

Art 382: Introduction to Interactive Media

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Lecture 2

Schedule

- Take Roll
- more explanations
- underlying internet
- putting up a web page
- text editors
- drawing with flash

We are starting with HTML, why?

- programming is more than knowing code
 - learn the use of programmer's tools
 - debugging is a skill
- HTML is easy coding
 - but you still use an editor and debug
- HTML should be free
 - it existed before page editors
 - you don't need a \$500 program to make web pages

How does the web work?

- You make directories with documents
- You put the directories on a "server"
 - what is a server?
- People "get" the documents and "look at them"
 - with a "browser" (?)
 - "get"? How?
 - "look at them"?

"Network"

- The internet is built like the phone system
 - There are "trunks" and "branches"
 - tree analogy
 - "trunks" are very high-speed, industrial-scale links that millions of people can use at once
 - "branches" are shorter-distance connections that hook onto the trunks
 - transparent to users-- you don't care how any two computers are connected

Internet like phones 2

- Everyone has a number
 - 410 455 2581
 - "410" is the area code-- AC's connected by trunks
 - "455" is the exchange-- my branch
 - "2581" the number in the exchange
- Internet numbers = IP Addresses
- Of the form a.b.c.d : "127.0.0.1"
 - more complex than phone numbers
 - Refers to a specific computer

DNS: Domain Name System

- Converts the 4 numbers to text: the "domain name"
 - so it's easier to remember
- Just a list of numbers and names
 - who owns the list?
 - the ICANN consortium supervises and several different domain registrars cooperate to make a single IP=>DN translation system
- You say "google.com", DNS says "148.3.5.22", the computers in CA say "hi."

Servers

- A "server" is a computer running server software.
- Server Software is a program that listens for requests for files.
- When a file is requested, the SS sends that file over the internet to the requestor
- Usually, SS is only allowed to send out pages from a particular directory

Putting up a web page

1. Make your files.
2. Register a domain name
 - or borrow space in someone else's
3. Get server space
 - the right to put some number of GB of files in a directory on a server
4. Set the domain name to refer to that directory on that computer
5. Put files in that space

1. Make your files

- HTML, .mov, .jpg, .swf, whatever
- Organize into one directory
- More later

2. Registering a domain name

- Find a domain name registrar
 - I use Network Solutions-- they are scumbags
 - They'll have an online form
- Pick an unused domain name
 - most are taken
 - by squatters
- Pay the registrar's fee
 - ~\$10/yr
- Now you have the right to say where your domain is

3. Getting Server Space

- Why not just use your own computer?
- A server must always be connected with the same IP
 - even if your computer is always on, its IP address probably changes a lot
 - most people don't need a fixed IP address
 - it's more trouble for your ISP : \$\$\$
- A server is running server software
 - which is pretty complex to install
 - server security is continuous work

3. Getting Server Space

- You'll start a second account, with an Internet Service Provider
- Make sure they provide "domain hosting"
 - many will not let you connect your domain to their system, instead, they insisting on your pages having addresses like "www.verizon.net/user55..." or "www.umbc.edu/~mcdo"

Don't get billed!

- Your ISP will give you a "storage quota" and a "bandwidth quota"
- Storage Quota = how much space all your files take up
 - go over the limit, get charged some extra
- Bandwidth Quota = how many GB you can send out per day or per month
 - go over the limit; get charged
 - if you get digg'ed, it could be very expensive!

4. Connect DNS entry to server

- Your DNS registrar will have a form that you fill out
 - some ISP's will do it for you
 - Whatever
- Once the dots are connected, you have a real, live web site.
 - with no files in it!

5. Move the files to the server

- You probably don't know where your ISP is, geographically
 - and don't care-- they're online, right?
 - so you can't send them a CDR
- Use a secure FTP program to move the files from your machine to the server
 - great. what's FTP?
 - File Transfer Protocol

Using FTP

- FTP is not a program, it's a network protocol for moving files from one computer to another.
- Many programs can do it
 - I use FileZilla on my PC: filezilla.com
 - Fugu for Mac; many others
- They're all pretty much the same
- All they do is transfer files and move between directories
 - Simpler than P2P file sharing!

