CMPT661 / CMPT782
Web Development

Syllabus and Course Admin

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Outline for Today

- Course introduction
- Grading
- Policies

About the Instructor

- **Dr. Abdelkarim Erradi**
  - **Office:** Office **H07-C309** Engineering Building
  - **Phone:** 4403 4254

Office hours:

- After class or before class upon request
- **Best way to contact me is via Teams chat**

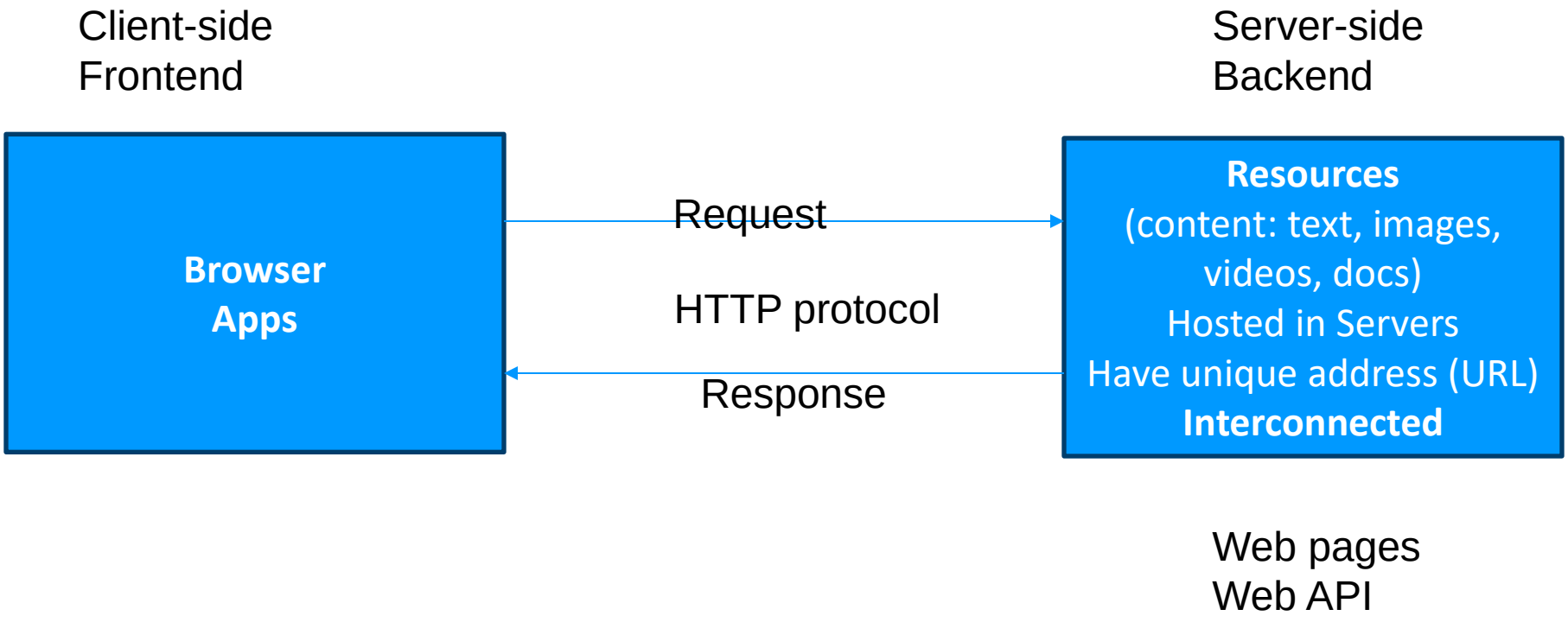
Why this Course?

