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WEB DESIGN

A WALK THROUGH WEB CONCEPTS
AND TECHNOLOGIES



A methodological approach

A high-level list of steps

Way of thinking

Useful information

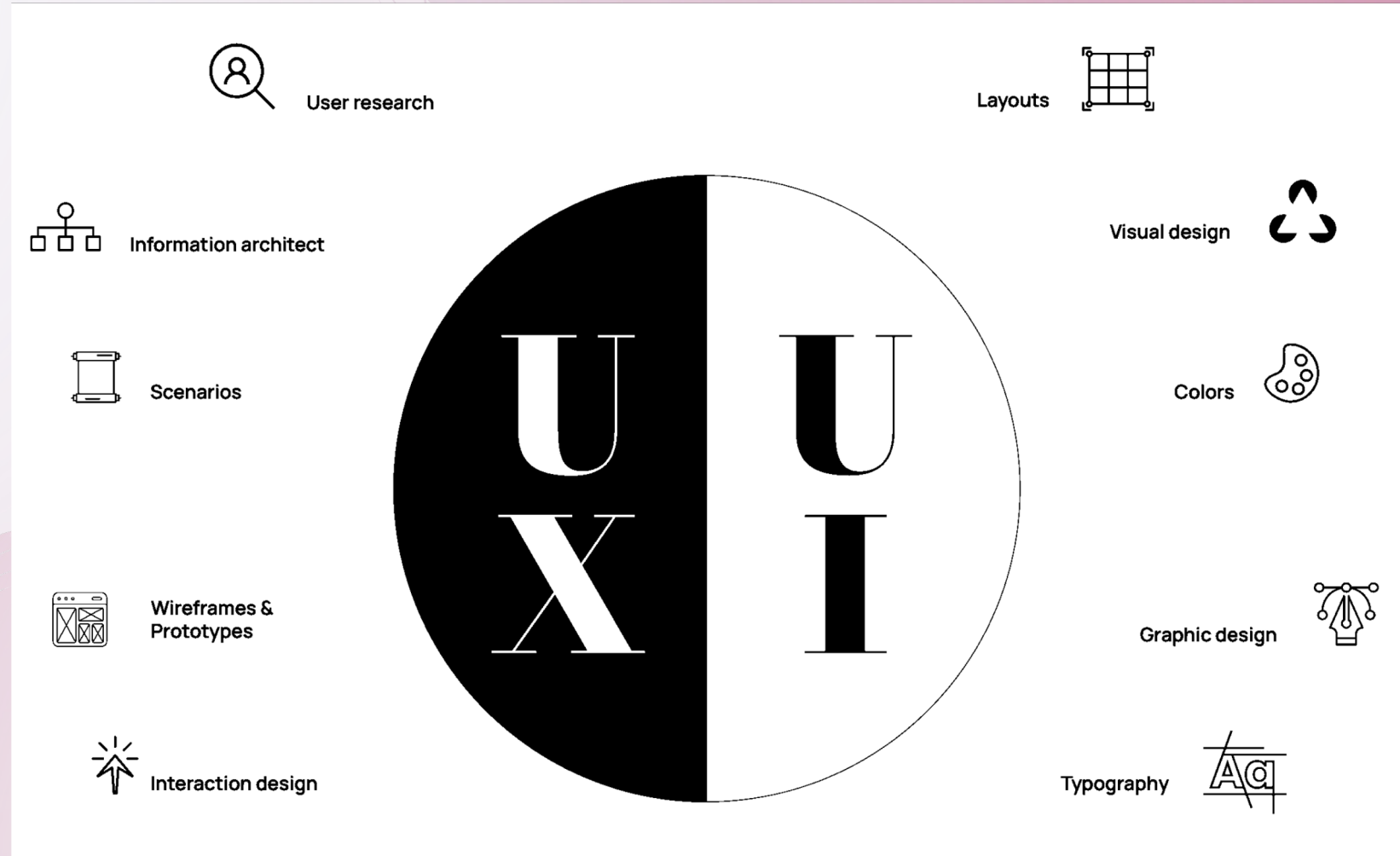
Next lesson: 17th of May

Topic: UX & UI

Relatrice: Alessia Gaia Russo

Tesi Triennale ottobre 2023

Studentessa magistrale al
Politecnico di Milano –
Design della comunicazione



Please remember that:

Two different MANDATORY assignments

10

HTML + CSS exercises

- two submissions are mostly done -> remember tomorrow afternoon

20

A website in WordPress and the related document describing the work

- the document template is available at this [link](#)
- submission of the document on the 3rd of June
 - if you're ready before, pls submit!

