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INLEDANDE WEBBPROGRAMMERING MED JAVASCRIPT

INTRODUCTION TO WEB PROGRAMMING USING JAVASCRIPT

ME152A

INTRODUCTION: SETTING THE CONTEXT

# OUTLINE

- About Teachers
- Course
  - Aim and Overview
  - Structure and Outcome – Grading System and Assessment
  - Literature, Schedule...
- Discussion: What is JavaScript...Programing?



# TEACHING TEAM

- Bahtijar Vogel (Bato) – Course responsible
- Sebastian Bengtegård - also, course responsible
- Nils Ehrenberg
- Gästföreläsare

## IN OUR CLASSROOM



LINK: <http://www.coolcatteacher.com/10-ways-to-build-team-classroom/>

# COURSE AIM

- Understand the basic knowledge and skills in programming with a focus on JavaScript and web applications.
- Independently produce interactive and dynamic websites with a focus on usability and interaction.
- Gain knowledge of general programming methodology with a focus on media technology.



# COURSE CONTENT

- Programming Methodology
- Introduction to functional and object-oriented programming
- JavaScript syntax
- Integration of JavaScript and HTML documents (Document Object Model)
- Variables and Operators
- Features
- Data structures in JavaScript (arrays, objects)
- Usability and interaction
- Version management and project methodology
- Web services such as API management and AJAX
- Introduction to Node.js



# COURSE STRUCTURE

- Lectures
- Labs
- Workshops
- Assignments
- Examination
- Project work



# METHODOLOGY

- Active and participative learning
- Theory combined with practical exercises through labs and workshops. Lectures about 24 hours, laboratory about 64 hours, seminars 4 hours, as well as project work and self-study about 308 hours.



- For project work we will run SCRUM as one of the AGILE methods

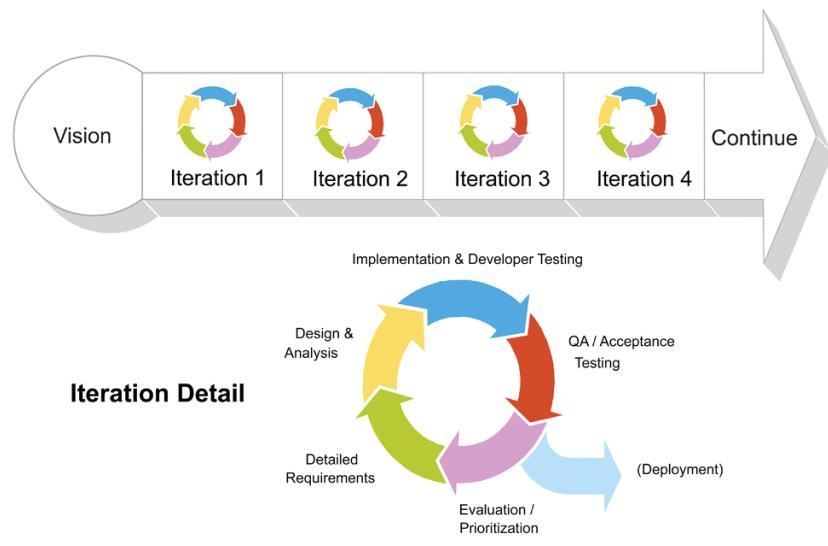


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# WHY AGILE...SCRUM



<http://www.agilenutshell.com/scrum>



<http://scrumreferencecard.com/scrum-reference-card/>



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# EXPECTED LEARNING OUTCOMES

- **Knowledge and understanding:**
  - account for common programming concepts and the JavaScript programming language
  - visualize and organize Web applications based on business value in relation to the purpose, audience and customer
  - demonstrate knowledge of the pros and cons of JavaScript, in relation to other programming languages
- **Skills and abilities:**
  - analyze, organize and implement simple web applications with JavaScript programming language
  - integrate JavaScript with HTML documents
  - use web services like data sources for dynamic content (API-handling)
  - manage and implement JavaScript libraries from third parties
  - independently seek new knowledge to solve a given problem
  - analyze and critically evaluate JavaScript code with a focus on optimization
- **Judgment and approach**
  - critically discuss the advantages and disadvantages regarding the purpose, audience and customer benefits in relation technology
  - be able to critically reflect on their learning process



