

# Website Design and Development

CSCI 311

# Learning Objectives

- ▶ Understand good practices in designing and developing web sites
- ▶ Learn some of the challenges of web design

# Activity

- ▶ In pairs:
  - ▶ Suppose you're hired to build a website for a local school to showcase some of the field trips they have been on. What do you need to do to make this happen?
    - ▶ Who do you need to meet with, and why?
    - ▶ What resources do you need from the client, and when?
    - ▶ What will you need to do to complete the task?

# Planning

- ▶ Planning cycle helps you:
  - ▶ gather requirements
  - ▶ refine requirements
  - ▶ come up with an appropriate look and feel
  - ▶ plan development

# Planning Cycle in Real Life

- ▶ In a perfect world we would plan first, code later
- ▶ In the real world, we often need to do multiple things at once, while:
- ▶ Early programming to test ideas before you commit to them

# SMART System

- ▶ When evaluating your milestones/tasks/objectives, keep them:
  - ▶ Specific
  - ▶ Measurable
  - ▶ Attainable
  - ▶ Realistic
  - ▶ Timely
- ▶ (From The Missing Link)

# The Fold

- ▶ Once we've started putting things on screens, we need to think about where to put it
- ▶ Newspapers:
  - ▶ above the fold
  - ▶ Name and logo
  - ▶ key headlines and images
- ▶ Websites:
  - ▶ same idea can apply
  - ▶ place vital things where they are always seen



# Typography

- ▶ The study of font
- ▶ Minimize the number of fonts used
- ▶ Keep things consistent
- ▶ Make sure user has the fonts
  - ▶ Google fonts
- ▶ Preferably use sans serif fonts

# Robots.txt

- ▶ robots are automated scripts used to index content of a website:

- ▶ <http://www.robotstxt.org/robotstxt.html>

- ▶ a robots file is kept at root of site

- ▶ indicates which content you want indexed

- ▶ Simplest robots.txt file:

```
User-agent: *
```

```
Disallow: /
```

- ▶ rules apply to all robots, and nothing is allowed below the root folder

- ▶ More complex robots.txt file:

```
User-agent: BadBot
```

```
Allow: /About/robot-policy.html
```

```
Disallow: /
```

```
User-agent: *
```

```
Disallow: /pictures/reserved
```