4 points extra bonus

- Attending the event organized on the 20th of Maj – BeDigital



Search Engine Optimization (SEO)

A few insights



SEO - Search Engine Optimization

- The process of improving your site to increase its visibility for relevant searches
- The **art** of ranking high on a search engine in the unpaid section – organic listings
- The process of optimizing site contents to be attractive to a search engine to show it as a top result for searches of a certain keyword



The better visibility your pages have in search results, the more likely you are to garner attention and attract prospective and existing customers to your business

SEO - Search Engine Optimization

- Motivations Search engine has a key role in internet traffic since it is a popular way to navigate the web and find interesting sites
 - interesting with respect to the search we are doing

- Market Share Survey Results for a Recent Month ([source](#))

	Desktop	Tablet		Mobile
• Google	71.6%	86.3%		88.6%
• Bing	21.1%	4.2%	Baidu	7%
• Yahoo!	3.5%	DuckDuckGo 3.8%	Bing	1.3%
• Yandex	2.2%	Yahoo! 3.4	Yahoo!	1.1%

- All share the same logic - three components: **Robot or “spider”**, Database (also used by search indexes), **Search form** (also used by search indexes)

SEO - Search Engine Robot

- Also called a spider or bot or crawler
 - A computer program that follows hyperlinks and “walks” the Web -- accessing and documenting web pages
 - Categorizes the pages and stores information in a database
- May access the following components of web pages:
 - title
 - meta tag keywords & meta tag description
 - text in headings
 - other text on the page
 - hyperlinks
- See <http://www.robotstxt.org>



SEO - Search Engine Components

- Search Engine Database
 - Contains information about web pages
- Search Form - the most familiar part
 - The search form is the graphical user interface that allows a user to request a word or phrase to search for (keywords)
 - Keyword sent to server-side processing that searches in the database
- The search results (also called a result set) is a list that contains information such as the URLs for web pages that meet criteria
 - SERP Search Engine Results Page - a ten
 - Featured snippet appeared in 2014, now very popular

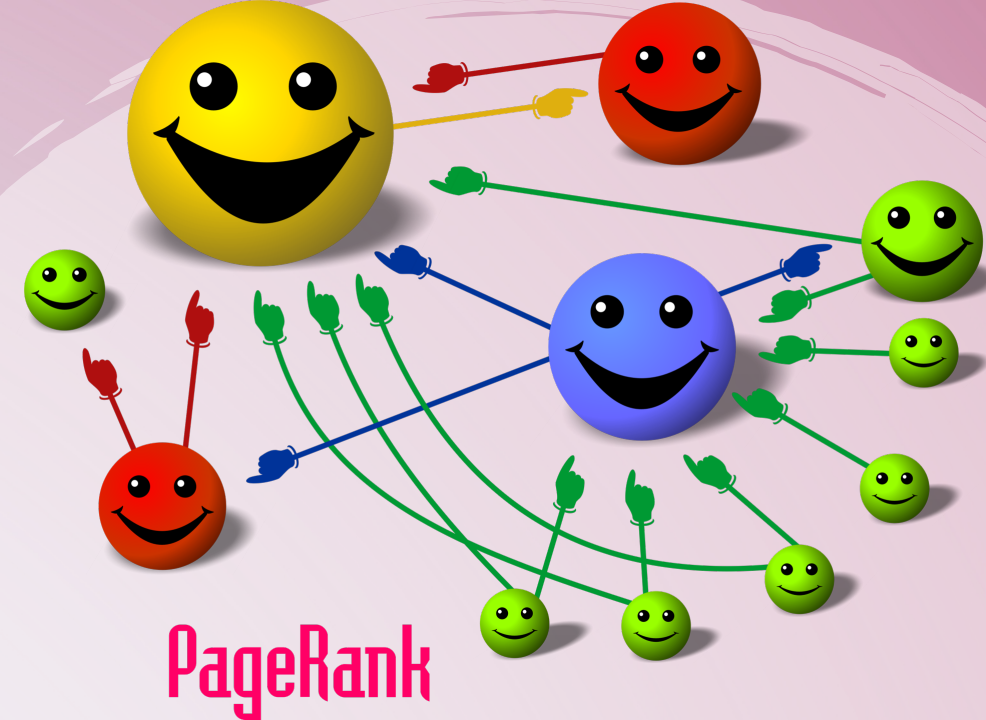


SEO - Search Engine Optimization

- The objective is to be listed in a Google search (unpaid part)
- Search engines use bots to **crawl** pages on the web, going from site to site, collecting information about those pages and putting them in an **index**
- Algorithms analyse pages in the index, taking into account hundreds of **ranking** factors or signals, to determine the order pages should appear in the search results
- First known Google algorithm: the PageRank algorithm
 - ... works by counting the number and quality of links to a page to determine a rough estimate of how important the website is. The underlying assumption is that more important websites are likely to receive more links from other websites...