# GRADING SYSTEM & ASSESSMENT

- Pass (G), Fail (U)
- Requirements for **pass**:
  - Approved laboratory work (5hp)
  - Examination (4 hp): two assignments based on Labs and presentation
  - Approved project work with accompanying reflection (6 hp): developing prototypes



# COURSE EVALUATION

- You will have the opportunity to give your comments at the end of the course



# COURSE SITE

- **20161-68041 - Inledande webbprogrammering med JavaScript**
- It's learning:  
<https://mah.itslearning.com/ContentArea/ContentArea.aspx?LocationID=24280&LocationType=1>
- Github: <http://mah-webb.github.io/courses/me152a/>
- Course plan: <http://edu.mah.se/sv/Course/ME152A#Syllabus>

# COURSE MATERIALS

- Eloquent JavaScript: A Modern Introduction to Programming, ~~1st Edition~~, 2nd Edition
  - ISBN: 9781593275846
  - <http://eloquentjavascript.net/>
- JavaScript: The Definitive Guide, 6th Edition
  - ISBN-13: 978-0596000486
- JavaScript: The Good Parts, 1st Edition
  - ISBN-13: 978-0596517748



# SCHEDULE

- **Vecka 4, 2016**  
Mån 25 Jan 13:15-15:00, NI:C0307, [Kursintroduktion](#)  
Ons 27 Jan 13:15-17:00, OR:E222, [Laboration 1](#)
- **Vecka 5, 2016**  
Mån 1 Feb 13:15-15:00, NI:B0303, [Föreläsning 1](#)  
Ons 3 Feb 13:15-17:00, OR:E222, [Laboration 2](#)
- **Vecka 6, 2016**  
Tis 9 Feb 13:15-15:00, NI:A0503, [Föreläsning 2](#)  
Ons 10 Feb 13:15-17:00, OR:E222, [Laboration 3](#)
- **Vecka 7, 2016**  
Tis 16 Feb 13:15-15:00, NI:A0503 [Föreläsning 3](#)  
Ons 17 Feb 08:15-12:00, OR:E222, Laboration 4
- **Vecka 8, 2016**  
Tis 23 Feb 23:59 [Deadline, Assignment 1](#)  
Ons 24 Feb 13:15-17:00, OR:E223, [Laboration 5](#)  
Fre 26 Feb 10:15-12:00, NI:B0303, [Seminarium 1](#)



# SCHEDULE (CONT'D)

- **Vecka 9, 2016**  
Tis 1 Mar 13:15-15:00, NI:A0503, [Föreläsning 4](#)  
Ons 2 Mar 13:15-17:00, OR:E223, [Laboration 6](#)
- **Vecka 10, 2016**  
Tis 8 Mar 13:15-15:00, NI:C0307, [Föreläsning 7](#)  
Tor 10 Mar 13:15-17:00, OR:E223, [Laboration 7](#)
- **Vecka 11, 2016**  
Tis 15 Mar 13:15-15:00, NI:C0307, [Föreläsning 6](#)  
Ons 16 Mar 13:15-17:00, OR:E222, [Laboration 8](#)
- **Vecka 12, 2016**  
Ons 23 Mar 10:15-12:00, NI:C0307, [Föreläsning 7: Gästföreläsning](#)  
13:15-17:00, OR:E223, [Laboration 9](#)
- **Vecka 13, 2016**  
**Tors 31 Mar 23:59, Deadline, Assignment 2**  
Fre 1 Apr 10:15-12:00, NI:B0303, [Seminarium 2](#)



# SCHEDULE (CONT'D)

- **Vecka 15, 2016**  
Tis 12 Apr 13:15-15:00, NI:A0503, Föreläsning 9  
Tor 14 Apr 13:15-15:00, OR:E222, OR:E223, Tentamen
- **Vecka 16, 2016**  
Tis 19 Apr 13:15-15:00, NI:C0307, Föreläsning 10  
Ons 20 Apr 13:15-17:00, OR:E222, Laboration 10
- **Vecka 17, 2016**  
Tis 26 Apr 13:15-15:00, NI:C0307, Project work  
Ons 27 Apr 13:15-17:00, OR:E222, Project work  
Tor 28 Apr 13:15-17:00, OR:E222, Project work
- **Vecka 18, 2016**  
Mån 2 Maj 13:15-15:00, NI:A0406, Project work  
Fre 6 Maj 08:15-12:00, OR:E223, Project work  
13:15-17:00, OR:E223, Project work
- **Vecka 19, 2016**  
Tis 10 Maj 13:15-15:00, NI:A0406, Project work  
Ons 11 Maj 13:15-17:00, OR:E222, Project work  
Tor 12 Maj 13:15-17:00, OR:E223, Project work



