

# Web Programming (CSci 130)

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# Learning outcomes

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- Preparation for Midterm 1
  - Current status in the course
  - To stay motivated and engaged

# Introduction

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- Where are we?
  - Csci 130 – Web Programming
    - **Part 1:** Client side / **Part 2:** Server side
  - **Middle** of the semester (Week 8) (it goes fast!)
    - The www and the documents with hyperlinks
    - **HTML5**
      - Differences with previous version of HTML
      - The idea of a structured document
    - **CSS3**
      - The presentation of documents
      - How to make webpages appealing, with simple animation and graphical effects
    - **Javascript**
      - Programming on the client side
        - Definitions of objects and functions

# Today

- Revision class + Questions + Some exercises
- Reflection about where we are in the course



# Revision class

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## ■ Midterm 1

➤ Friday 10/11/2019 at 3h00pm.

- Don't come late !
- Duration 1h50

➤ Questionnaire on Canvas → bring a device to be online

- Multiple choices
  - A unique solution
  - Several possibilities
- Matching
  - To match some elements with others
- Fill the box
  - To evaluate the value of a variable

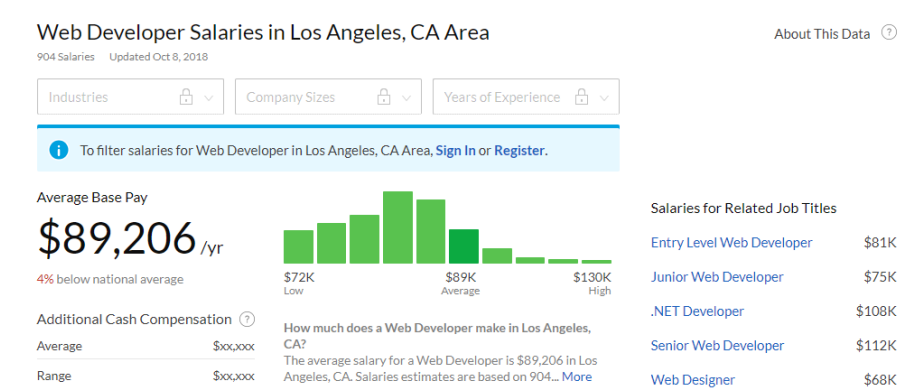
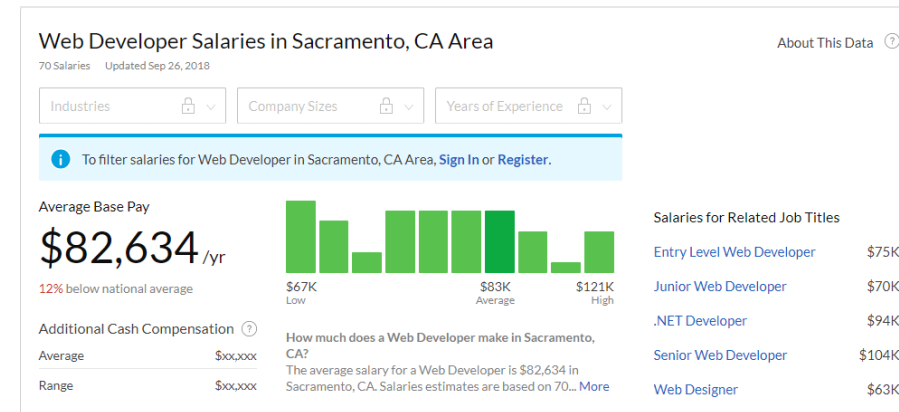
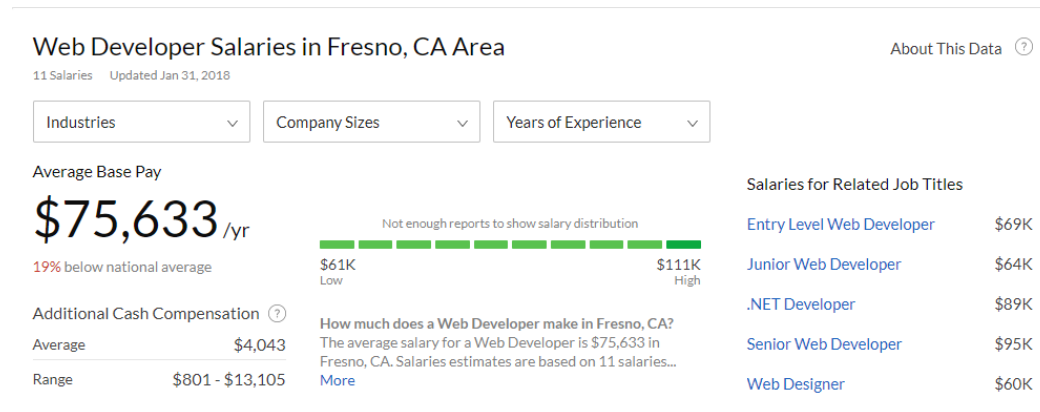
# Web programming