SEO - Search Engine Optimization

- Just to have a raw idea of the PageRank algorithm
 - The algorithm measures the importance of each node within the graph, based on the number incoming relationships and the importance of the corresponding source nodes.



A PageRank results from a mathematical algorithm based on the webgraph, created by all World Wide Web pages as nodes and hyperlinks as edges, taking into consideration authority hubs such as cnn.com or mayoclinic.org.

It assigns a numerical weighting to each element of a hyperlinked set of the World Wide Web, with the purpose of "measuring" its relative importance within the set.

The algorithm may be applied to any collection of entities with reciprocal quotations and references.

The PageRank of a page is defined recursively and depends on the number and PageRank metric of all pages that link to it ("incoming links"). A page that is linked to by many pages with high PageRank receives a high rank itself.

SEO - Search Engine Optimization

- Algorithms analyse pages in the index, taking into account hundreds of **ranking** factors or signals, to determine the order pages should appear in the search results
- Continuously evolving – 2013 Google defined **Hummingbird** algorithms, really disruptive, looks deeper at content on individual pages of a website to lead users directly to the most appropriate page rather than just a website's home
 - Google never published an explainer of what Hummingbird was
 - It is also used for results visualization... it is more likely to keep users on the results page instead of driving them to other websites

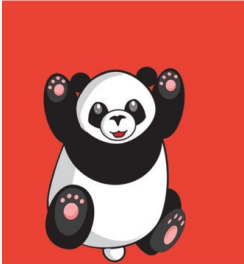
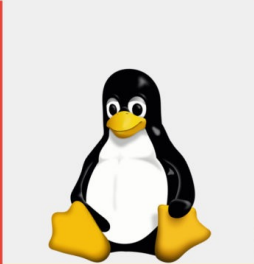
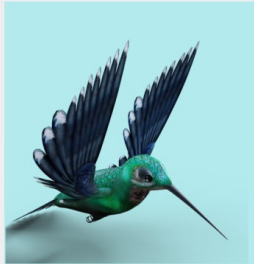

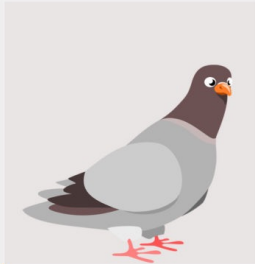
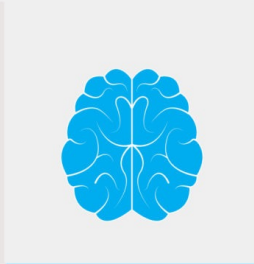
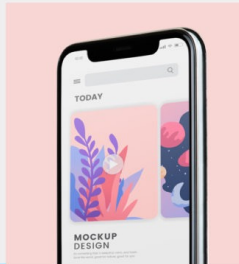
"Hummingbird" considers the context of the different words together, with the goal that pages matching the meaning do better, rather than pages matching just a few words. The name is derived from the speed and accuracy of the [hummingbird](#)

A semantic analysis of the content!





SEO - Search Engine Optimization

- Continuously evolving... [here](#) described up to 2019 and [here](#) up to march 2023

Google ALGORITHMS As of March 2019						
						
Panda	Penguin	Hummingbird	Fred	Pigeon	RankBrain	Mobile
Panda 4.2 Update: July 18, 2015	Penguin 4.0 Update: Sep 23, 2016	Hummingbird Update: Aug 21, 2013	Google Link Quality Update: Mar 09, 2017	Google Local Algorithm Expands: Dec 22, 2014	RankBrain Related Search Update (undisclosed): Dec 10, 2015	Speed Update Release (Mobile): July 9, 2018
<p>This update was released to focus on spammy links and low-quality content. This update was welcomed by all the sites that were penalized by Panda 4.1 however rectified the issues to get out of the pack. Panda 4.2 did a recheck of all the sites and the sites that performed well were stopped being triggered.</p>	<p>The update was integrated into Google's core ranking algorithm used to evaluate the site(s) while crawling it. The site started gaining its rank back after the issues that were responsible for a dip in their rank were resolved.</p> <p>The second change was that it stopped penalizing the entire website for the spam signal and started the individual page analysis.</p>	<p>This update was released for the motive of focusing on the semantic search. The specific goal is to offer more relevant and personalized results on the basis of trends/pattern, location, and online behavior.</p>	<p>The update was related to the link quality. This update targeted sites that were over advertising. This used to attack the sites with more ads advertised to collect extra revenue and gave the inferiority complex to the content.</p>	<p>Pigeon Google search algorithm aimed to offer better local search results by rewarding local businesses that have a strong organic presence with better visibility in traditional search, similar to the visibility a business may have seen previously in Google Maps.</p>	<p>This update boosted Google's special SERP features resulting in an increase in the number of SERP's containing related search as well as the improvement in the word count of related search phrases averagely.</p>	<p>Google thought of releasing Speed update that forces the sites to improve the page speed on mobile so that it loads faster.</p> <p>This update is only for the sites that are extremely slow wherein the minor changes will not change the ranking on Google search. The markable changes need to be released so that Google notices the difference and rank the sites better.</p>