# SCHEDULE (CONT'D)

- **Vecka 20, 2016**  
Tis 17 Maj 13:15-15:00, NI:A0406, Project work  
Ons 18 Maj 08:15-12:00, OR:E222, Project work  
13:15-17:00, OR:E223, Project work
- **Vecka 21, 2016**  
Tis 24 Maj 13:15-15:00, NI:A0406, Project work  
Ons 25 Maj 13:15-17:00, OR:E222, Project work  
Tor 26 Maj 13:15-17:00, OR:E223, Project work
- **Vecka 22, 2016**  
Ons 1 Jun 08:15-12:00, NI:A0406, Projekt: Redovisning  
13:15-17:00, NI:A0406, Projekt: Redovisning
- **Vecka 23, 2016**  
Fre 10 Jun 08:15-12:00, OR:E222, OR:E223, Omtentamen 1



# DISCUSSION

What do you know about programming in general and Web technologies?

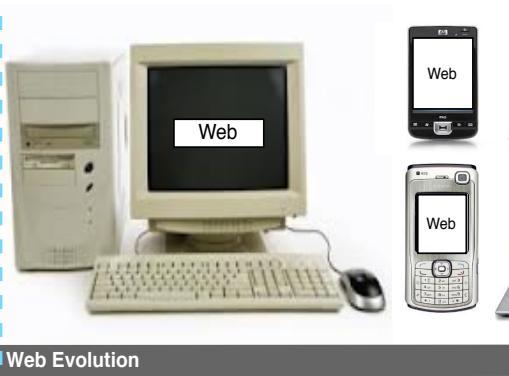
What do you know about JavaScript?



# **WEB TECHNOLOGIES?**



# WEB EVOLUTION: MEDIA TECHNOLOGIES EVERYWHERE



Sharing

Contributing

Contextualizing

# THE POWER OF WEB



# AT STAKE

- Lots of smartphones



- Lots of operating systems    Android

iOS

Windows

Blackberry

- Platform Fragmentation



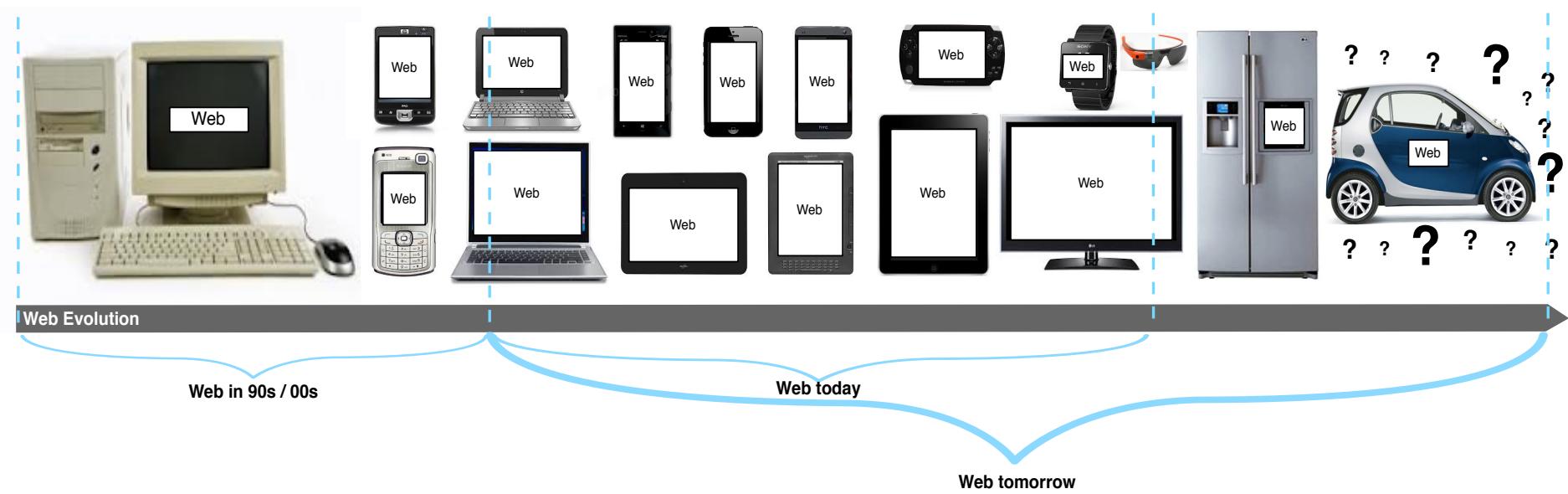
Image: <http://topandroids.wordpress.com/2012/12/20/what-is-android-fragmentation/>

