Lecture 0: Introduction to the Course

Building Modern Web Applications
Vancouver Summer Program 2018 (Package E)

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Vancouver, Canada

Electrical and Computer Engineering

Wednesday July 18, 2018

What's this course about?

- **Core principles** behind building modern web applications
- Abstractions and design principles
- Application of core web technologies such as CSS, HTML, JavaScript, Node.js to the above

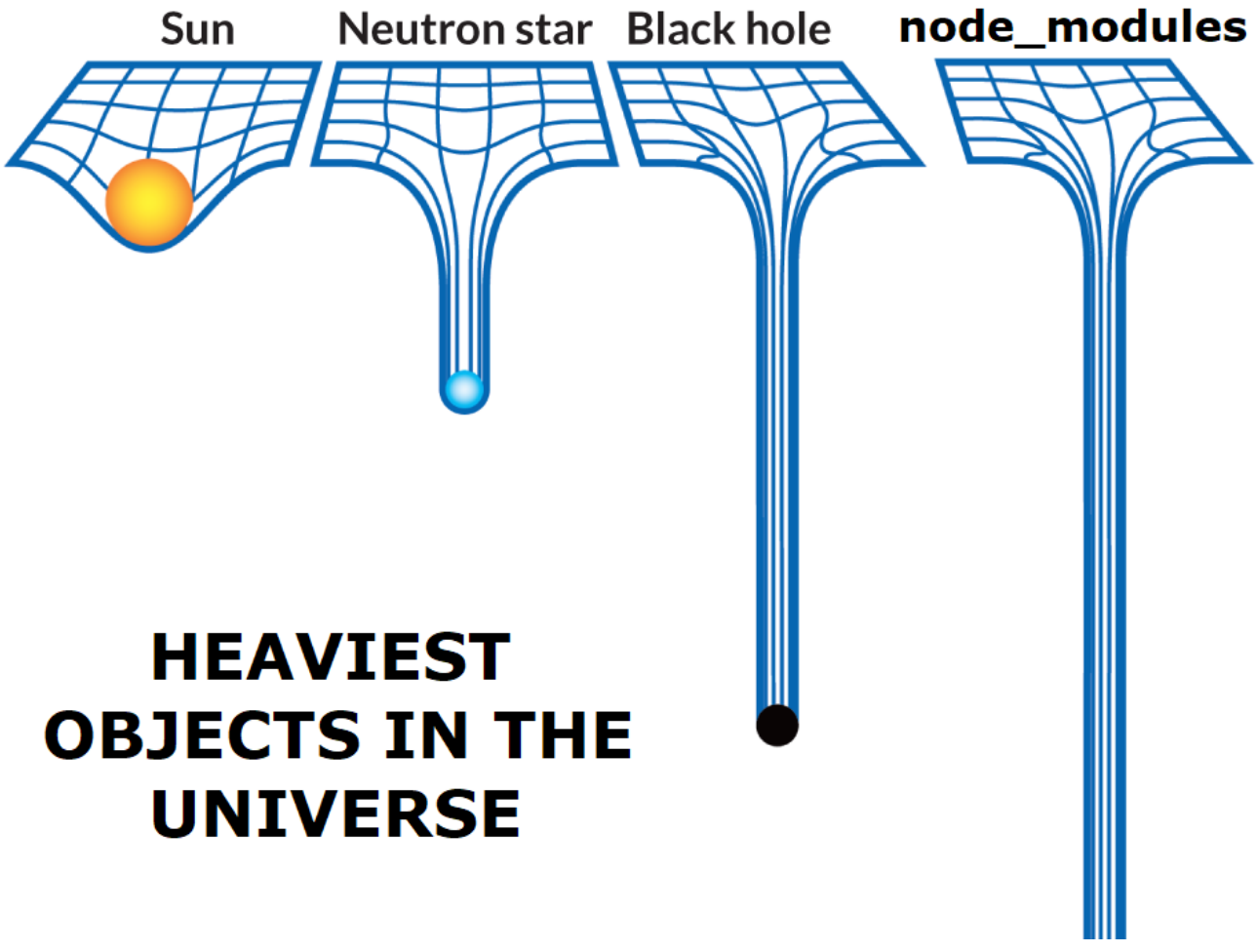
What's it not about ?