- Web Applications are **critical applications** that **automate business processes** and **support the organization in achieving its goals**
- There are typically characterized by:
  - Mission critical hence they need to be **secure**, **reliable** and **highly available**
  - Users often require fast response time & good user experience
  - Often used by a large number of concurrent users. Hence, they need to be **scalable**

=> This course **equips you with the skills** and best practices needed to design and develop Web applications with the required quality attributes

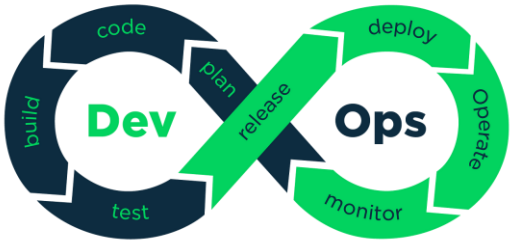
Course Objectives

1. Critically evaluate and apply **principles** and **technologies** to design, develop, and deploy scalable, secure, and high-performance web applications
2. Design, implement, and test interactive, and dynamic web applications using a range of client-side and server-side technologies, considering performance, security, and user experience
3. Evaluate, select, and effectively utilize state-of-the-art application frameworks, tools, DevOps practices to build, secure, deploy, and scale web applications in diverse cloud and on-premise environments


Client-side
Frontend
Server-side
Backend
Browser
Apps
Request
HTTP protocol
Response
Resources
(content: text, images, videos, docs)
Hosted in Servers
Have unique address (URL)
Interconnected
Web pages
Web API