Using an FTP program

- Start up the program (also called a "client")
- Tell it to connect to the other computer
 - we want "gl.umbc.edu"
 - specify port "22"
 - Log in to the other computer
 - use your myUMBC username & password
- Go to the right directory and put files there
 - esp. "index.html"
 - drag & drop, just like in the finder

Internet = files in directories, connected by FTP

- Every web site is a collection of files in a few formats
- html files are the spackle that glob it all together
- servers and browsers (and email, and chat, etc.) are just friendlier FTP programs

To Recap: making a web site

1. make files
2. get a domain name
3. get server space
4. connect server to domain name
5. put files on server
6. repeat, for money

While you are at UMBC

- Domain name assignment and hosting are already taken care of for UMBC students
 - You use the web address
 - `www.umbc.edu/~username`
 - You use UMBC's domain name
- UMBC allocates space for all myUMBC users-- a GB?
- Use Secure FTP to put your files in the right place:
 - `sftp://gl.umbc.edu/username/home/www/`

Let's do this

- 1: make the files
 - start with a directory (a "folder")
 - make a directory to hold just directories
 - new folder each class; keeps the files separate
 - then, make your "index.html"

why do you need index.html?

- When you specify only a domain name, many assumptions are made
 - you specify the computer
 - the server software determines what the root directory is
 - "index.html" is the default page for that directory
- every directory can have an "index.html"
- index.html is your home page

Why the suffix, the ".html"?

- In Windows and UNIX, a file's type is given by a few letters after a period
- tells the OS what kind of file it is
 - and therefore what to use to open the file
- Macs keep that data elsewhere, but if you put a suffix on a file name, Mac will understand you and change the other data, too

HTML

- HTML == Hyper Text Mark-up Language
 - the language of web pages
 - a kind of text file
- Text files
 - not .docx! that's a Word file, and there is formatting data in Word files
 - .txt
 - each byte contains one letter

the programmer's text editor

- Word, PowerPoint, XL, Flash, InDesign, all can make documents with words on them
 - The words have fonts, with sizes
 - The lines of text have positions relative to each other
 - Lots of extra data!
- Generally, text to be read by computers omits that stuff
 - formatting makes the file harder for the computer to read
 - extra work for the programmer

programmer's editors

- Will not let you
 - set your fonts per-document
 - use bold, underlines, ...
 - use Word or whatever for that stuff.
- Will allow you to
 - save "plain text" -- no formatting information
 - load, save, and edit all formats
 - even formats that are of unknown type
 - sometimes, this is fun/useful

Using TextEdit to make .txt

- Start TextEdit
- in the "TextEdit" menu, choose "Preferences"
- in the prefs dialog,
 - check "Plain Text"
 - do not hide suffix
- Save those preferences
- Good to go!

HTML

- an HTML document tells a browser how to draw a web page
- HTML is a simple programming language?
 - the computer reads it
 - the file tells the computer what to do
 - (draw a page)
 - yes

Let's look at one

- Go to the class web site
- Follow the "first.html" link
- Use the "view-> page source" command

first.html

```
<HTML>
```

```
<HEAD> </HEAD>
```

```
<BODY>
```

```
This is a really simple web page.<br>
```

```
<A HREF="index.html">A link</a><br>
```

```
</BODY>
```

```
</HTML>
```

Different times in programs

- Time of running, for you
 - seems instantaneous
 - done once each time you say
 - produces a result
 - maybe a drawing, maybe an error
- Runtime for the computer
 - it can only do one thing at a time
 - does each thing sequentially until it runs out
 - if there is a mistake, stop and complain

<X> and </X>

- Words in <brackets> are called "tags"
- Tags are different from the words they enclose
 - Enclosed stuff is a "block"
- Tags can be commands, or just markers.
- Tags can come in pairs: <x> and </x>
- <x> begins a "block", and </x> ends it.
 - like having fancy parentheses

First HTML file, again

```
<HTML>
```

```
<HEAD> </HEAD>
```

```
<BODY>
```

```
This is a really simple web page.<br>
```

```
<A HREF="index.html">A link</a><br>
```

```
</BODY>
```

```
</HTML>
```

HTML, HEAD, and BODY

- `<HTML>` block
 - contains the whole file!
 - start with `<HTML>`, end with `</HTML>`
- `<HEAD>` block
 - can contain a description of the page
 - ours is empty
- `<BODY>` block
 - contains the visible part of the page

Inside of <BODY></BODY>

Is the page's content:

This is a really simple web page.