- Learning of specific technologies
  - These will get outdated by the time you finish
  - Fast changing field, so new technologies continously appear and disappear.
  - Can learn any technology if you understand the principles and concepts behind web development
- Frameworks or libraries (e.g., jQuery)
  - These are built on the principles and concepts
  - Too many to cover in a reasonable time

Bottom line

- You will understand the **principles** behind web application development
  - Not simply copy-paste code from websites to string together a web application
  - You will understand **why** technologies are the way they are, rather than accept it as a statement of fact, and perhaps change them if needed
  - It enables you to design novel techniques and technologies in the web application space
  - If you put in the effort, this course will be really fun! :-)

Bottom line


Sun
Neutron star
Black hole
node_modules
HEAVIEST OBJECTS IN THE UNIVERSE

Logistics

Instructors: Karthik and Julien

Karthik Pattabiraman (karthikp@ece.ubc.ca)

- Associate Prof in UBC (joined 2010)
  - PhD from Univ. of Illinois at Urbana-Champaign
  - Detour via Microsoft Research in 2009
- Research
  - Web applications' reliability and security
  - Error resilient applications
  - Internet Of Things (IoT) security

Instructors: Karthik and Julien

Julien Gascon-Samson (julien.gascon-samson@ece.ubc.ca)

- Post-Doctoral Fellow at UBC
  - PhD from McGill University (Montreal, 2017)
  - Master's in Computer Engineering (École Polytechnique de Montréal, 2011)
  - Undergrad in Software Engineering (École Polytechnique de Montréal, 2009)
- In January 2019, will be appointed as an Assistant Professor of Software and IT Engineering at ÉTS Montreal / University of Quebec
- Research
  - Internet Of Things (IoT)
  - Cloud / Distributed Systems
  - Publish/Subscribe
  - Software Engineering

Course TAs

- Kumseok Jung (jungkumseo@gmail.com) – arriving Monday, July 23
- Lucas Palazzi (lpalazzi@ece.ubc.ca)
- The TAs will be available during each class to assist during in-class exercices and during the time you will be working on your class project

Logistics – Lectures

- Lectures delivered by the instructors (Julien and Karthik)
- Will consist of a mix of teaching (lecturing) sessions mixed with in-class activities
  - Please bring your laptops **fully charged** with you to class. Contact us if you do not have a laptop.
  - You will work in teams of 3
  - Participation to activities is important
- Lecture notes will be distributed ahead of time – no course textbook required
  - However, you should keep your own notes

Logistics – Software

- Any OS: Windows, Mac OSX or Linux
- Your favorite web browser + built-in web dev tools
  - Chrome
  - Firefox
  - Edge
- The text editor of your choice :-)
  - Sublime
  - Atom
  - Notepad++
- Even IDEs can be used for Web Development

Additional Tools to be installed

- Git client
- (Optional): GitHub Desktop Client for Windows/Mac
- Node.js (later in the course)

Logistics – Interactions

- Google Groups for all communications related to course (no email unless it's private)
  - We will subscribe your VSP email to the group
  - Use it for communication (ask and answer questions) – bonus points for active participation
- Shared Dropbox folder for lecture materials
  - Do not distribute without our permission
- We will use Github for disseminating assignments and for submissions of assignment solutions
  - Email will NOT be accepted in lieu of Github

Logistics – Resources

- There's no textbook for the course
  - Lectures will cover all the material
  - Augment with online resources as needed
  - Attendance expected at all lectures
- Assignments will test you on material not necessarily covered in the lectures
  - You're free to use publicly available online resources on the web, as long as you cite them