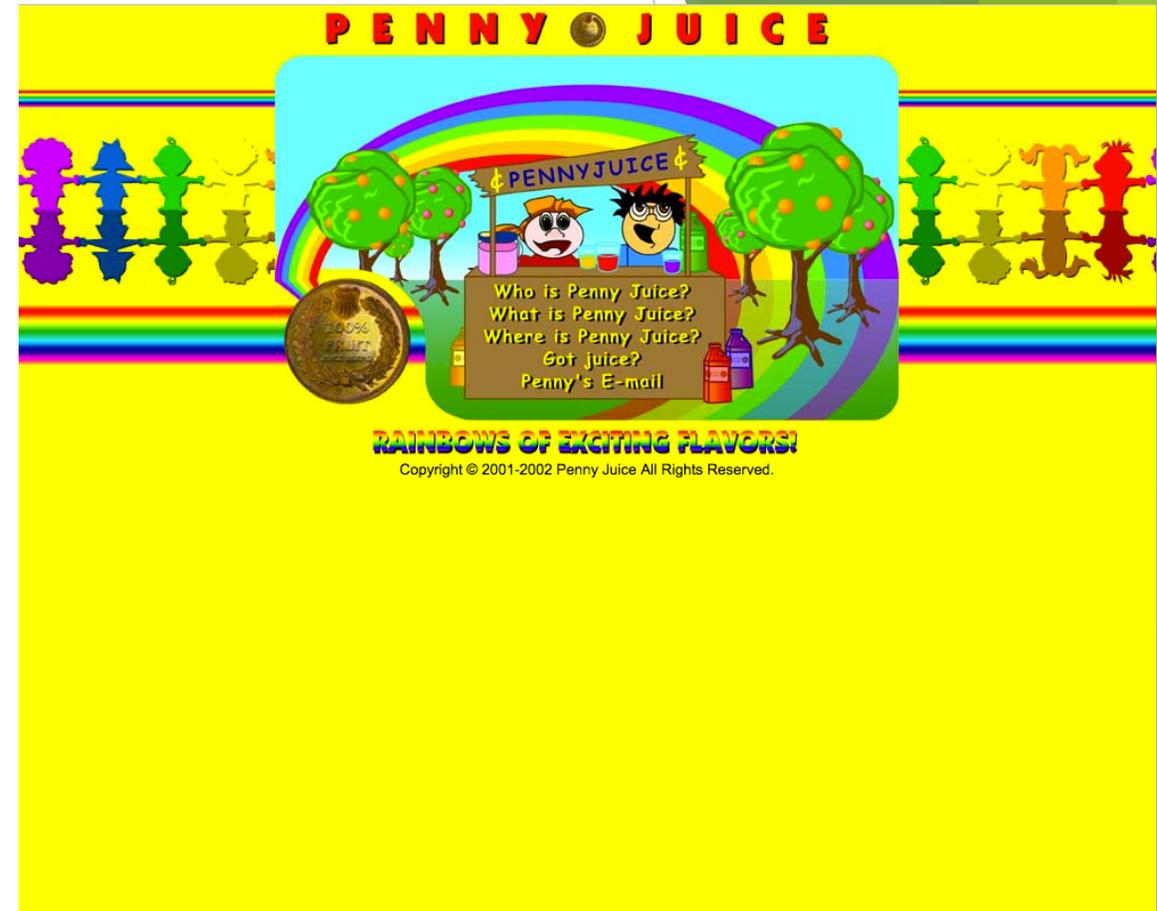
```
Disallow: /index.php
```

# Prototyping

- ▶ Prototyping early can help you convey design options to clients or stakeholders
- ▶ Prototyping techniques that are appropriate for web design:
  - ▶ Sketches
    - ▶ quick and dirty way to share design ideas with clients
    - ▶ good way to bring notes back to the office for implementation
  - ▶ Wireframes:
    - ▶ create a mockup of one or more designs
    - ▶ no colour, images or content
    - ▶ planning layout
  - ▶ Storyboarding:
    - ▶ lets you plan the flow between pages
    - ▶ gives you a sense of the user experience

# Colour Schemes

- ▶ Figuring out what colours to use can be hard!
- ▶ Especially if your client doesn't have a colour scheme already
  - ▶ many of us are programmers, not designers
- ▶ The quickest way to scare away your users (and potential clients!) is to make your site ugly
- ▶ There are tools out there to help:
  - ▶ <http://paletton.com/>
  - ▶ <http://www.colorsontheweb.com/Color-Tools/Color-Wizard>



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The image shows a screenshot of the Okayplayer website. At the top, there is a navigation bar with the Okayplayer logo and various menu items like 'NEWS', 'AUDIO', 'VIDEOS', 'ARTISTS', 'INTERVIEWS', 'MOVIES', 'TONIGHT SHOW', 'EVENTS', and 'ABOUT'. Below the navigation bar, there is a main article titled 'Bulletproof Soul: Ali Shaheed Muhammad & Adrian Young On Scoring Luke Cage'. To the right of the article, there is a 'JOIN OUR MAILING LIST' section with a 'SUBSCRIBE' button. Below the article, there is a video player for 'Watch The Weeknd Perform Starboy and False Alarm On SNL'. The website has a clean, modern design with a white background and a dark header.

# The Development Process for Web Design

- ▶ Kinds of Style:
  - ▶ Single Developer
    - ▶ one person who understands whole code-base
    - ▶ advantages: no arguments
    - ▶ disadvantages: fresh eyes catch problems
  - ▶ Paired Programming
    - ▶ two developers work at one computer
    - ▶ take turns driving
  - ▶ Team Development
    - ▶ developers work on different pieces of the project
    - ▶ communication is key

# Web Development Process

- ▶ Requirements Analysis and Development Plan
- ▶ Site Architecture
- ▶ Content-only Site Framework
- ▶ Visual Communication and Artistic Design
- ▶ Site Production

# Requirement Analysis and Development Plan

- ▶ Lots of questions to answer:
  - ▶ What are the requirements for the finished product?
  - ▶ What will it achieve for the client?
  - ▶ Target audience?
  - ▶ What resources are needed?
  - ▶ Who will provide the content and in what formats?
  - ▶ What kinds of resources are needed? video, text, photos, logos, colour schemes, etc.