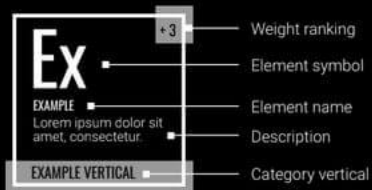
SEO - Search Engine Optimization

- Very very basic advice

 <h2>BLACK HAT</h2>	 <h2>WHITE HAT</h2>
<h3>BLACK HAT STRATEGIES</h3> <ul style="list-style-type: none">• Duplicate content• Invisible text and stuffed keywords• Cloaking or re-directing the user to another site or page• Links from sites with non-relevant content	<h3>WHITE HAT STRATEGIES</h3> <ul style="list-style-type: none">• Relevant content• Well-labeled images• Relevant links and references• Complete sentences with good spelling and grammar• Standards-compliant HTML• Unique and relevant page titles

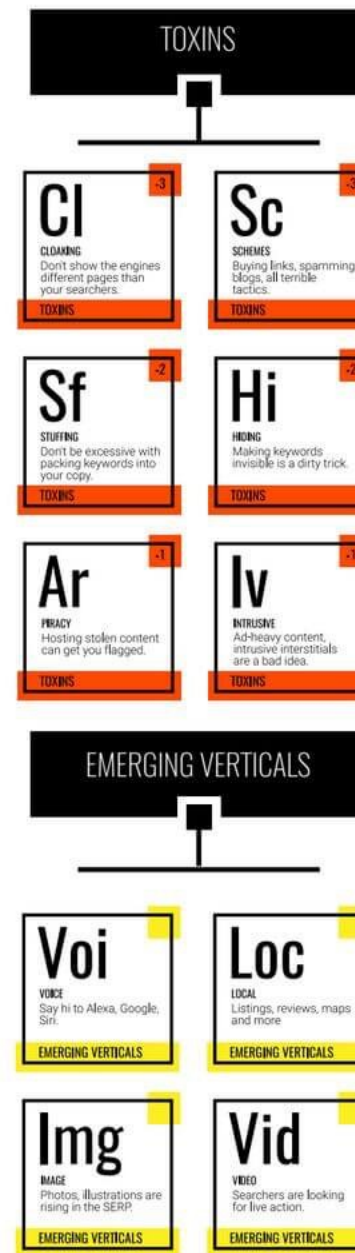
PERIODIC TABLE OF SEO FACTORS 2019

Search engine optimization seems like alchemy to the uninitiated. This guide to success factors, best practices and potential pitfalls can build the framework for your SEO strategy.



Search Engine Land

Qu QUALITY Pages must be well-written and highly valuable. CONTENT (+3)					
Rs RESEARCH Investigate keywords people may use to find your content. CONTENT (+3)	Cr CRAWL Search engines must easily crawl your pages. ARCHITECTURE (+3)				
Kw KEYWORDS Build target keywords into your pages. CONTENT (+2)	Mo MOBILE Optimize for today's smartphones and tablets. ARCHITECTURE (+3)	Tt TITLES Build keywords into your titles. HTML (+3)			
Fr FRESHNESS Create timely content; refresh or retire stagnant pages. CONTENT (+2)	Dd DUPLICATE Be smart. Use canonicals, redirects. ARCHITECTURE (+2)	Ds DESCRIPTIONS Meta tags should describe what pages are about. HTML (+2)		Co COUNTRY Consider the country of your searcher. USER (+2)	
Mm MULTIMEDIA Images, video and audio can set your content apart. CONTENT (+2)	Sp SPEED Your site should load quickly on any device. ARCHITECTURE (+2)	St STRUCTURE Use Schema and more to turn data into enhanced listings. HTML (+2)	Au AUTHORITY Authority is everything. Covet links, shares and other signals. TRUST (+3)	Va VALUE Seek links from trusted, quality websites. LINKS (+3)	Ux USER EXPERIENCE Experience matters more every day. USER (+2)
An ANSWERS Create content that can be turned into answers in the SERP. CONTENT (+2)	Ps HTTPS Provide a secure connection for visitors. ARCHITECTURE (+2)	Hd HEADINGS Build keywords into your H1 • H2 tags, especially H1. HTML (+2)	En ENGAGEMENT Visitors should spend time with your pages, not bounce. TRUST (+2)	Ac ANCHORS Seek links from pages that use similar keywords. LINKS (+2)	Hs HISTORY Consider how regularly someone has visited your site. USER (+1)
Dt DEPTH Shallow content fails. Aim for substance. CONTENT (+2)	Ur URLS Build keywords into your page addresses. ARCHITECTURE (+1)	Am AMP Google's mobile page format is built for speed. HTML (+1)	Re REPUTATION Sites operating the same way for years carry weight. TRUST (+1)	Ba BACKLINKS The more high-quality links, the better. LINKS (+1)	In INTENT Consider why someone is conducting a specific search. USER (+1)



