and seeking ways to implement them into current curriculum to stay relevant
- Advocating for DEI in tech

Dislikes:

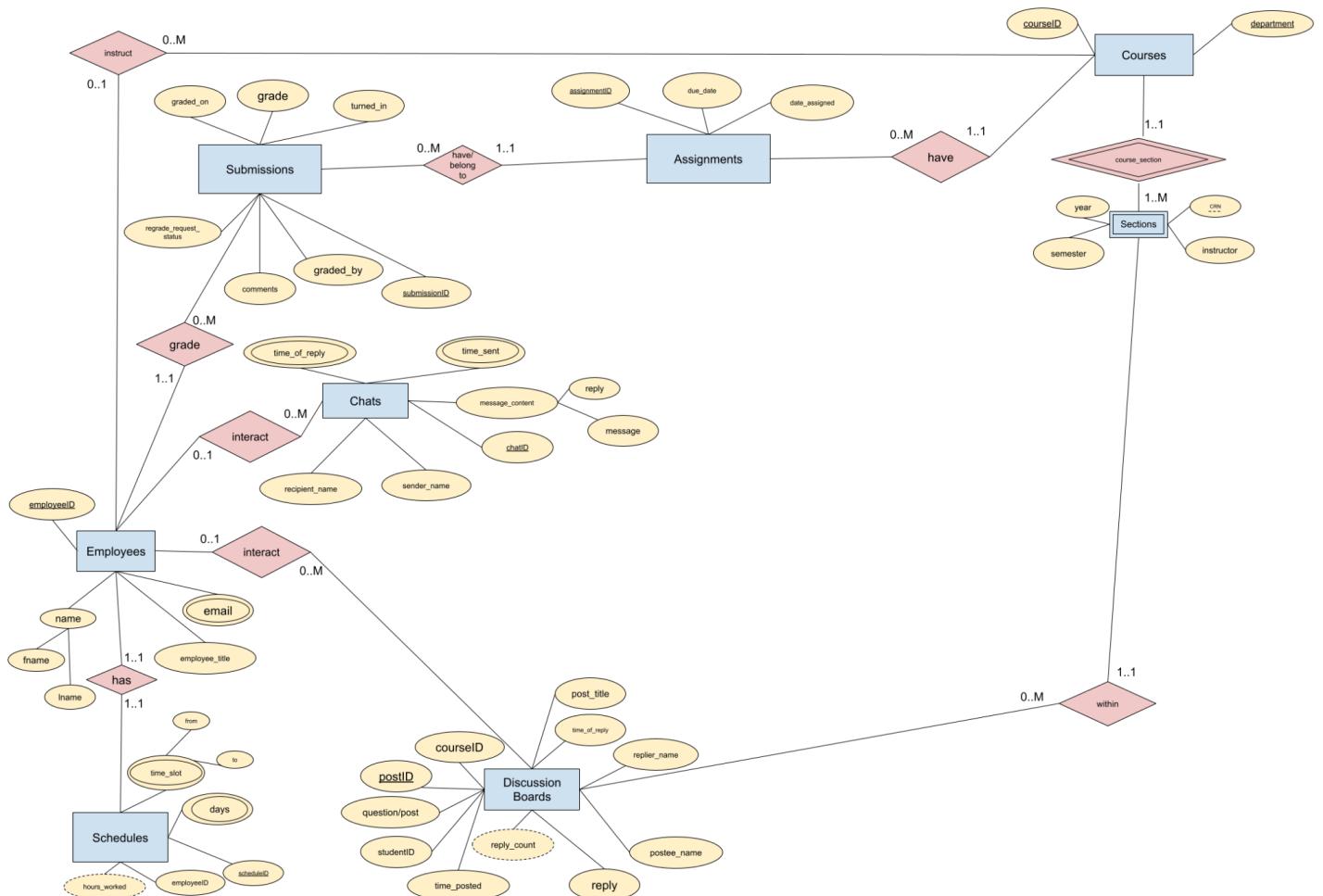
- Excessive amounts of administrative work with no tangible student impact
- Planning the scheduling of course sections each semester
- Dealing with technical difficulties in course platforms and registration she is assigned to fix
- Limited opportunities to interact directly with students in her current position
- Conducting performance evaluations for professors based on student feedback
- Combing through excess information to gather data that supports her ideas for the future of the department

User Stories for Persona 4:

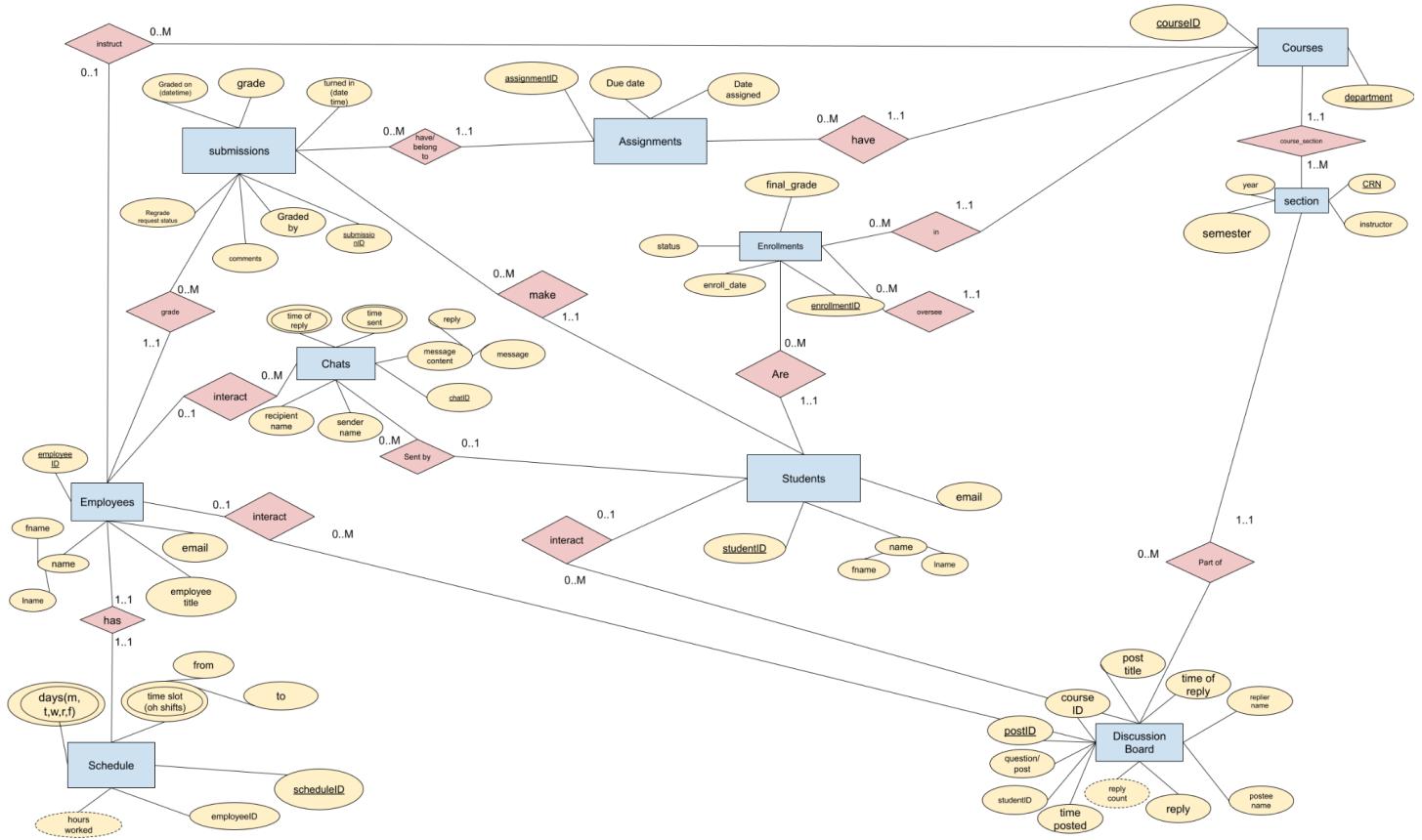
1. As an Academic Coordinator, I would like to be able to access student enrollment data on one platform so that I can easily find which students are registered in each course and avoid wasting time having to copy data across platforms.
2. As an Academic Coordinator, I would like to be able to easily review student feedback for individual courses at the end of each semester so that I can make better informed decisions about which classes should or shouldn't be offered the following semester.
3. As an Academic Coordinator, I would like to be able to view all grades for courses offered within a semester so that I can effortlessly report course grade breakdowns to my supervisor for department approval.
4. As an Academic Coordinator, I would like to be able to gather a list of all emails of students registered for courses by department so that I can reach out to them with timely course registration updates specific to their home college.