T. Wasserman, "Technical and Business Challenges for Mobile Application Developers," Mobicase 2010.

# AT STAKE (CONT'D)



- From OS fragmentations we are moving to Browsers fragmentation.
- The challenge is more than just mobility.



# DIVERSITY IS NOT A BUG...IT'S AN OPPORTUNITY 😊



Source: <http://stephanierieger.com/diversity-is-not-a-bug/>

Source: <http://bradfrostweb.com/blog/mobile/beyond-media-queries-anatomy-of-an-adaptive-web-design/>

# MEDIUM AND CONTEXT

GPS

Touch

Sensors (A/V)

Contacts

Portability

Location-Aware

Intimate and  
Interactive

Physical  
Intelligence

Personal and  
Social

Relevant at Point  
of Consideration

## *New Media Landscape: APPS*



# WHAT IS PROGRAMMING?

- Programming - create a sequence of instructions to enable the computer to do something.
- “The art of programming is the skill of controlling complexity.” - Marjin Haverbeke

# WHAT IS PROGRAMMING?



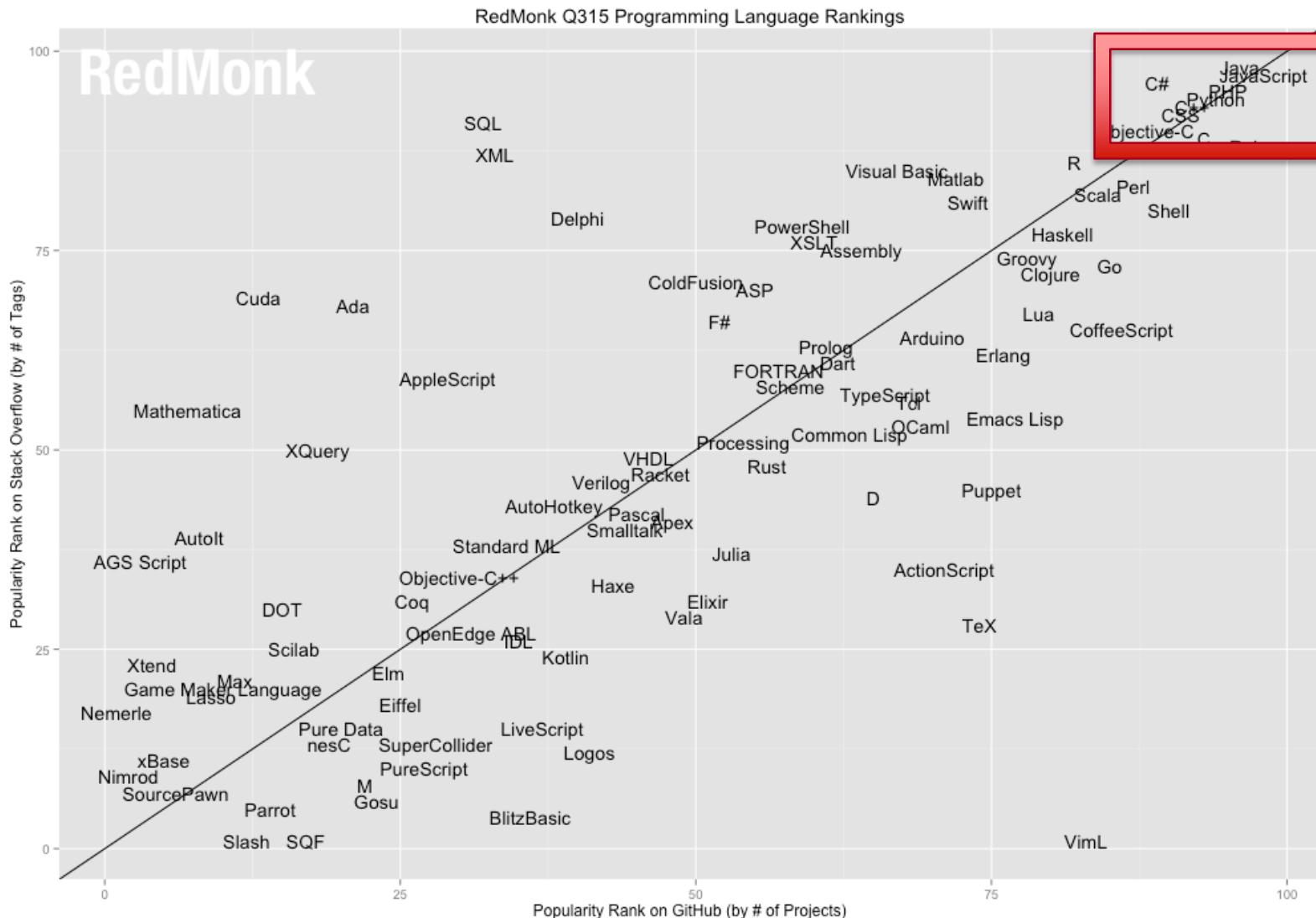
Why the piano image?

