# COMP 1950

Day 11

Optimization

# Minifying Code

- HTML, CSS and JS are largely whitespace agnostic (with a few exceptions) so their plain text files can be compressed by eliminating nearly all the whitespace in the code
- Why?
  - No whitespace space means less bytes, which means less data flowing from the server to the user
    - This equals a faster load time and less bandwidth used (less bandwidth used could save you and your users money if on a metered connection (user and web host))
- How?
  - You can automate this through a build process and build tool
    - Gulp is a relatively simple to learn tool that can automate many tasks such as minification
      - https://gulpjs.com/
  - You can do it manually through web services such as:
    - http://minifycode.com/

# Caching

- Caching means instructing the server not to resend the same data (files) to the user if they visit your site multiple times
- You can instruct your server to say:
  - Never cache HTML files
  - Cache images files for 1 year
  - Cache CSS and JS files for 30 days
  - The time and type of files is completely up to you
- Why?
  - It saves you and your users bandwidth costs
  - On subsequent visits to your site your site will load faster

# Caching

- How?
  - You can set directives in your web server software
    - The exact commands vary depending on the type of server
    - The most common web server is the Apache web server
    - Most small to medium web sites are hosted on inexpensive shared hosting systems
      - These “web hosts” rarely give you direct access to the apache configuration files
      - Fortunately, there is still a way to set server settings by way of an “.htaccess” file
        - “.htaccess” files are just plain text files saved as “.htaccess”
        - You place “.htaccess” files usually in the root of your web site, but you can have multiple “.htaccess” files inside your web site’s folders
        - “.htaccess” files nested in folders will override the same settings on “.htaccess” files saved in the root directory of your web site
    - So for most small to medium web sites the easiest way to set caching is by creating a “.htaccess” file, setting its content for caching (instructions on how to do that are on the next slide) and saving it in the root of your web site

# Caching - .htaccess settings

```
#add this code to your .htaccess
#the pipe delimited lists describe which file types to target#max-age=31536000 describes the duration of the cache in seconds

#cache image files for one year
<filesMatch ".(jpg|jpeg|png|gif|ico)$">
        Header set Cache-Control "max-age=31536000, public”
</filesMatch>

#cache css and js files for one month
<filesMatch ".(css|js)$">
        Header set Cache-Control "max-age=2628000, public”
</filesMatch>

#if your html content is regularly updated, set a 1 day cache
<filesMatch ".(html)$">
        Header set Cache-Control "max-age=86400, public”
</filesMatch>

#if needed, you can also disable caching for specific file types
<filesMatch ".(pdf)$">
        Header set Cache-Control "max-age=0, no-cache, no-store, must-revalidate”
</filesMatch>
```

# GZip Compression

- **GZip** is a common method for compressing files before transfer on a network, resulting in smaller file sizes (faster, less bandwidth useage)
- GZip is especially effective with text based files (.html, .css, .js, etc), but less so with images (since images are already compressed). GZipped text filesizes can be 50-70% smaller than before compression
- When a browser makes a request to a server, it will notify the server if it can accept gzipped files. If so, the server will compress files before sending the response

# GZip Compression

- How to enable GZip compression
  - As with caching, the easiest way to enable GZip is by adding commands to an “.htaccess” file (if your site is hosted using an Apache web server)
  - See the next slide for the ”.htaccess” commands for enabling GZip

# GZip - .htaccess Settings

```
# BEGIN GZIP
<ifmodule mod_deflate.c>
AddOutputFilterByType DEFLATE text/text text/html text/plain text/xml text/css application/x-javascript application/javascript
</ifmodule>
# END GZIP
```

# Checking GZip Compression

- You can check to see if GZip is enabled on any site by visiting this web site:
  - https://checkgzipcompression.com/

# Other .htaccess Settings

- Prevent directories from being listed

```
# disable directory listing
Options -Indexes
```

- Prevent access to folder from outside requests (place a secondary .htaccess file in the folder that you wish to block access to)

```
# prevent access to folder from outside requests
deny from all
```