SEO - Search Engine Optimization

- More advices

THE PERIODIC TABLE OF SEO RANKING FACTORS

Search engine optimization — SEO — seems like alchemy to the uninitiated. But there's a science to it. Search engines reward pages with the right combination of ranking factors. Below, some major factors or "signals" you should seek to have.

ON THE PAGE SEO RANKING FACTORS

These elements are in the direct control of the publisher.

CONTENT		
Cq	QUALITY	Are pages well written & have substantial quality content?
Cr	RESEARCH	Have you researched the keywords people may use to find your content?
Cw	WORDS	Do pages use words & phrases you hope they'll be found for?
Ce	ENGAGE	Do visitors spend time reading or "bounce" away quickly?
Cf	FRESH	Are pages fresh & about "hot" topics?
HTML		
Ht	TITLES	Do HTML title tags contain keywords relevant to page topics?
Hd	DESCRIPTION	Do meta description tags describe what pages are about?
Hh	HEADERS	Do headlines and subheads use header tags with relevant keywords?
ARCHITECTURE		
Ac	CRAWL	Can search engines easily "crawl" pages on site?
As	SPEED	Does site load quickly?
Au	URLS	Are URLs short & contain meaningful keywords to page topics?

ON THE PAGE SEO

CONTENT	HTML	ARCHITECTURE	LINKS	SOCIAL	TRUST	PERSONAL
Cq ⁺³ Quality	Ht ⁺³ Titles	Ac ⁺³ Crawl	Lq ⁺³ Quality	Sr ⁺² Reputation	Ta ⁺³ Authority	Pc ⁺³ Country
Cr ⁺³ Research	Hd ⁺² Description	As ⁺¹ Speed	Lt ⁺³ Text	Ss ⁺¹ Shares	Th ⁺¹ History	Pl ⁺³ Locality
Cw ⁺² Words	Hh ⁺¹ Headers	Au ⁺¹ URLs	Ln ⁺¹ Numbers			
Ce ⁺² Engage						Ph ⁺² History
Cf ⁺² Fresh						Ps ⁺¹ Social

FACTORS WORK TOGETHER

Some factors influence more than others, which we've weighted 1 (weakest) to 3 (strongest). No single factor guarantees top rankings. Several favorable factors increase odds of success. Negative "Violation" and "Blocking" factors harm your chances.

VIOLATIONS

Vt ⁻² Thin	Vs ⁻¹ Stuffing	Vc ⁻³ Cloaking	Vp ⁻³ Paid Links
	Vh ⁻¹ Hidden		VI ⁻¹ Link Spam

BLOCKING

Bt ⁻⁴ Blocking	Bp ⁻³ Blocking
------------------------------	------------------------------

OFF THE PAGE SEO RANKING FACTORS

Elements influenced by readers, visitors & other publishers.

LINKS		
Lq	QUALITY	Are links from trusted, quality or respected web sites?
Lt	TEXT	Do links pointing at pages use words you hope they'll be found for?
Ln	NUMBER	Do many links point at your web pages?
SOCIAL		
Sr	REPUTATION	Do those respected on social networks share your content?
Ss	SHARES	Do many share your content on social networks?
TRUST		
Ta	AUTHORITY	Do links, shares & other factors make site a trusted authority?
Th	HISTORY	Has site or its domain been around a long time, operating in same way?
PERSONAL		
Pc	COUNTRY	What country is someone located in?
Pl	LOCALITY	What city or local area is someone located in?
Ph	HISTORY	Does someone regularly visit the site? Or "liked" it?
Ps	SOCIAL	What do your friends think of the site?

BLOCKING

If searchers "block" site, hurts both trust & personalization.

Bt	BLOCKING	Have many people blocked your site from search results?
Bp	BLOCKING	Has someone blocked your site from their search results?

VIOLATIONS

Spam techniques may cause ranking penalty or ban.

Vt	THIN	Is content "thin" or "shallow" & lacking substance?
Vs	STUFFING	Do you excessively use words you want pages to be found for?