Part 4: Localized ER Diagrams

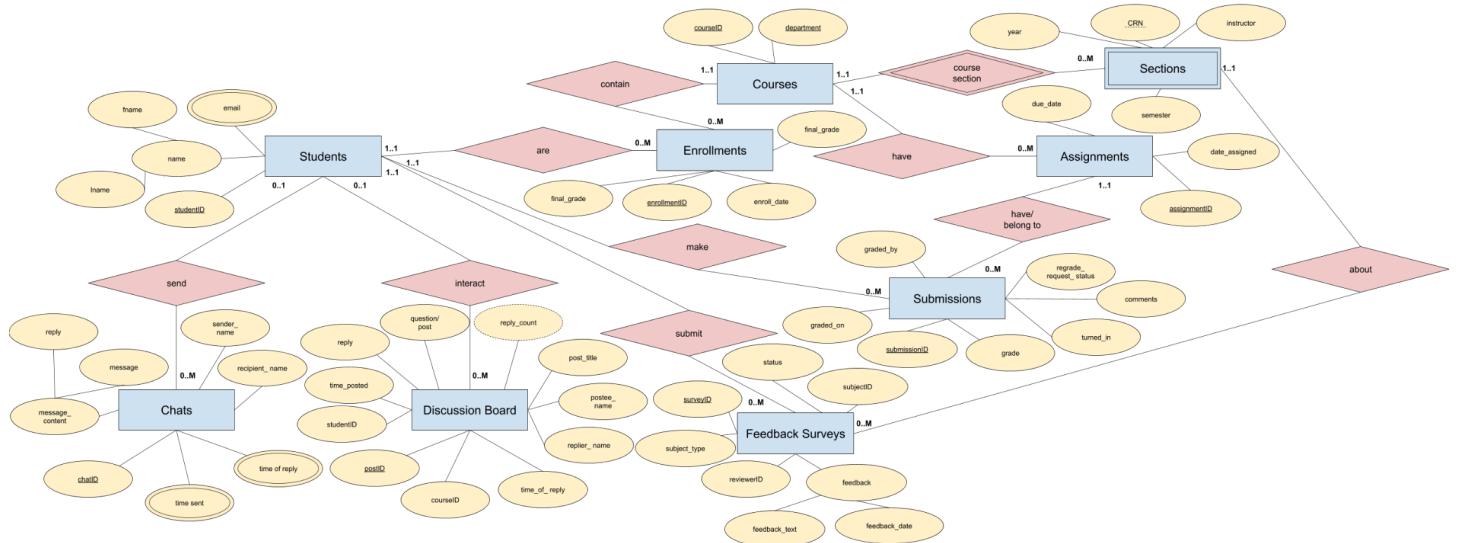
User Persona 1: Professor - Harry Morrison