Policies

Policies - 1

- You are responsible for all material you hand in
  - Review UBC's policies for academic dishonesty
  - Plagiarism of any kind will NOT be tolerated – automatically result in you getting an F
    - Lack of knowledge of policies is not a valid excuse
  - No collaboration allowed on assignments (except with your partners – more on this later)

Policies - 2

- All material in the exam will be from the lectures covered in class
  - Will NOT test you on material NOT in the lecture notes!
  - Missing a lecture means that you may miss out
  - Encouraged to ask questions in class and online
- You are encouraged to work on assignments in class and get help from us then and there
  - Office hours will not typically be held outside class

Grading

Grading

- **Assignments (60%)**
  - Four assignments counting for 15% each
  - Due in class every 2-3 days (see schedule)
  - Done in teams of three (form teams by today)
  - Encouraged to work during class on laptops
  - Encouraged to use Github to commit code
  - Code must be submitted via Github (branches)
  - No late assignments (no exceptions)

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  - No late assignments (no exceptions)
- **Final Exam (40%)**
  - To be held on the morning of Aug 10th
  - Must be done individually (NO collaboration)
  - Closed notes and Closed book part consisting of multiple choice questions (15%)
  - Open notes and Open book part consisting of 5 programming problems (25%) – please bring your laptop for this

Assignments – Git

- Open source distributed version control system
- We will be using Git for version control and GitHub for hosting
- Each group will receive a private GitHub repository

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Assignment Submission

- Assignment submissions will take place through GitHub
- Create an assignment branch (i.e., assignment-1, assignment-2, assignment-3, assignment-4) by the due date (we will give more details on this)
  - No other means to submit an assignment will be accepted!
- No late commits will be accepted (unless with instructor permission).
  - **Please push your latest changes to the appropriate branch before 11:59:59 PM on the due date!**

Class Participation

- To truly learn and benefit from this class, we encourage all of you to participate
  - Asking and answering questions in class and on Google groups
  - Participating in in-class exercises
  - Does NOT mean simply showing up in class
- We may award bonus points for class participation

Other

Other thoughts

- Hope you have fun and learn too
- It's your responsibility to keep up in class
- If you're struggling, let us know early so we can help to the extent possible – or it may be too late
- Feel free to give us feedback and suggestions for improvement etc. – these will NOT impact your grade in any way

Important: TODOs for Wed. July 18, 2018

- Find two partners to do the assignments with (teams of three), to get a Github account from Lucas (TA).
  - Let us know by end of the first class the composition of your team. **One member** should write to Lucas Palazzi (`lpalazzi@ece.ubc.ca`), an email that contains the following information **for all team members**:
    - Your IDs (starts with 9)
    - Your last and first names
    - Your email addresses
    - Your GitHub account usernames
  - We will then assigned a GitHub repository for your team, and all 3 members will be added as collaborators. Make sure you can work with it from your laptops
  - If you have difficulty, come talk to us
- Make sure you're subscribed to Google groups (VSP 2018 Building Modern Web Applications)

Git Demo (to be done by the TAs)

1. Clone repository
2. Commiting changes
3. Pushing/pulling changes from repository
4. Branching

Useful Git Commands

- git clone
- git pull origin master
- git push origin master

Creating Branches

- git branch assignment-X
- git checkout assignment-X
- git push -u origin assignment-X
- git checkout master
- git branch
- git branch -r

Extra Resources on JavaScript

If you want to go beyond the VSP course:

1. "Eloquent JavaScript: A Modern Introduction to Programming" by Marijn Haverbeke
2. "JavaScript: The Good Parts" by Douglas Crockford (where JavaScript quiz is from)
3. "Programming JavaScript Applications: Robust Web Architecture with Node, HTML5, and Moderns JS Libraries" by Eric Elliott
4. "Effective JavaScript: 68 Specific Ways to Harness the Power of JavaScript" David Herman
5. "JavaScript: The Definitive Guide" by David Flanagan
6. "You Don't Know JS" by Kyle Simpson

Not required for this VSP course!