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- Different key components
  - Programming languages
  - Markup languages
- Your target if you want to work in the field of web programming
  - 100k / year **within 5 years** after graduation
  - The average salary for a Web Developer is **\$104,845** in San Jose, CA.
- Therefore → to **study**
  - The slides are **NOT** enough
    - Links on Canvas are part of what you should read and study !!!
      - Study == add comments, change values, parameters, check every single command given in the examples
  - The labs are **NOT** enough
    - Get the examples from the links and analyze the code
      - You should understand why we have
      - Go through the solutions and/or examples

# Web programming

- Source: <https://www.glassdoor.com> (2018)



# Web programming

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- Example of positions

- **Web Developer II**

- Education/Experience Bachelor's degree in Computer Science, related field or equivalent experience. 4+ years of web application development experience with **HTML, CSS, Java Script, SQL**, and C# (ASP.NET). Experience with client side web development including interactive online forms. Working knowledge of Oracle PL/SQL, **SQL Server TSQL, Web Services, AJAX, JQuery**, Visual Studio 2010 preferred.

- **Web Developer**

- Top-notch programming skills and in-depth knowledge of modern **HTML/CSS**
    - Familiarity with at least one of the following programming languages: **PHP**, ASP. NET, Javascript or Ruby on Rails

- **Web services: JSON, XML, AJAX**

- How to exchange **data** and **documents** between clients and servers in a clean structured way



# HTML/CSS

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- Programming languages

- $\text{Output} = f(\text{Input})$

- Clear way to evaluate the quality of the output
    - It does what it is supposed to do
      - Example: sort an array, query a database,...

- The structure and the presentation

- Depends on the problem, the functionalities

- Description of data, document...
    - HTML → semantic level

- Presentation

- Subjective
      - BUT must respect user experience + accessibility

# What to know/do

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## ■ HTML/CSS

### ➤ Know your acronyms

- XML, DTD, HTML, HTTP, ...

### ➤ Know some history about the web

- Who did invent the web... the rationale
  - → topic for lunch with your grandma...
- You can check Wikipedia pages without risk

### ➤ Know the main tags

- Head, title, body, table, lists, images, links ...
  - Structure
  - Be professional → you cannot rely on the internet all the time