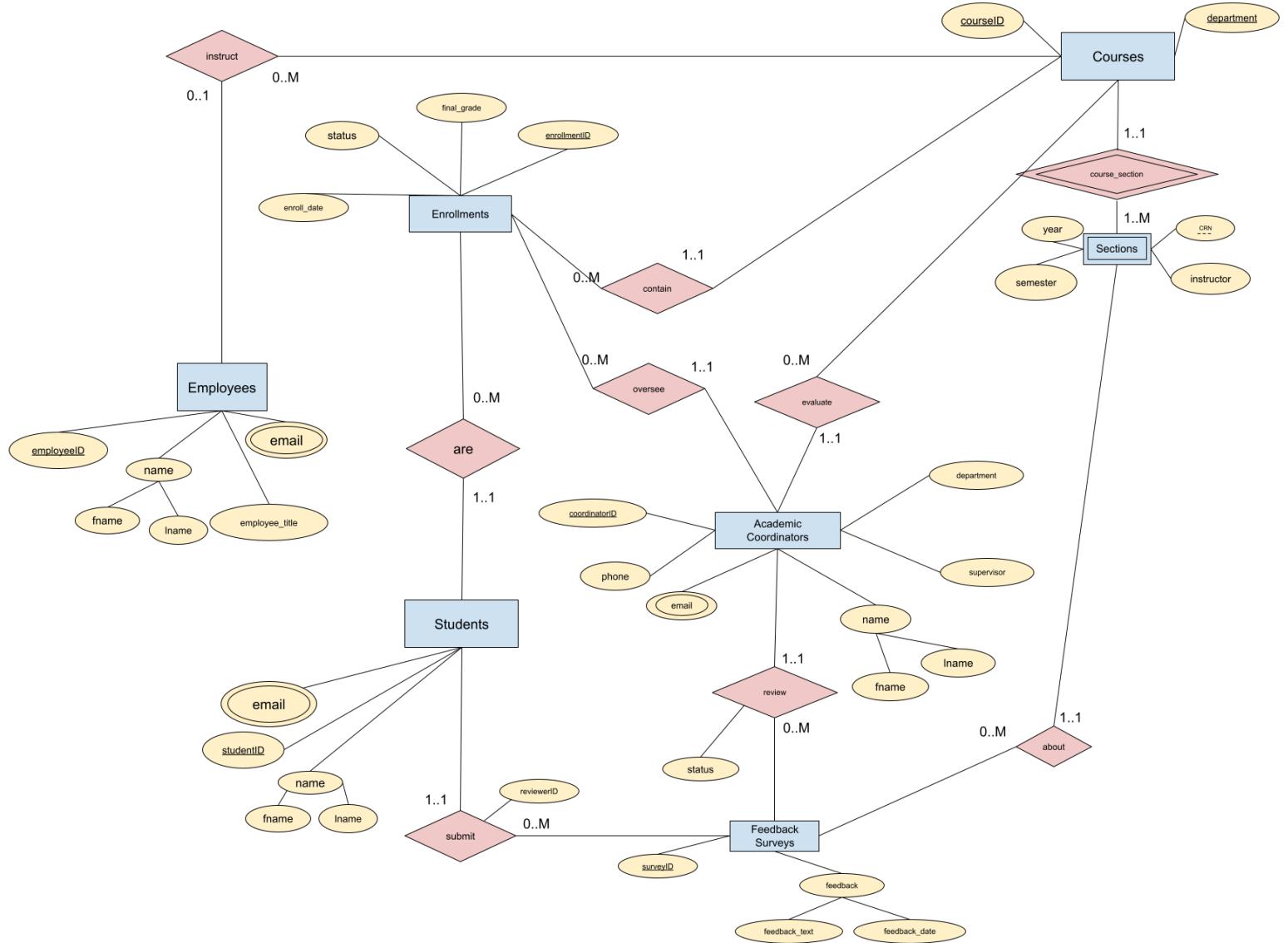
User Persona 2: TA - Alex Fernandez



User Persona 3: Student - Emily Johnson

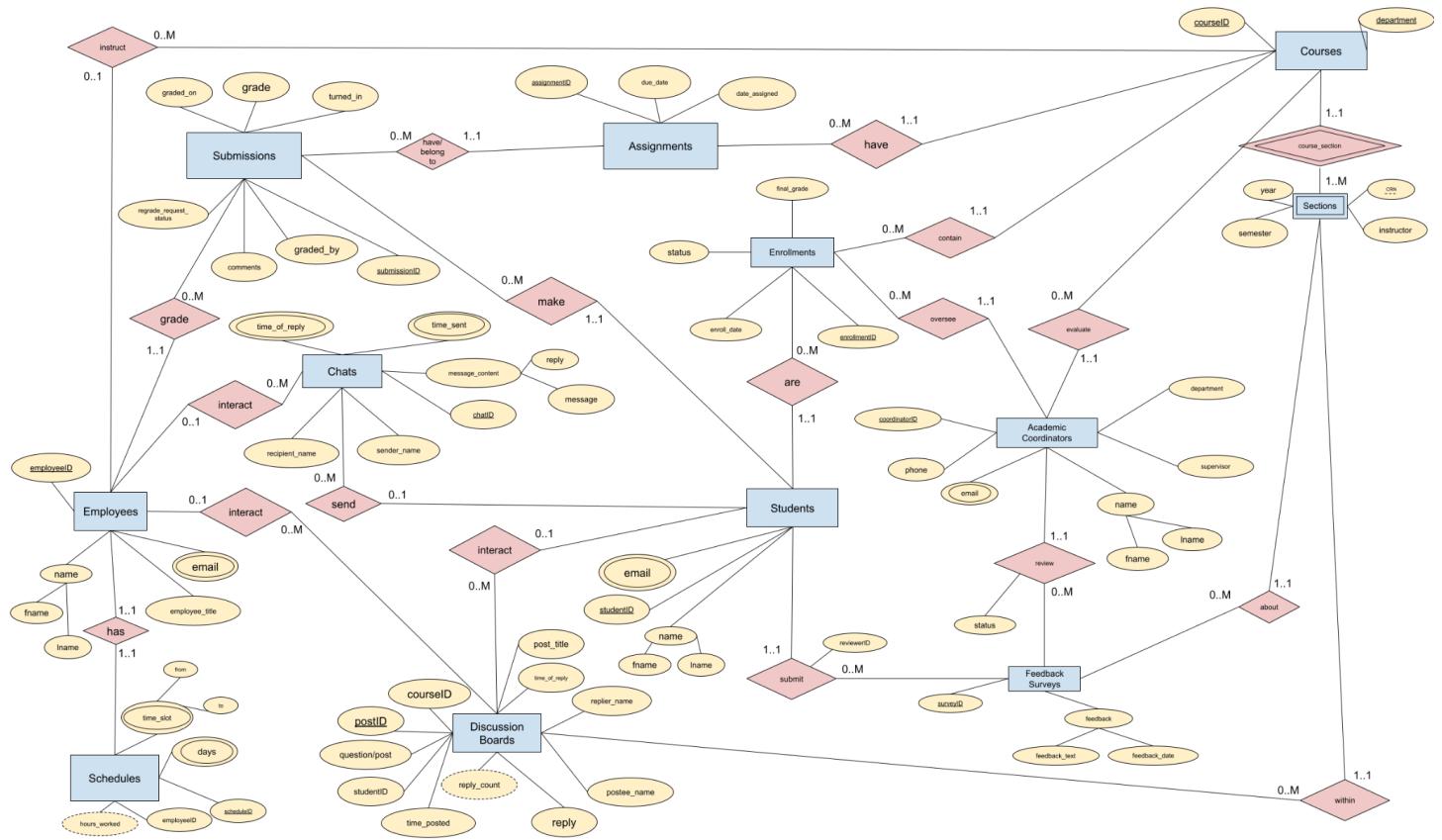