Course Roadmap

Web Application Security



Web Client

Request

Response

Web Server

Frontend development

HTML for page content & structure

CSS for styling

JavaScript for interaction

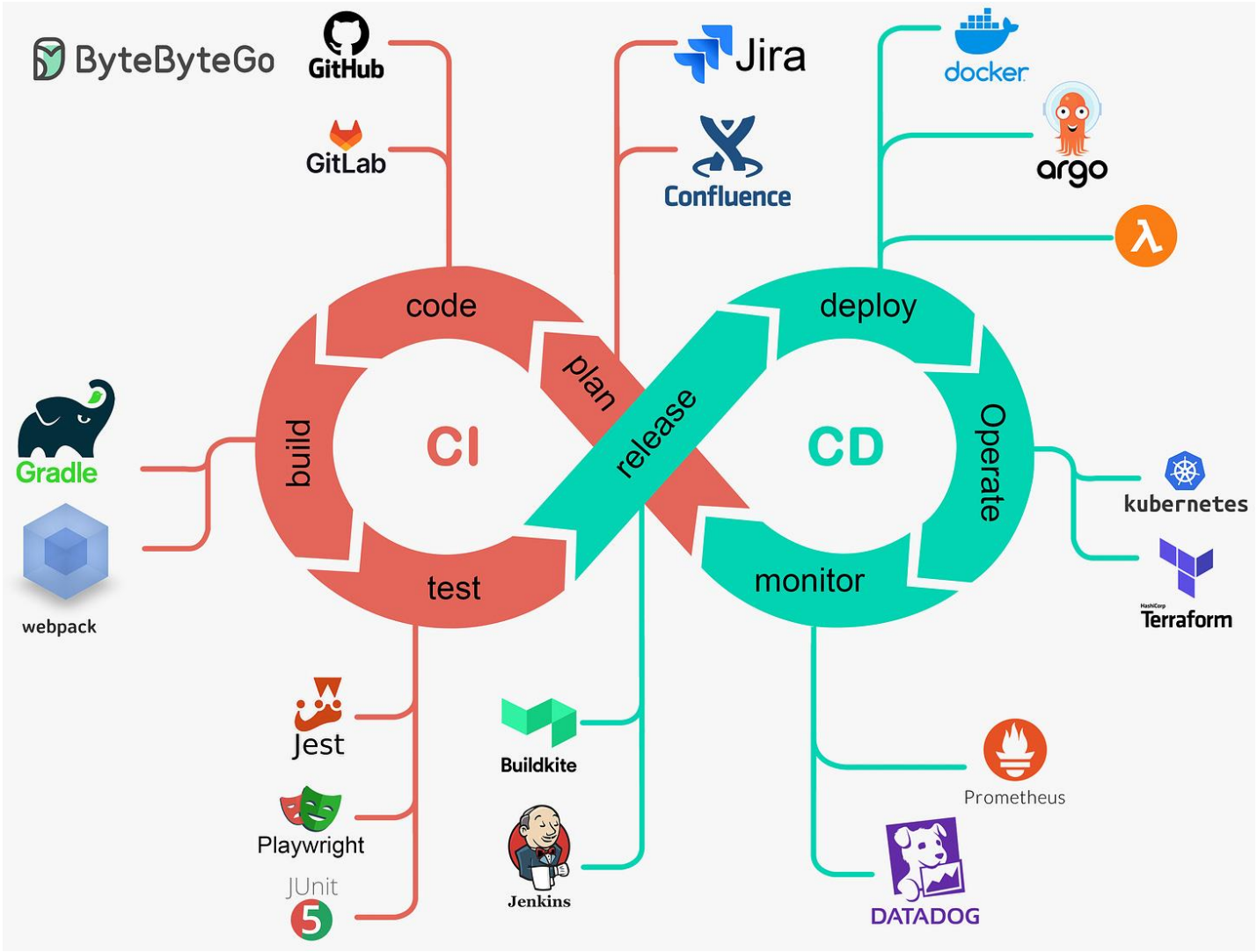
Backend development

Web API

Web Pages

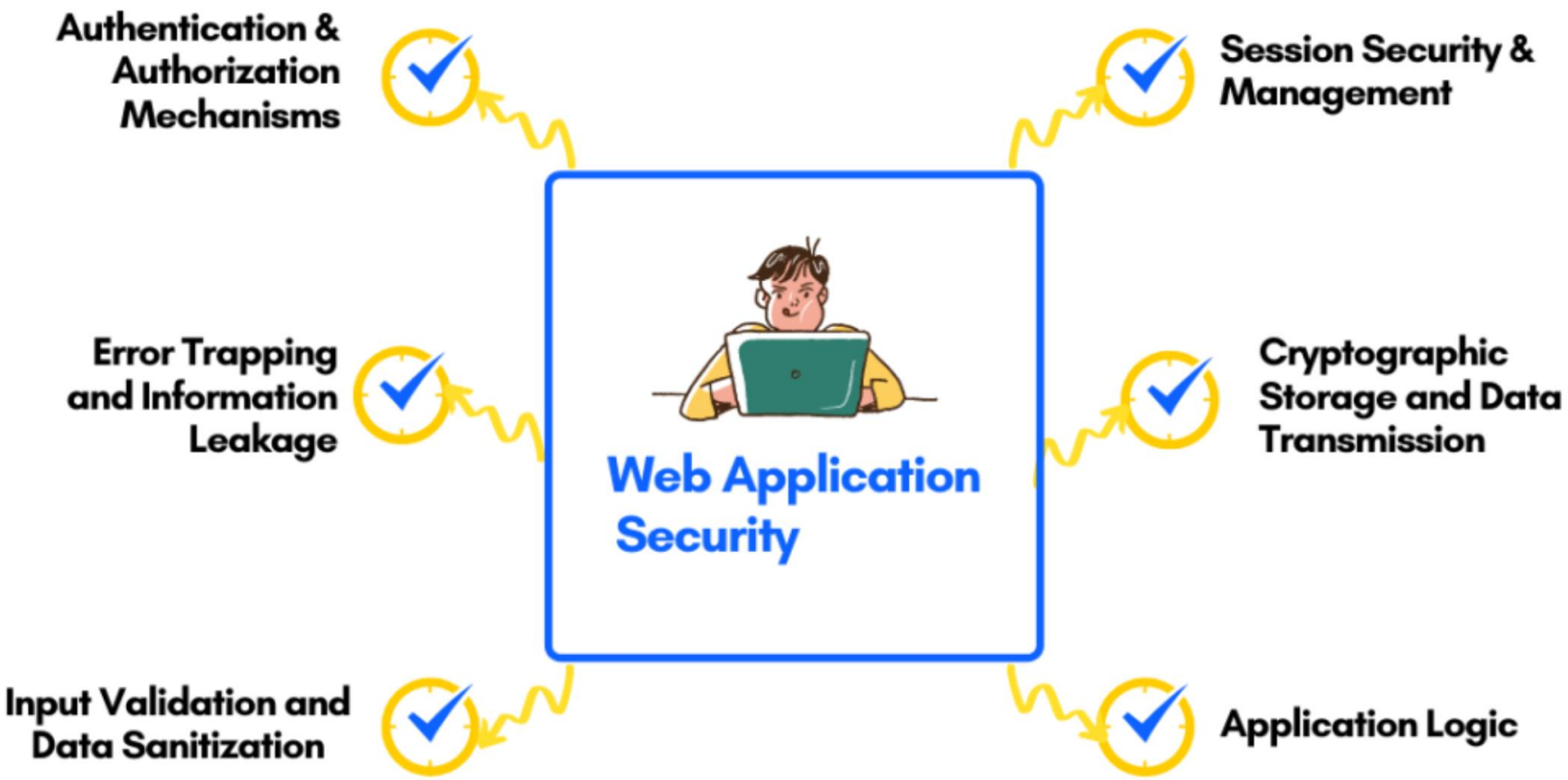
Data Management

Continuous Integration and Continuous Delivery (CI/CD)



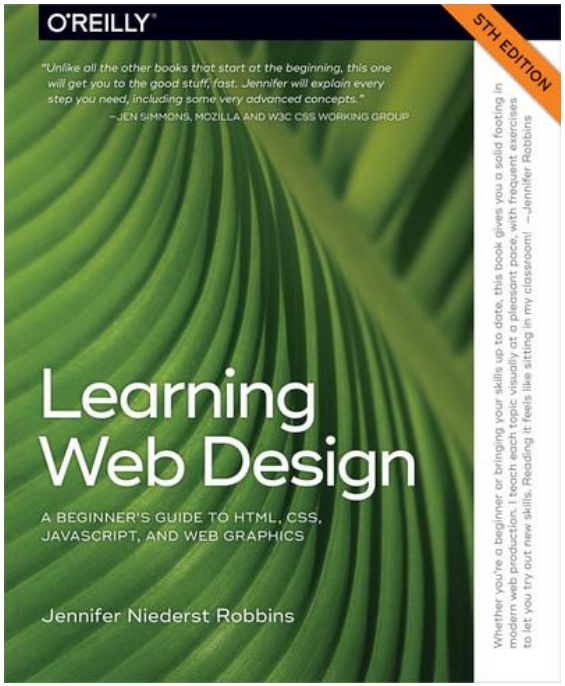
Source: https://blog.bytebytego.com/p/a-crash-course-in-cicd

Web Application Security



Source: https://www.linkedin.com/pulse/web-application-security-team-conflict-management-vinodh-s/

Topics	Chapter	Weeks
Course Introduction HTML	T1 - Part II. HTML for Structure	1
CSS	T1- Part III. CSS for Presentation	1
JavaScript & Client-side JavaScript	T2 - Chapters 3, 4, 5 to 10	1
Web API with Next.js	T2 - Chapter 16	1
Data Management using Prisma	Online readings	1
Multi-page full stack app using Next.js and React	Online readings	2
Midterm Exam		**1**
Progressive Web Apps (PWAs)	Online readings	1
Securing Web applications: authentication and authorization		1
Security threats and vulnerabilities (OWASP Top 10)		1
DevOps & Cloud Technologies		1
Scaling Web Apps		1
Student presentations		1
Total		**14**