- Learning to code is much like learning to play an instrument.
- You can often get by just noodling along and picking up tricks and "licks" here and there.
- But to really get good, it takes an **understanding of the fundamentals, lots and lots of hands-on practice**, and the **ability to learn from others**.
- Oh...and it should be **FUN** along the way ☺

Motivated by: <https://canvas.harvard.edu/courses/8478>

# WHY JAVASCRIPT?

- 1.JavaScript
- 2.Java
- 3.PHP
- 4.Python
- 5.C#
- 5. C++ 5. Ruby
- 8.CSS
- 9.C
- 10.Objective-C



LINK: <http://sogrady-media.redmonk.com/sogrady/files/2015/07/lang-rank-615-wm.png>

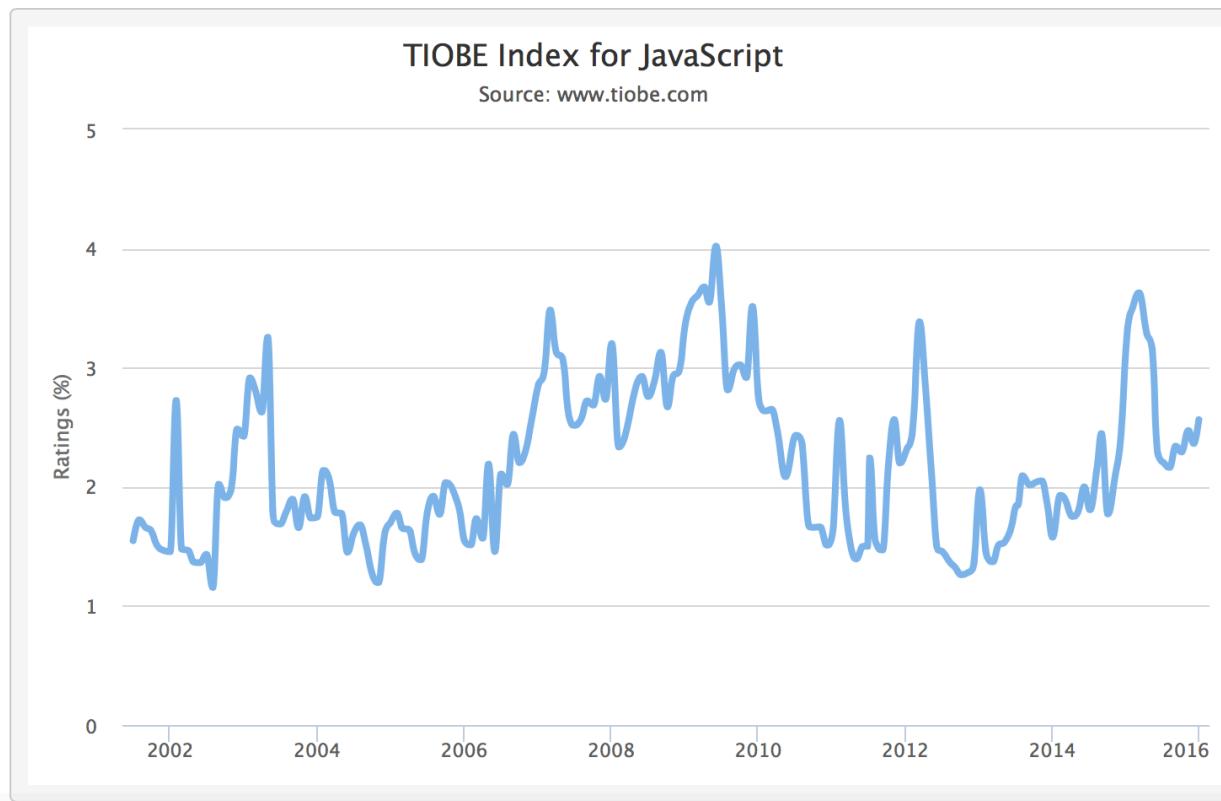
# The JavaScript Programming Language

Some information about JavaScript:

▲ Highest Position (since 2001): #6 in Apr 2015

▼ Lowest Position (since 2001): #12 in Oct 2014

⭐ Language of the Year: 2014