# Site Architecture

- ▶ Static pages only?
- ▶ Dynamic content generation?
- ▶ Create a blueprint for building the site
  - ▶ components
  - ▶ contents
  - ▶ functionality
  - ▶ relationships
  - ▶ connections
  - ▶ interactions
  - ▶ navigation

# Content-only Framework

- ▶ Content
- ▶ Site map
- ▶ Skeletal site
- ▶ Navigation

# Visual Communication and Artistic Design

- ▶ Now is the time to think about:
  - ▶ look and feel
  - ▶ characteristics of the site
- ▶ Techniques:
  - ▶ storyboards
  - ▶ sketches
- ▶ For all pages, create a page layout
- ▶ Must reflect the client identity

# Site Production

- ▶ Create page templates
  - ▶ skeleton files used to make finished pages
  - ▶ let everyone on team generate pages consistently
- ▶ Prototype pages
  - ▶ use templates to complete typical pages
  - ▶ add navigation
- ▶ Add client-side programming
  - ▶ scripts for browsers or web clients
  - ▶ stylesheets
  - ▶ JavaScript
  - ▶ Add interactivity and responsiveness

# Site Production

- ▶ Finished pages
  - ▶ add text, graphics, images, animation, video
- ▶ Error Checking and Validation
  - ▶ use page-checking tools
  - ▶ spelling, broken links, loading times
- ▶ Testing
  - ▶ different browsers
  - ▶ different access points
- ▶ Add server-side programming
  - ▶ form processing
  - ▶ dynamic page generation
  - ▶ database access
  - ▶ e-commerce

# Site Production

- ▶ **Deploying**
  - ▶ release to Web, release URL
- ▶ **Documentation**
  - ▶ description of website, design and function
  - ▶ describe file structure, locations of source files (art, code)
  - ▶ create a maintenance guide
- ▶ **Maintenance**
  - ▶ check in with clients on regular basis

# Development Best-Practices

- ▶ File Organization
  - ▶ your system will grow, plan for it
- ▶ Comments
  - ▶ notes for the developer(s)
  - ▶ “Any code you have not looked at for six or more months might as well have been written by someone else” - Eagleson’s Law
- ▶ Read Me
  - ▶ notes for the user
- ▶ Code standards:
  - ▶ spacing, brackets, naming, indentation.... You know the drill...
- ▶ Versioning
  - ▶ use version control
  - ▶ don’t release code until it is ready. Use a sandbox

What do you do while updating a site?



# Development Tools

- ▶ Frameworks:
  - ▶ ASP.NET (server-side)
  - ▶ Ruby on Rails (MVC framework)
  - ▶ Symfony (PHP)
  - ▶ Django (backend python)
  - ▶ Angular.js (JavaScript)
  - ▶ Bootstrap (frontend)
  - ▶ Foundation (frontend)
  - ▶ Play (backend Java and Scala)
  - ▶ Wordpress (CMS)
  - ▶ Drupal (CMS)

# Developer Tools

- ▶ Text editors:
  - ▶ Jedit (Windows, Mac, Linux)
  - ▶ Notepad++ (windows)
  - ▶ Bluefish (Linux, FreeBSD, Mac, Windows)
  - ▶ TextWrangler/BBEdit (Mac)

# In summary

- ▶ Developing web sites is about more than learning to code
  - ▶ Need to have a plan
  - ▶ Need a good design
  - ▶ Need a good development style
  - ▶ Take advantage of existing technologies:
    - ▶ design patterns
    - ▶ frameworks
    - ▶ developer tools