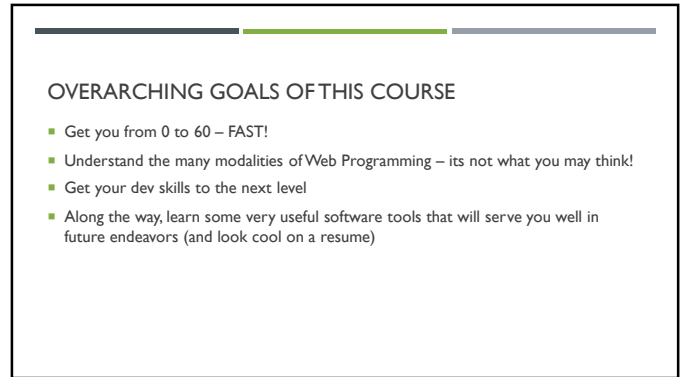
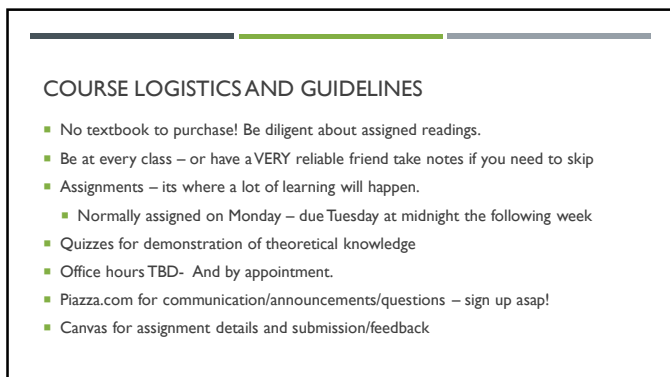




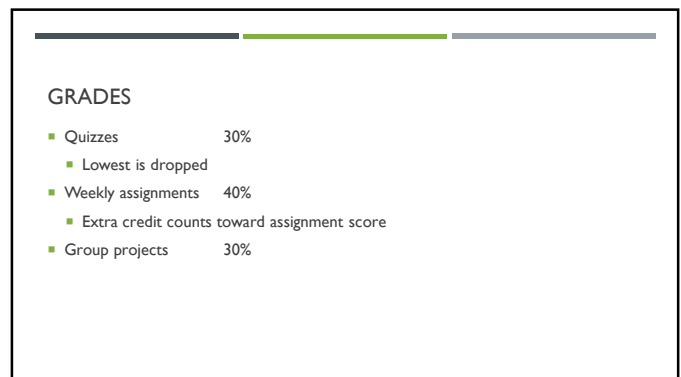
1



2



3



4

PLEASE DO ...

- Don't be late.
- If you do need to be late- don't make weird excuses.
- Stay focused.
- If you are lost, get help from me or a TA.
- Pace yourself - this course is a marathon not a sprint.
- Be kind, respectful and helpful to one another.



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WEB PROGRAMMING – WHY DO I NEED IT?

Website
Web App
Mobile App
Responsive Website
Mobile Friendly Website

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WEB TECHNOLOGIES (NOT AN EXHAUSTIVE LIST)

Client Side

- HTML
- CSS
- Javascript

Server Side

- PHP
- Node.js
- Database

Other

- XML
- JSON
- AJAX

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WEB DEV VS. NATIVE MOBILE DEVELOPMENT?

REACH (FACE OF A BUSINESS)
DESIGN (EASY TO LOOK SLICK)
BROAD DEMOGRAPHIC (CROSS BROWSER SUPPORT IS EASIER)
CHEAPER (USUALLY)
UPDATES (EASY TO PUBLISH)

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WHAT SHOULD WE BE THINKING ABOUT
WHEN WE CREATE A WEBSITE?

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WHAT HAPPENS WHEN I TYPE A URL
INTO MY BROWSER?

10,000 FOOT VIEW

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WHAT IS A URL?