Vh	HIDDEN	Do colors or design "hide" words you want pages to be found for?
Vc	CLOAKING	Do you show search engines different pages than humans?

Vp	PAID LINKS	Have you purchased links in hopes of better rankings?
VI	LINK SPAM	Have you created many links by spamming blogs, forums or other places?

Written By: [search engine land](#) Design By: [COLUMN FIVE](#) Learn More: [HTTP://SELND.COM/SEOTABLE](http://selnd.com/seotable) Copyright Third Door Media

Designing Web Pages for Promotion

- **Keywords**
 - Terms and phrases that people may use when searching for your site.
 - Words or phrases that describe your web site or business.
 - Create a list of them
 - Include common misspellings
- **Description**
 - What is special about your web site that would make someone want to visit?
 - 25-30 words -- inviting and interesting
 - Some search engines will display your description in the SERP

Description meta tag

- The meta element
 - A stand-alone tag
 - Placed in the head section
 - Attributes:
 - name
 - content

```
<meta name="description" content="value">
```

Example: Description Meta Tag

Example: "Acme Design"

```
<meta name="description" content="Acme Design, a  
premier web consulting group that specializes in  
E-commerce, website design, website development,  
and website re-design.">
```


Search Engine Optimization (SEO)

- Determine keywords
- Page Title
 - Include the company and/or website name
 - Include selected keywords as appropriate
- Heading tags
 - Include keywords
- Text on page includes keywords

Search Engine Optimization (SEO) 2

- Linking
 - Provide text navigation hyperlinks
 - Verify that all hyperlinks are functioning
- Page Layout
 - Use CSS for page layout
- Images & Multimedia
 - Configure meaningful alternate text
 - Be aware that text and hyperlinks contained within multimedia may not be accessed by search engine robots

Search Engine Optimization (SEO) 3

- Valid Code
 - Validate HTML
 - Validate CSS
- Content of Value
 - Follow Web Design Best Practices
 - Well-organized
 - Meaningful & useful to your target audience

Listing in a Search Engine

- Wait until your site is finished
- Don't submit "under construction" Web sites!
- Locate the "Add URL" or "Submit Your Site" page for a search engine
- Follow the directions and fill out the form
- A robot from the search engine will visit your website and index it
- Allow several weeks and test the search engine to see if your site is listed

Monitor Search Engine Listings

- **Web Analytics:**

- "the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimizing Web usage."

- **Analyze web site logs**

Keyword	Visits	Pages Per Visit	Average Time on Site
flash slideshow tutorial	27,097	1.75	00:01:17
adobe flash tutorial	21,773	6.08	00:07:32
flash tutorials	15,751	5.71	00:04:56
flash tutorial	14,346	5.96	00:05:43
flash banner tutorial	6,859	5.32	00:04:05
adobe flash tutorials	4,943	5.98	00:06:24
fireworks tutorial	4,023	8.20	00:05:23
web development and design foundations	3,198	4.17	00:05:02
tutorial flash	3,141	5.06	00:04:46
flash tutorial	3,120	4.94	00:04:27

SEO - Search Engine Optimization

- SEO is a professional skill that requires specific studies...
 - Here the [link](#) to Google suggestions, video lessons, path for beginners and advanced SEO
 - More info about periodic table for SEO – [link](#) and [link](#)
- However very popular plugin are available for WordPress
 - Yoast SEO - the most-used WordPress SEO plugin, 5 million of installations
 - Here the [link](#) to the official page
 - Here the [link](#) to a tutorial for installation and use
 - Math Rank - a very recent plugin, quite popular
 - Here the [link](#) to the official page
 - Here the [link](#) to a tutorial for the installation and use

A walk through



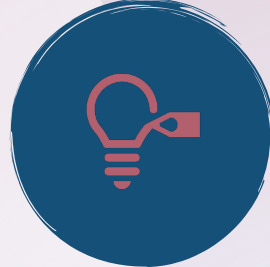
A web site...

What actually is?
Focusing on the
«dark side»



The magic of
being online...

A roadmap to
publish a site:
domain, hosting...



How is built...

Technologies beyond
the front end



Let's give
a try!