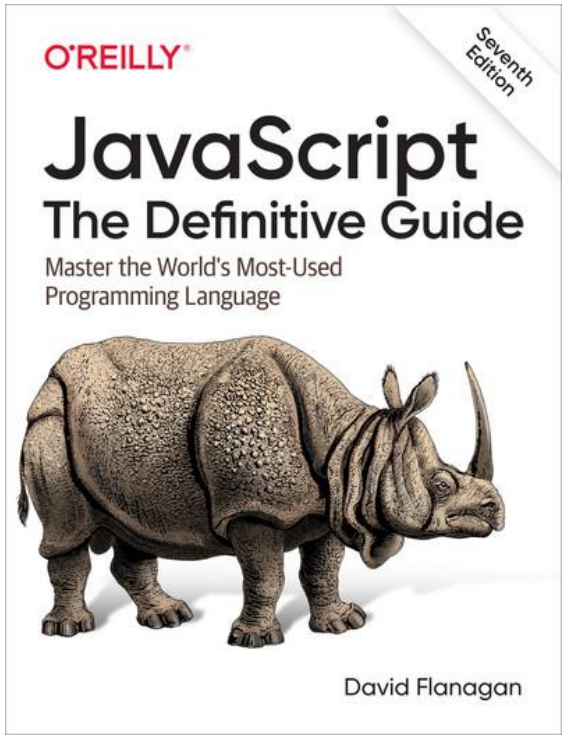


Recommended Textbooks

Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics

5th Edition, Jennifer Robbins 2018, O'Reilly Media

(freely available as OReilly eBook using your QU login)



JavaScript: The Definitive Guide

7th Edition, David Flanagan 2020, O'Reilly Media

Your Grade is Based on:

Quizzes	10%	10% (4 out of 5) - no make-up quiz if absent
~~**Assignments**~~	~~10%~~	~~2 individual assignments~~
Review paper and presentation	**15%**	Review and synthesize research papers and present the findings
Project	**25%**	2 phases project: - Design, implement and test a Web application (10%) - Secure, Deploy and Scale (10%)
Midterm exam	25%	Theory (10%) & Practical (15%)* - week 8
Final exam	25%	Theory (10%) & Practical (15%)* - Consult University exam timetable

How to succeed in this course….

- Do your weekly assigned readings
- **Read the slides before you come to the class**
- **Exercise a lot – study as many examples as possible**

  - Understand and enhance the examples I provide as well as the ones in the textbook and the ones in the provided resources
- **Attend and participate in class**
  - **Many of the exam questions are from the class explanation**
- Do all the assignments and project **yourself.** Actively contribute to your project.
- Seek help when needed and ask questions (and do it EARLY): During Lectures/Labs & Come to office hours

We learn swimming by swimming and we learn design and programming by practicing it!

Software we will use

- VS Code https://code.visualstudio.com/
- GitHub
- Node.js
- Next.js
- Prisma https://www.prisma.io/
- For modeling we will use **Visual Paradigm**

https://ap.visual-paradigm.com/qatar-university/license.jsp

- Other tools will be communicated to you as we go

GitHub will be used to deliver Slides, Examples, Assignments, and Project

Check https://github.com/CMPTWebDevS25/webdev-content ***regularly!***

Post your technical questions to

https://github.com/CMPTWebDevS25/webdev-content/issues

All Communications using Teams (No emails)

Important Notes

- Attendance… QU attendance policies will be enforced
  - Do not miss classes/labs
- **Start your assignments and project early!!!**
- This is a senior-level course and students are expected to learn independently as much as needed in order to complete the course requirements
  - Do not expect me to find/fix your code bugs
  - Do not expect me to find and fix your technical issues

  => I can only give you high level suggestions and guidance

No ‘Free Riding’ allowed

- ‘free riders’ (who do not contribute much) => not acceptable and not fair for hardworking students
  - You must actively contribute to your project and do your ultimate best to deliver the best possible results
  - Otherwise you will be asked to do the project alone
  - **Report free-riders early**

Plagiarism / Cheating

- “Getting an unfair academic advantage"
  - Using other people's work as your own
  - Not doing your assignments yourself
- All the code you submit has to be your own
    - Only exception: Code I have provided or explicitly authorized
    - **NO** code you have found on the web. **NO** sharing with others.
- **Do your homework and project yourself**
  - Do NOT copy from each other or from the Internet - **I will know it!**
  - You can be picked-up randomly to explain your implementation
  - Cheating will be treated very seriously
- Penalties START with a zero on the assignment, failing the course! and other disciplinary actions as per QU policy

To do before next class

- Install the required software: VS Code & GitHub desktop (see announcement on Teams)
- Decide your team members and enter them in the spreadsheet on Teams
- Create your GitHub account **(firstname-quUsername)**
- Prepare any questions you might have

I wish you a fruitful and enjoyable journey!