User Persona 4: Academic Coordinator - Mary Bishop



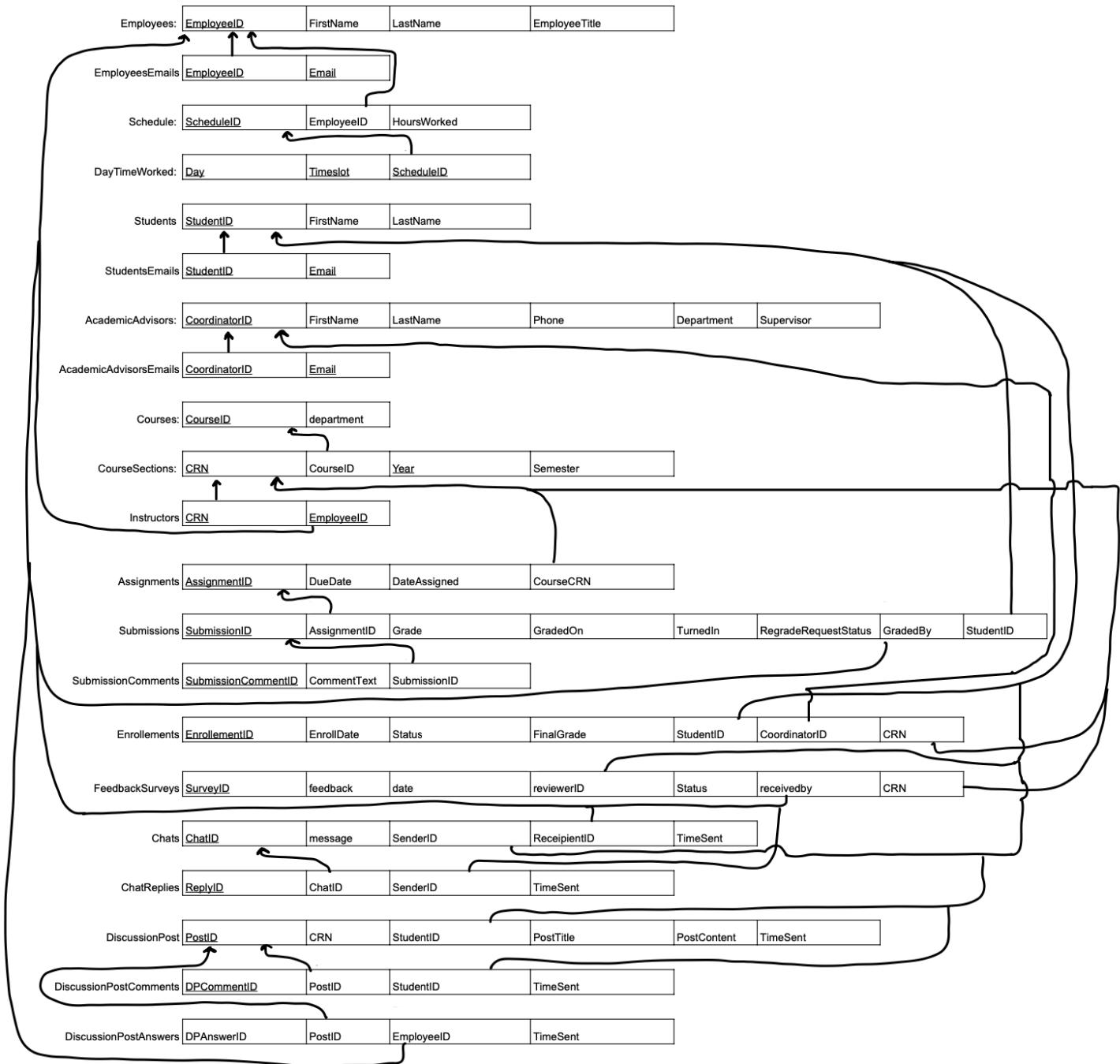
Global ER Diagram

App's global ER diagram