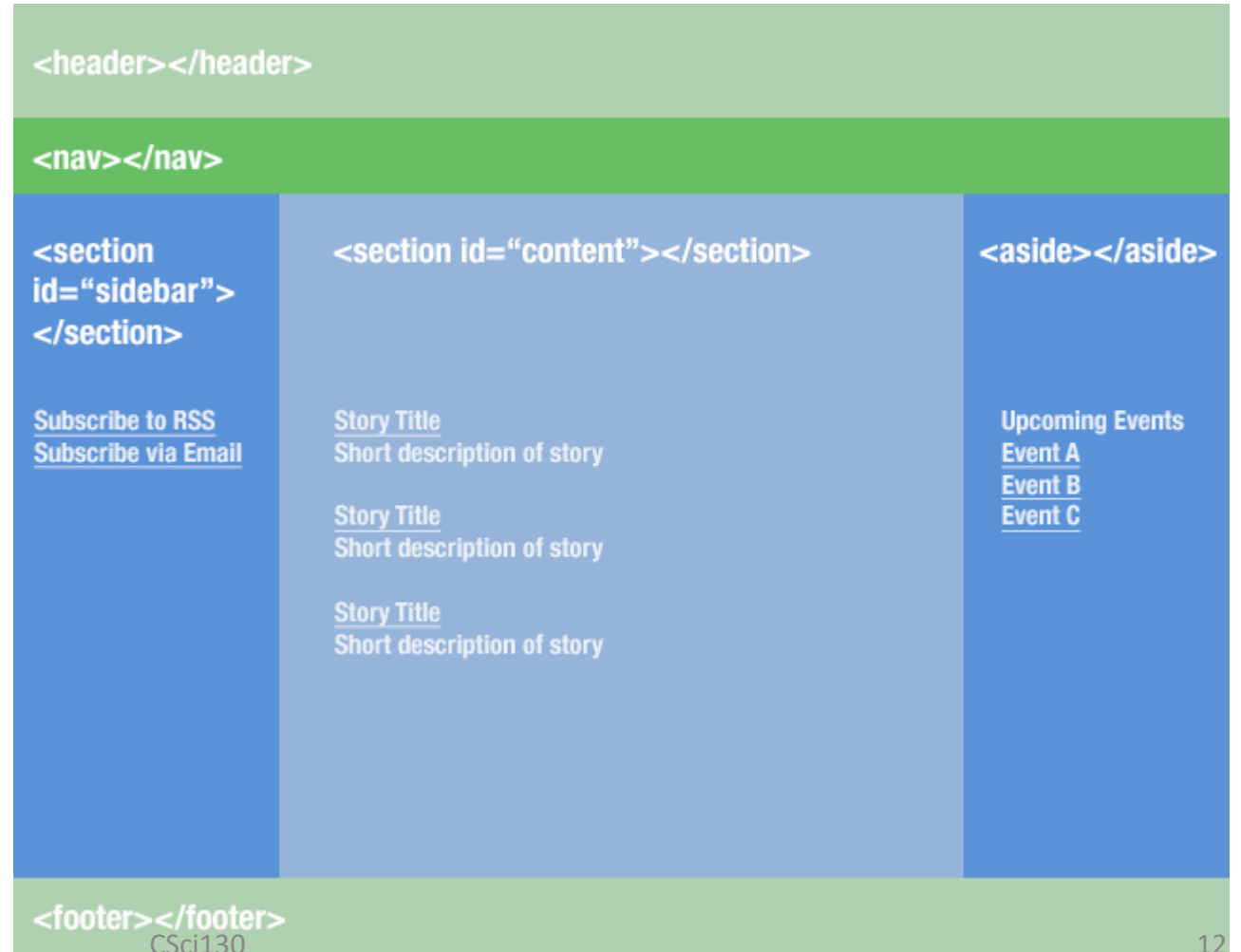
# HTML/CSS

- Problem:
  - Typical page



# HTML/CSS

- Solution
  - Example



# HTML/CSS

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- **Without** the help of internet ([www.w3schools.com](http://www.w3schools.com))
  - Write a HTML5 webpage with
    - What you need to write so it is an HTML5 webpage?
    - Change the value of the string that is displayed as a title in the browser, not in the document?
    - A table and a list of items.
  - Change the style of the text in the list of items
    - Change the font
    - Change the background color in yellow using RGB color

# HTML/CSS

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- Difference between div and span?
  - \_\_\_\_\_ element
    - in-line, typically used for a small piece of HTML inside a line
      - inside a paragraph
  - \_\_\_\_\_ element
    - block-line
      - equivalent to having a line-break before and after it
      - used to group larger block of code.
- X,Y?

# What to know/do

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## ■ Javascript

- What are the main types
- How operators can cast automatically a variable from one type to another
- How to declare, create **functions**
- Understanding of the functions, the **scope** of the variables
  
- How to create **objects**
- How to create **classes** (constructor, # private, ... : main keywords)

# DOM

- To learn the main selectors
  - How to access, create NODES
- To create a webpage, without HTML

```
<!DOCTYPE html>
<html>
<head>
  <title>No title</title>
</head>
<body>
<script>
  function CreatePage() {
    var title=document.createElement('H1');
    title.innerHTML="It is my main title";
    document.body.appendChild(title);
    var section1=document.createElement('SECTION');
    section1.innerHTML="<p>A <h1 id=\"myh1\">B</h1></p>";
    document.body.appendChild(section1);
    var p1=document.createElement('P');
    p1.innerHTML="<p>C</p>";
    section1.appendChild(p1);
    var x=document.getElementById("myh1").innerHTML;
  }
  CreatePage();
</script>
</body>
</html>
```



# DOM

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- Document Object Model Everything is a Node
- Exercise
  - Create a table 7x4 in an HTML webpage
    - Using only DOM functions
      - Attach the table to the body of the document
      - Where you write the days of the week in the first line, and “0” in all the other cells
      - Days of the week are stored in an array

# Javascript

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- Case-sensitive?
- Order of the declarations of the variables?
  - First declaration of var
- Example
  - Create a function in JS to return the factorial of a number n
    1. Verify that n is an int
    2. With Recursion
      1. With if structure
      2. With the conditional Ternary operator
    3. Without Recursion
      1. With a for loop
      2. With a while loop

# Basic knowledge

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- Everything given in the **slides** and the files on Canvas
  - → Not the links to other websites.
- Comments in HTML, CSS, JS
- Variables, Functions, Objects in JS
- Access properties (JS, JSON)
  - **JSON.parse** / **JSON.stringify**
  - (key,value)

# Exercise

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- **Constraint:** Don't use documents/internet
  - Force yourself to do it from scratch
  - Avoid trials and errors
- **Goal**
  - Create a web page that allows you to ask for:
    - First name, Last name, DOB, and Phone number
      - Example of JSON to store a single user
      - Example of JSON to store multiple users
    - Create a function that retrieves the information from the form and place it into an **object**
    - Create a function that transforms the content of the **HTML table** into a **JSON object**
    - Create a function that places the content of a **JSON object** into an **HTML table**

# Quiz online

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- Many websites with questionnaires
  - **Good practice**
  - Javascript
    - Good training
      - <https://www.javatpoint.com/javascript-quiz>
    - Some tests are tricky [try it and analyze each question!!]
      - <http://davidshariff.com/js-quiz/> (questions with answers)
    - Some tests are interesting to see the mechanics inside JS but you should never program that way
    - Test with answers
      - <https://www.nczonline.net/blog/2010/01/26/answering-baranovskiys-javascript-quiz/>
        - Advanced JS
        - Important to understand the underlying way how JS interprets your code
          - Get into Javascript's shoes

# Conclusion

## ■ Web programming

- Different components
  - → communication between the elements
    - HTML-CSS-DOM-JS
- The love of well-done work
  - **Rigor**
    - HTML/CSS
      - The right tag at the right place
      - Section vs Article?
    - JS
      - Decomposition of the code with functions
      - Comments
  - Clockwork: no gap for approximation

## ■ Office hours

- Don't hesitate to come
- Ask for availability for other hours