Practical
development
and tutorial



Exam

To obtain the credit
of the course, a test
on all topics



Knowledge

HTML, CSS,
JavaScript, MySQL
/ PostgreSQL



IDE Integrated
Development Environment

Brackets,
Sublime, Atom,
Adobe
Dreamweaver



Client FTP

fileZilla, WinSCP
e Cyberduck



How to develop a web site from scratch

What we need to know:
mandatory (basic) skills
and tools

How to develop a web site from scratch

HTML (Hyper Text Markup Language)

- Basic structure that makes semantic content for the web browser
- Sequential tags (with an opening and a closing) and structurally a keyword enclosed in angle brackets

Scripting Language

- HTML and CSS are not interactive. To create a dynamic web page we need languages like JavaScript and jQuery
- Server-side languages like PHP, Python, and Ruby may also be needed over time

CSS (Cascading Style Sheets)

- Style language used to “decorate” the HTML markup of a web page
- Without CSS, a web page would appear as a large white page with unordered text and images

Database Management

- To store, manage and access data of a website a database is needed
- DB management system: MySQL, MongoDB and PostgreSQL - server side



Responsive Design

Definition

- **Responsive design** refers to design that responds to the environment in which it is viewed
- The goal is to build web pages that detect the visitor's screen size and orientation and change the layout accordingly
- Responsive web page creation makes use of **flexible layouts, flexible images and cascading style sheet media queries**

Adaptive (vs Responsive)

- **Adaptative design** is an approach to web development where developers create **multiple layouts of the same site** to fit to specific screen dimensions
- An adaptive site will **first detect the dimensions of the user's screen** and, based on the available layouts created, will **choose the one** that is **most appropriate**

Reactive software development

Reactive and Responsive design are mostly the same

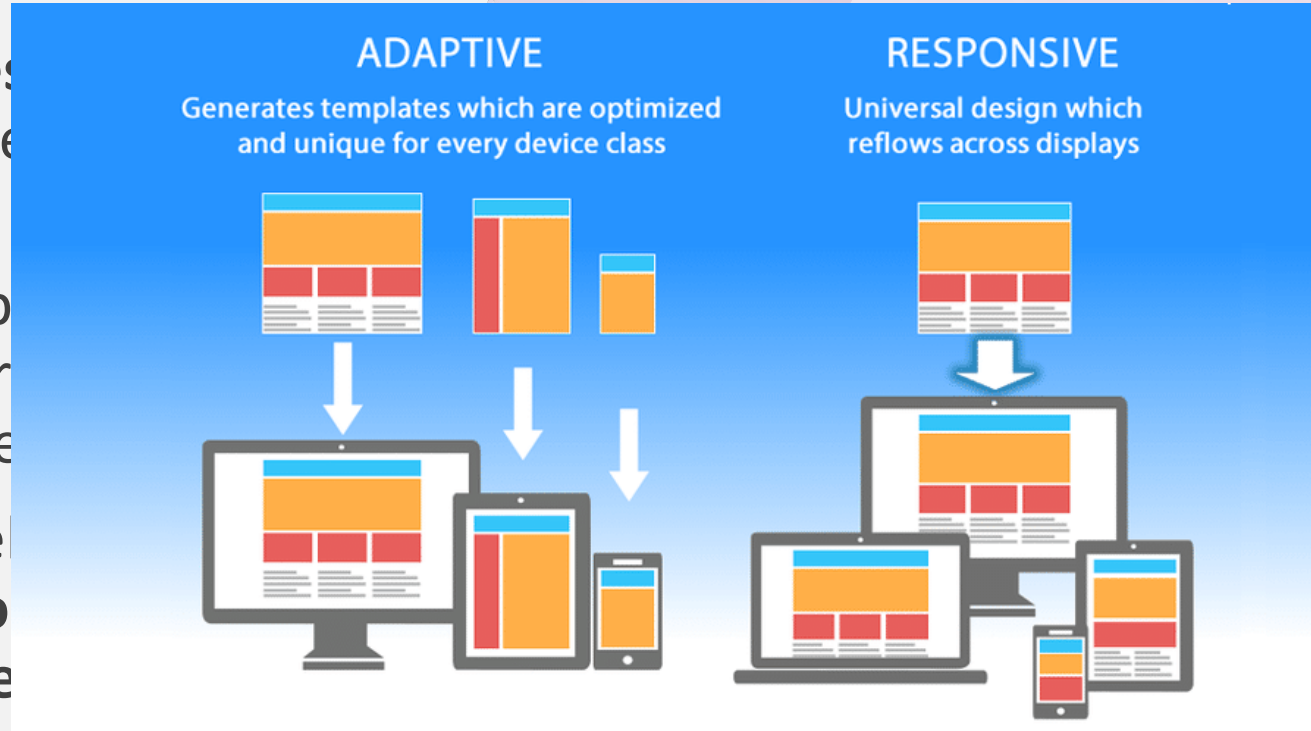


Responsive Design

Definition

- **Responsive design** is an approach to web design that responds to the user's device and the screen size it is viewed on
- The goal is to build websites that automatically adjust the visitor's screen size and change the layout of the content to fit the screen
- Responsive web design is a design approach that uses a flexible layout, fluid grid images, and CSS media queries to create a web page that automatically adjusts the content to fit the screen of the device that is most