LINK: <http://www.tiobe.com/index.php/content/paperinfo/tpci/JavaScript.html>



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**GitHub** This repository Search Explore Features Enterprise Pricing Sign up Sign in

**Microsoft / ChakraCore** Watch 339 Star 4,617 Fork 429

Code Issues 48 Pull requests 16 Wiki Pulse Graphs

ChakraCore is the core part of the Chakra Javascript engine that powers Microsoft Edge

128 commits 6 branches 0 releases 32 contributors

Branch: master New pull request New file Find file HTTPS https://github.com/Microsoft/ChakraCore Download ZIP

**Yongqu** [MERGE #118] Fix max length condition + prevent assert crash ... Latest commit 4376228 16 hours ago

Build Fix ARM nojit build. 2 days ago

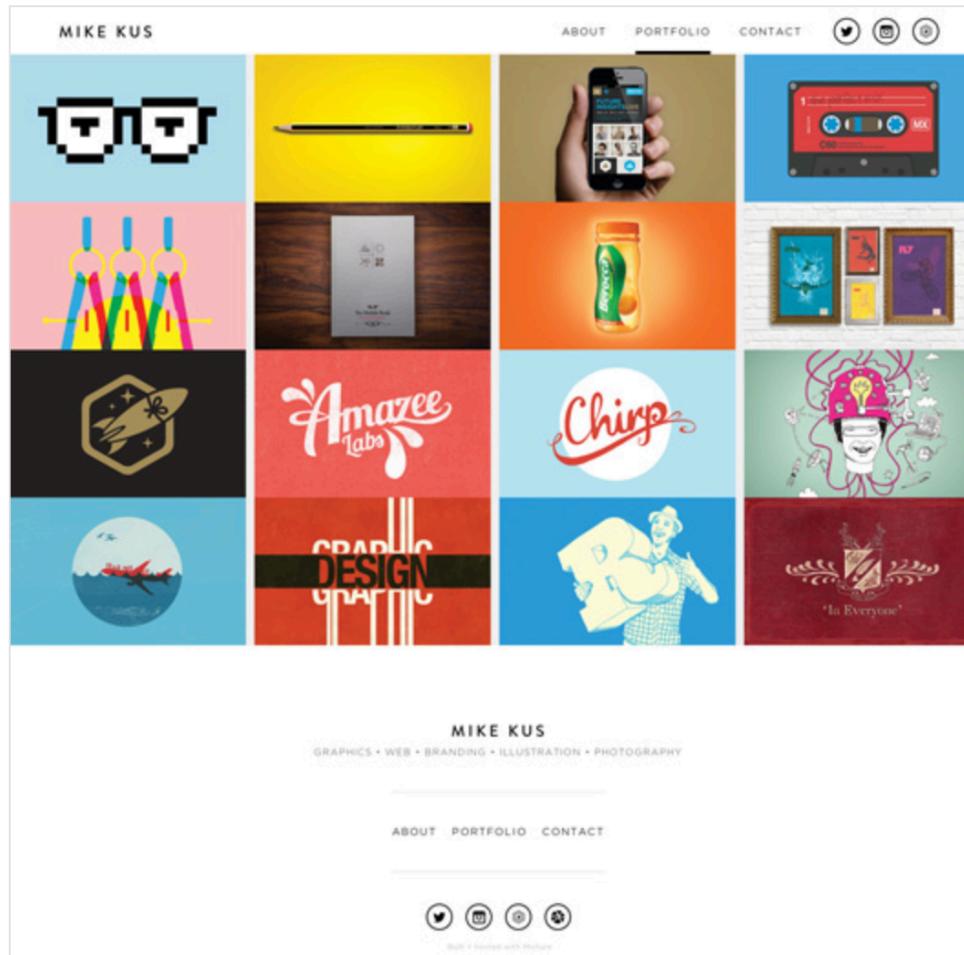
bin [MERGE #96] ch: Get error string from exception when error `stack` is... 4 days ago

