CS 493
Cloud Application Development
Fall 2019

Introduction to concepts and techniques for developing and deploying RESTful APIs on the cloud.

Canvas Course Home Page

https://oregonstate.instructure.com/courses/1737594

Instructor

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Graduate Teaching Assistants

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Prerequisites

This course has the following 3 prerequisites

- CS 290: Web Development
- CS 340: Introduction to Databases
- CS 372: Introduction to Computer Networks

Course Topics

A weekly schedule of topics and assignments is provided on the Canvas home page.

- RESTful API design and implementation
- Resources, routing, and HTTP verbs
- Data representation and errors
- Efficient data storage models
- Data replication and synchronization
- Authentication and authorization
- Queueing and request processing
- Cloud API deployment
- API performance, reliability, and scaling

Student Learning Outcomes

At the completion of this course, students will be able to:

- Design and implement an effective RESTful API, using appropriate HTTP verbs (GET, POST, DELETE, etc.) to access specific API resources.
- Evaluate various approaches to representing data in API requests and responses and to alerting users of errors.
- Use modern tools and techniques for storing API data.
- Use modern techniques to replicate and synchronize data to ensure data safety and consistency.
- Employ secure mechanisms for authenticating users and authorizing the use of specific portions of an API.
- Use modern tools and techniques to queue and process API requests.
- Select an available open-source search index to meet an API's information retrieval needs.
- Create a publicly available cloud API.
- Evaluate an API's performance and reliability using appropriate metrics.

Platform and Programming Languages

- We will use Google Cloud Platform (GCP) in this course.
- For implementing the assignments, you will have the choice of using either Python with Flask or Node.js. The Instructor, at his discretion, may allow use of additional languages/platforms beyond these two choices.

Learning Resources

There is no textbook for this course. There will be required articles and other material from the internet posted on the course website as the course progresses.

Evaluation of Student Performance

Final grades will be comprised of the following weighted components:

- 60% 8 programming assignments
    - All assignments have equal weight
    - We will drop the grade of your lowest scoring assignment and count the 7 assignments with the best grades
- 35% Final project
    - In lieu of a final exam, you'll demonstrate your mastery of the skills you've learned by the end of this course by working to develop a complete RESTful HTTP API.
- 5% Quizzes or Activities
    - There will be occasional small quizzes or activities which are required

Letter Grades

Numerical score	Letter grade
>= 93%	A
>= 90% & < 93%	A-
>= 87% & < 90%	B+ (e.g., an 89.99% would be a B+)
>= 83% & < 87%	B
>= 80% & < 83%	B-
>= 77% & < 80%	C+
>= 73% & < 77%	C
>= 70% & < 73%	C-
>= 67% & < 70%	D+
>= 63% & < 67%	D
>= 60% & < 63%	D-
< 60%	F

Grading Programming Assignments

We will attempt to grade the assignments within 5 days of the due date.

If you have grading questions about an assignment, you MUST email the person who graded the assignment. This is determined by your last name and this information is posted on the Course Home Page. If you believe a grade returned to you is incorrect, please contact your grader within 48 hours of the grade being received by you.

For the final project and the assignments, it will be your responsibility to provide adequate proof that your API works as intended. This should be something a grader can evaluate quickly. This may require you to record a demo of you interacting with your project via Postman or running a suite of unit tests on your APIs access points. More information will be provided with each assignment.

Portfolio Assignment

We ask you to refrain from publicly posting your assignments. However, we are now designating one assignment as the Portfolio Assignment which the students are allowed to share publicly. For this course your Final Project is designated as the Portfolio Assignment and you can share it publicly.

Course Policies

Late work

Assignments submitted after the due date will not be accepted without a documented medical or family emergency and will receive a grade of 0.

Contesting grades

You can request a regrade on an assignment by contacting your grader within 48 hours of receiving your grade. Include what points were taken off and why you feel your assignment/project does in fact meet the requirements you were penalized for not meeting.

When requesting a regrade the grade will NEVER be lower than when you made the request. We will not lower a grade for finding something else wrong. That said, please note that while reviewing your request we discover we made a mistake in taking points but also made a mistake in not deducting points it is possible your grade will remain the same.

Communication

All questions seeking technical help should be posted to Piazza so all students may benefit from the answer. If you have a question that is personal in nature send an email with [493] in the subject. We will strive to reply to Piazza posts and emails within 48 business hours.

Course Expectation

In this course, you are encouraged to collaborate with your fellow for Student classmates to discuss concepts and high-level approaches to programming assignments. However, you are expected to do your own programming work and may not work with other students to write code for programming assignments. You may never copy the work of another student.

Student Conduct

Programming assignment submissions will be checked for similarity against other submissions from the current term and past terms and against work published online. At the instructor's discretion, any student whose work is deemed to be too similar to another person's work will receive a zero for the assignment in question, and the offense will be reported as academic dishonesty to the Office of Student Conduct. See this page for more details on OSU's Student Conduct Code: http://studentlife.oregonstate.edu/code.

Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but

have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.