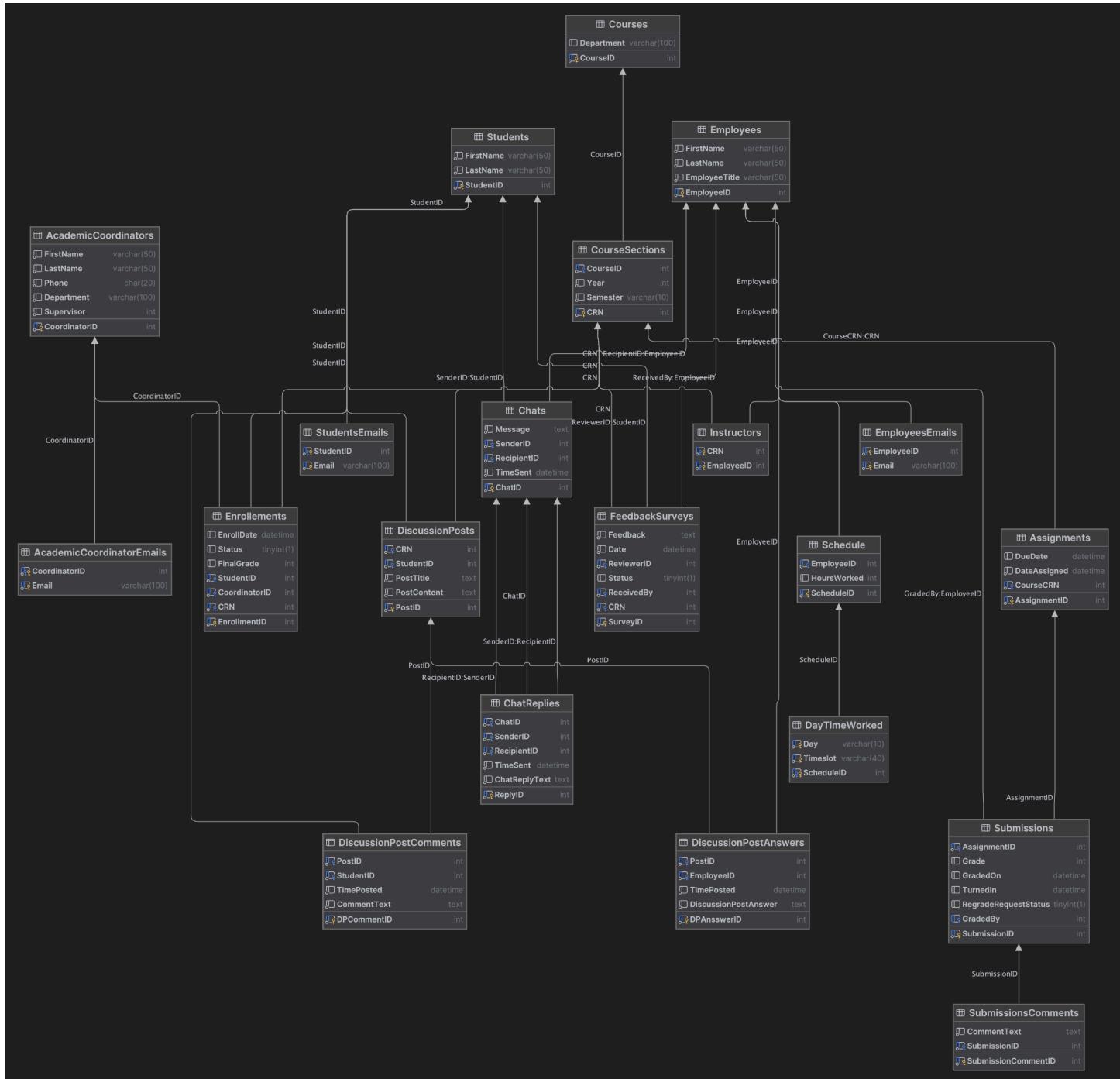
Relational Diagram:

Our app's relational diagram (generated from the above global ER diagram)