lib [MERGE #118] Fix max length condition + prevent assert crash 16 hours ago

Microsoft: open sourced Chakra called ChakraCore, the JavaScript engine used in its Edge and Internet Explorer browsers

LINK: <https://blogs.windows.com/msedgedev/2015/12/05/open-source-chakra-core/>

# 01. Mike Kus



- The portfolio of designer Mike Kus presents his stunning work in a refreshingly clean and understated manner

LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>

## 02. Hello Monday



- **Hello Monday has produced an impressive body of digital work**

creates a story for each of its projects, building up a picture of the client, their needs and the solution delivered.

LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>

## **03. Multeor**



➤ **Multeor is written in plain JavaScript using HTML5 Canvas**

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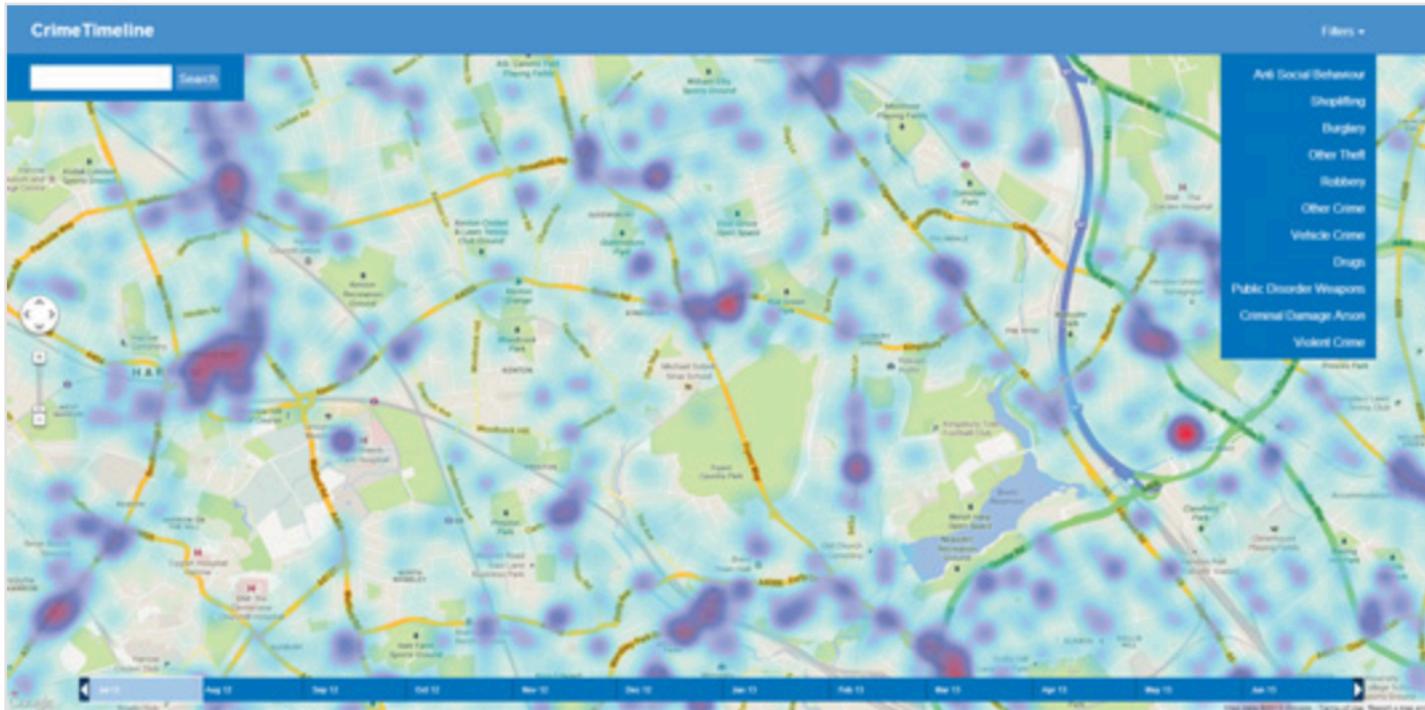
multiplayer web game

LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>



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# 04. CrimeTimeline



- The CrimeTimeline uses public APIs to pull in data about crime in Britain

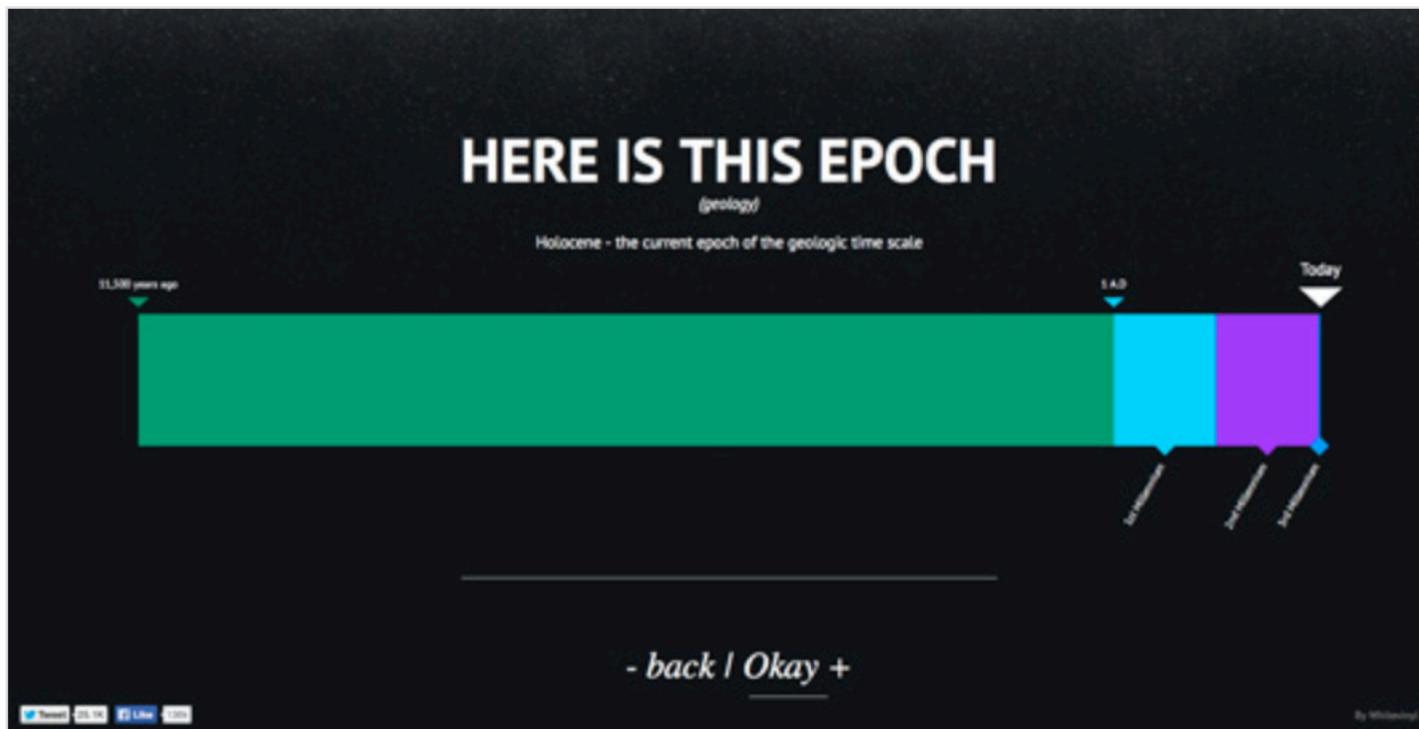
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LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>



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# 05. Here Is Today



- Here Is Today required a small amount of JavaScript to put the animation in place

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LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>

## 06. Tweetmap



- › Tweetmap represents countries in the world proportionally based on numbers of tweets

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LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>

**... MANY MORE**

LINK: <http://www.creativebloq.com/web-design/examples-of-javascript-1233964>

**THANK YOU  
QUESTIONS?**