- Universal Resource Locator
- Several pieces:
 - Protocol
 - Domain (TLD + domain name)
 - Subfolder/subdomain
 - File
 - Query string

[HTTPS://HELP.FEEDME.COM/SNACKS.PHP?FLAVOR=SALTY](https://help.feedme.com/snacks.php?flavor=salty)

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FIND IP ADDRESS OF THE SERVER

Domain name ~ human friendly ⇔ IP address ~ computer friendly

- Mapping in a database of DNS Records (DNS = Domain Name System)
- Looks for DNS in:
 - Cache: Browser, OS, Router, ISP
- DNS Query
- Try it: whoishostingthis.com

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GETTING A DNS RECORD OF YOUR OWN

- Internet Corporation for Assigned Names and Numbers (ICANN)
- Whois.com
- Bustaname.com
- Choosing a TLD: <https://data.iana.org/TLD/tlds-alpha-by-domain.txt>
 - Playing with the country code:
https://icannwiki.org/Country_code_top-level_domain

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DOMAIN NAME FAILS

- Too long!
llanfairpwllgwyngyllgogerychwyrndrobwyl-llantysiliogogoch.com
- Teachers Talk teacherstalk.com
- IHA Vegas ihavegas.com
- One Hour Scrap 1hourscrap.com
- Auctions Hit auctionshit.com
- Via Grafix viagrafix.com

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EXERCISE: CHOOSE A DOMAIN NAME

- Work in teams of 3 to 4
- You are tasked with coming up with a domain name for a company that names websites (i.e., creates the domain name)
- Make sure your name does not already exist (whois.com)
- There will be voting for the best name!
- Prize is 20 points extra credit to the winning team

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BACK AT THE SERVER ...

- The IP will direct to the root of the server
- The server has a mapping of each domain to where the corresponding files are stored on that server
- Follow the folder structure in the URL to get to the precise file.
- Examine the file type
 - HTML => send it along
 - **Server side code** (node.js, php, asp, etc) => run it on the server
 - Pass the query string to the server side code
 - Send a browser readable file back to satisfy the request

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IS THAT IT?

- Not quite .. Now it's the browser's turn
- The browser will display content formatted via **HTML** markup
- It will interpret Javascript or other **Client Side** code
- It may request other resources- images, include files
- It may access the server asynchronously

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Why do we need both client side programming AND server side programming

- Speed
- Browser differences
- Access to server resources

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SETTING UP A WEBSITE/WEB APP: STUFF TO WORRY ABOUT

- | | |
|---------------------------|----------------------------|
| ■ Register domain name | ■ Hide from search engines |
| ■ Hosting | ■ Robots.txt |
| ■ Technology | User-agent: * |
| ■ Linux vs windows | Disallow: / |
| ■ cPanel | |
| ■ Server side programming | |
| ■ CMS | |

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HOSTING YOUR WEBSITE

- Some hosts require a domain
- Private hosting (GoDaddy, Siteground, etc)
- Free/nearly free hosting options
 - Tufts hosted server
 - GitHub pages
 - 000webhost.com
 - Amazon Web Services

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UI/UX AND USABILITY

- A web site/app should be designed for the user, not the developer
- Three criteria for usability:
 - Easy to figure out the first time
 - Easy to remember and use on subsequent visits
 - User can achieve their goals
- Always think about what the user wants- i.e., solve their problem

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BEST AND WORST WEBSITES

- <https://www.lingscars.com/>
- <http://www.mikiyakobayashi.com/>

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SEO – SEARCH ENGINE OPTIMIZATION

- If you build it, they will come – NOT
- Your obligation as a web programmer
 - Best practices
 - Mobile friendly
 - Use interesting effects to engage users

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CYBER-SECURITY

- Need to secure a website from cyber-attacks
- This has to be maintained ongoingly
- Sometimes a site is hacked
 - to steal information/users
 - to redirect a user to another site
 - just to be malicious
- No site is exempt from being a target
- CMS sites or sites with open source software are particularly vulnerable

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TYPES OF ATTACKS

- SQL Injections- alters the database
- Cross-site Scripting (XSS) – malicious scripts are injected into the site
- Credential Brute Force Attacks
- Website Malware Infections & Attacks
- DoS/DDoS Attacks (Distributed Denial of Service) – fake traffic bogs down a site