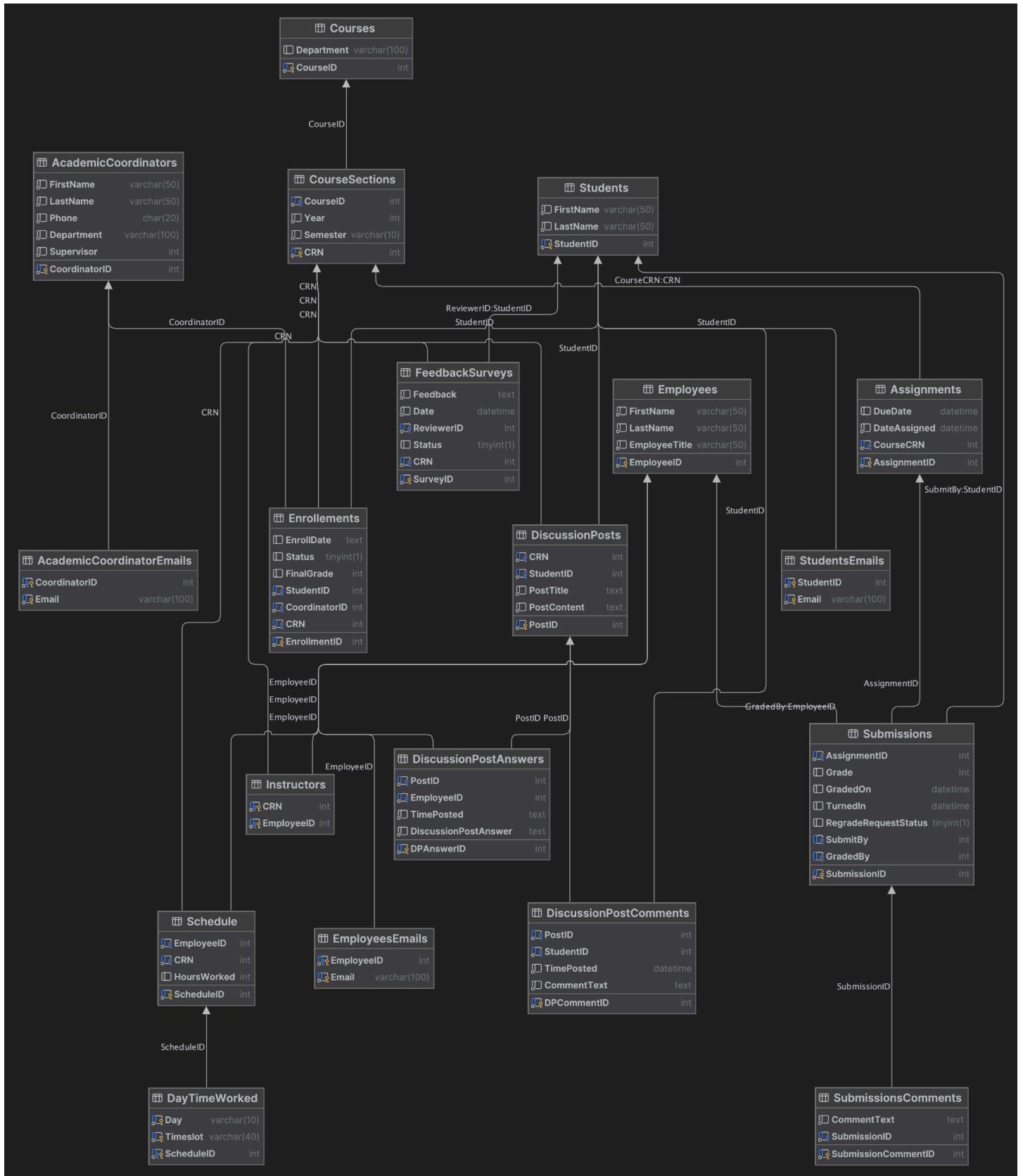


Datagrip Database Diagram

Now that the database script file is created, generate a database diagram in Datagrip.



Updated database diagram from Datagrip (Phase 3):



User Story Queries

For each of your user stories, provide a single SQL SELECT, INSERT, UPDATE, or DELETE statement that would solve the data needs of the user story. Label each Query with its corresponding User Story Number (e.g., “2.4” for user story 4 of persona #2, or something similar). Each SQL statement should be written to work with your data model.

The SQL Statements provided should be **properly formatted** and in a **fixed point font** such as Courier or Fira Mono.

1.1

```
SELECT TAs.Name, TAs.OfficeHours  
FROM TAs  
    JOIN Courses ON Courses.TAID = TAs.TAID  
WHERE Courses.ProfessorID = 1;
```

1.2

```
SELECT Schedules.Date, Schedules.TimeSlot, Courses.CourseName, TAs.Name AS  
TAName  
FROM Schedules  
    JOIN Courses ON Schedules.CourseID = Courses.CourseID  
    LEFT JOIN TAs ON Courses.TAID = TAs.TAID  
WHERE Schedules.ProfessorID = 1 AND Schedules.Date BETWEEN '04/2/2024' AND  
'04/9/2024';
```

1.3

```
SELECT Professors.Name AS ProfessorName, Professors.OfficeHours AS  
ProfessorOfficeHours, TAs.Name AS TAName, TAs.OfficeHours AS TAOfficeHours  
FROM Professors  
    LEFT JOIN Courses ON Professors.ProfessorID = Courses.ProfessorID  
    LEFT JOIN TAs ON Courses.TAID = TAs.TAID  
WHERE Professors.ProfessorID = 1;
```

1.4

```
INSERT INTO Communications (SenderId, ReceiverID, Timestamp, Content)  
VALUES (10, 7, CURRENT_TIMESTAMP, 'Can I schedule an appointment during  
your office hours?');
```

2.1

for seeing all ungraded submissions:

```
SELECT *
FROM Submissions s
JOIN Assignments a ON s.AssignmentID = a.AssignmentID
WHERE s.Grade IS NULL;
```

for putting in a grades for an ungraded submissions:

```
UPDATE Submissions SET GRADE = %s
WHERE SubmissionID = %s AND AssignmentID = %s
```

2.2

```
SELECT *
FROM Schedule s JOIN DayTimeWorked dtw ON dtw.ScheduleID = s.ScheduleID
JOIN Employees e ON e.EmployeeID = s.EmployeeID;
```

2.3

For getting all submissions:

```
SELECT *
FROM Submissions;
```

For changing grade on any submission:

```
UPDATE Submissions SET Grade=%s, GradedBy=%s, GradedOn=%s WHERE
SubmissionID=%s;
```

2.4

```
SELECT dp.PostContent AS Content, DiscussionPostAnswers AS Reply
FROM DiscussionPosts dp
JOIN DiscussionPostAnswers da ON dp.PostID=da.PostID;
```