Adaptive (vs Responsive)



is an approach to web design that developers create of **the same site** to fit to various screen dimensions

It **first detect the user's screen** and, based on the available layouts created, it serves the one that is **most** appropriate

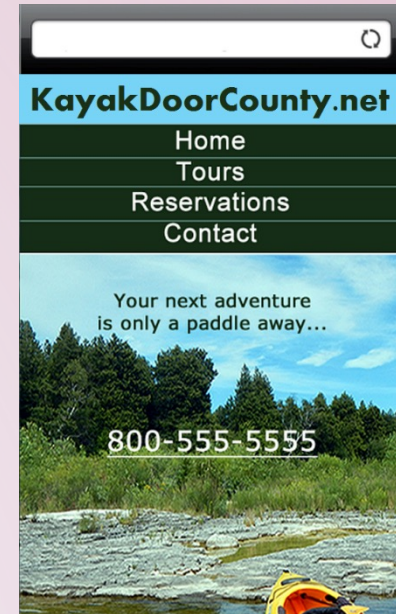
Responsive Design

Today we are going to see

- Which are the building blocs of responsivity?
- Responsive web page creation makes use of **flexible layouts, flexible images and cascading style sheet media queries**
- But before just some few insights about mobile web design...

Mobile Web Limitations

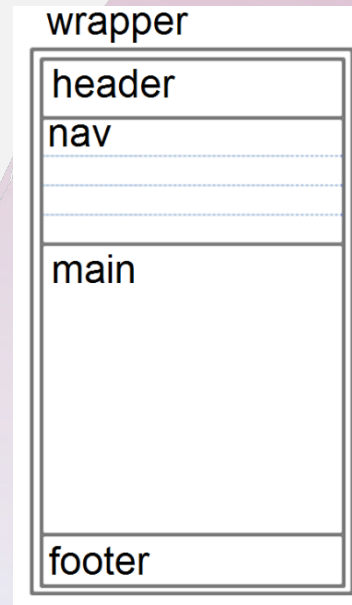
- Small Screen Size
- Low bandwidth
- Limited fonts
- Limited colour
- Awkward controls
- Lack of Flash support
- Limited processor and memory
- Cost per kilobyte



Mobile Web Design

Optimize Layout for Mobile Use

- Single column design
- Limit scrolling to one direction
- Use heading elements and list
- Avoid using tables
- Provide labels for form controls
- Avoid using pixel units & absolute positioning in style sheets
- Hide content that is not essential for mobile use



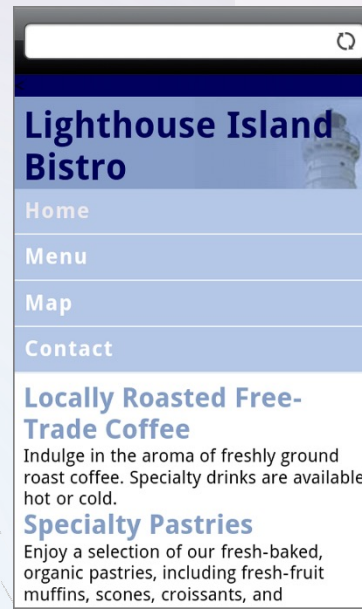
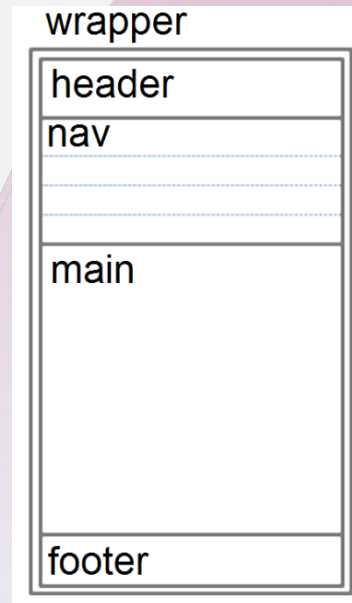
Optimize Navigation for Mobile Use

- Provide minimal navigation near the top of the page
- Provide consistent navigation
- Avoid hyperlinks that open files in new windows or pop-ups
- Try to balance both the number of hyperlinks on a page and the number of levels needed to access information

Mobile Web Design

Optimize Graphics for Mobile Use

- Avoid displaying images that are wider than the screen width
- Configure alternate, small optimized background images
- Avoid using images that contain text & of large graphic images
- Specify the size of images
- Provide alternate text for graphics and other non-text elements



Optimize Text for Mobile Use

- Configure good contrast between text and background colors
- Use common font typefaces
- Configure font size with **em** units or percentages
- Use a short, descriptive page title



A methodological approach

A high-level list of steps

Way of thinking

Useful information



GRAZIE