For seeing all discussion posts:

```
SELECT *
FROM DiscussionPosts;
```

For seeing post replies to discussion posts:

```
SELECT *
FROM DiscussionPostAnswers;
```

Finally, to actually post the reply:

```
INSERT INTO DiscussionPostAnswers (PostID, EmployeeID,
DiscussionPostAnswer, TimePosted)
VALUES (%s, %s, %s, %s);
```

3.1

```
SELECT dtw.Day AND dtw.Timeslot AS OfficeHours, e.EmployeeFirstName AND
e.EmployeeLastName as Name
FROM DayTimeWorked dtw
    JOIN Schedule s ON dtw.ScheduleID = s.ScheduleID
    JOIN Employees e ON s.EmployeeID = e.EmployeeID
ORDER BY OfficeHours ASC;
```

3.2

```
SELECT *
FROM FeedbackSurveys
ORDER BY CRN;
```

3.3

```
SELECT dp.PostTitle AND dp.PostContent as posts, e.FirstName AND
e.LastName as sender, dpa.DiscussionPostAnswer as answer
FROM DiscussionPost dp
    JOIN DiscussionPostAnswers dpa ON dp.PostID = dpa.PostID
    JOIN Employees e ON dpa.EmployeeID = e.EmployeeID
WHERE answer IS NOT NULL;
```

3.4

```
SELECT *
FROM Assignments a
    JOIN Submissions s ON a.AssignmentID = s.AssignmentID
ORDER BY a.CourseCRN;
```

4.1

```
SELECT *
FROM Enrollments
ORDER BY CRN ASC;
```

4.2

```
SELECT Feedback, CRN
FROM FeedbackSurveys
ORDER BY CRN ASC;
```

4.3

```
SELECT CRN, AVG(FinalGrade) as Average_Grade
FROM Enrollments
GROUP BY CRN;
```

4.4

```
SELECT se.Email as EmailAddress, c.Department as Department
FROM StudentEmails se
    JOIN Enrollments e ON se.StudentID = e.StudentID
    JOIN CourseSelections cs ON e.CRN = cs.CRN
    JOIN Courses c ON cs.CourseID = c.CourseID
ORDER BY Department ASC;
```

REST API Matrix

- List all resources you've identified from the user stories.
- Under the relevant HTTP methods for that resource, very briefly describe the action that will take place. If a particular route will not be supported, put 'n/a' in the box.
- Indicate which User Story or stories will use each route. Use the format [persona_name , user_story_num]. Example: [Jane-2] means the 2nd user story of persona Jane.
 - Feel free to update your user stories submitted for Phase 1 with numbers.
- Use the example below to guide you.

| Resource | GET | POST | PUT | DELETE |
|------------------------------|--|---|--|--|
| /DiscussionBoardContent | Review all discussion board posts [Emily-3], [Alex-3], [Harry-4] | n/a | n/a | n/a |
| /DiscussionBoardAnswers | See all replies to discussion posts (including the ones just created) [Emily-4], [Alex-3], [Harry-4] | n/a | n/a | n/a |
| /DiscussionBoard | n/a | Post a reply on a discussion board post [Alex-3], [Harry-4] | n/a | n/a |
| /Enrollments | Retrieve all student enrollment data [Mary-1], [Mary-3], [Mary-4] | n/a | n/a | Delete an already existing enrollment [Mary-4] |
| /Enrollments/{coordinatorID} | n/a | Create a new enrollment [Mary-4] | n/a | n/a |
| /FeedbackPost/{studentID} | n/a | n/a | Make a new feedback post [Emily-2], [Mary-2] | n/a |
| /FeedbackSurveys | Retrieve student feedback for all courses [Emily-2], [Mary-2] | n/a | n/a | n/a |
| /Students | Return all students and their emails [Mary-3], [Mary-4] | n/a | n/a | n/a |
| /Submissions | Get all ungraded submissions [Alex-1] | n/a | n/a | n/a |
| /GradeASubmission | n/a | n/a | Grade an ungraded submission [Alex-1] | n/a |
| /Grades | Get all submissions (graded and ungraded) and see their grades [Alex-4] | n/a | n/a | n/a |

| | | | | |
|------------------------------|---|-----|---|-----|
| /GradesUpdate/{employeeID} | n/a | n/a | Update grade for selected submission [Alex-1], [Alex-4] | n/a |
| /AssignmentsStud/{studentID} | Return all assignments and submissions for a particular student [Emily-4] | n/a | n/a | n/a |
| /AllGrades | View all grades [Mary-3] | n/a | n/a | n/a |
| /TAS | Retrieves all TAs' names and emails [Harry-1] | n/a | n/a | n/a |
| /OfficeHours | Retrieve entire office hours schedule for all TAs [Harry-2], [Harry-3] | n/a | n/a | n/a |
| /OfficeHoursSchedule | Retrieve more robust office hours schedule [Emily-1], [Alex-2] | n/a | n/a | n/a |