A link

- A line of plain text, which is drawn
- two
's
- A link block <A>

- Means "line break".
- There is no </br>
- Helps with formatting your text
- There are many tags for text formatting in HTML:
 - , <table>, <P>, CSS
 - We'll get to them soon

`link`

- `<a>` is a link block
- "HREF=..." is a parameter for the link
 - "index.html" is where the link takes you
 - the text "link" appears on the page and is clickable
 - usual format "http://www.x.org/index.html"
 - Simply using "index.html" implies "stay in this directory"
 - A "relative link"-- what if you move this file?

Save this as "index.html"

```
<HTML>
```

```
<HEAD> </HEAD>
```

```
<BODY>
```

```
This is a really simple web page.<br>
```

```
<A HREF="index.html">A link</a><br>
```

```
</BODY>
```

```
</HTML>
```

Run it!

- Once the file is saved, go to that directory in the finder and double-click on it
- The OS will see the ".html" and run a browser.
- The browser will read the file and draw words.
- Nothing to it.

error correction = debugging

- you didn't do it correctly
- fine! change the file, save it, and reload the page
 - don't forget to save it; the browser has to read the file
- this is the debug-test loop

Mission accomplished

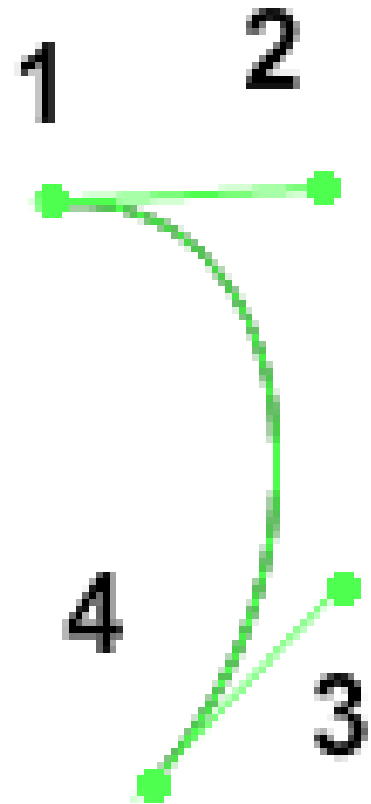
- Next topic: flash
- please start Flash

Part 2: Flash, Welcome

- 80% of drawing in Flash is operations on curves.
 - most tools make either curves or regions, which are closed curves, with a fill
 - the curves are the drawing-- .swf's usually don't contain pixels
 - you animate by-- attaching stuff to curves
 - if you understand curves, Flash is easier
- Let's start with curves

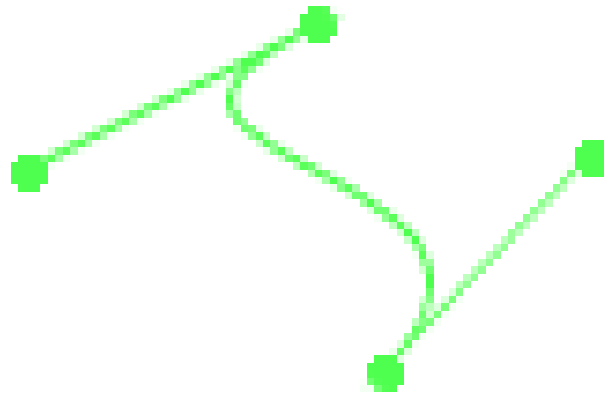
Curves are NURBS

- A way of taking four points and making a smooth curve between points 1 and 4.
- By adjusting points 2 and 3, you change **endpoint tangents**.
- tangent = the direction of a line at a particular point on the line



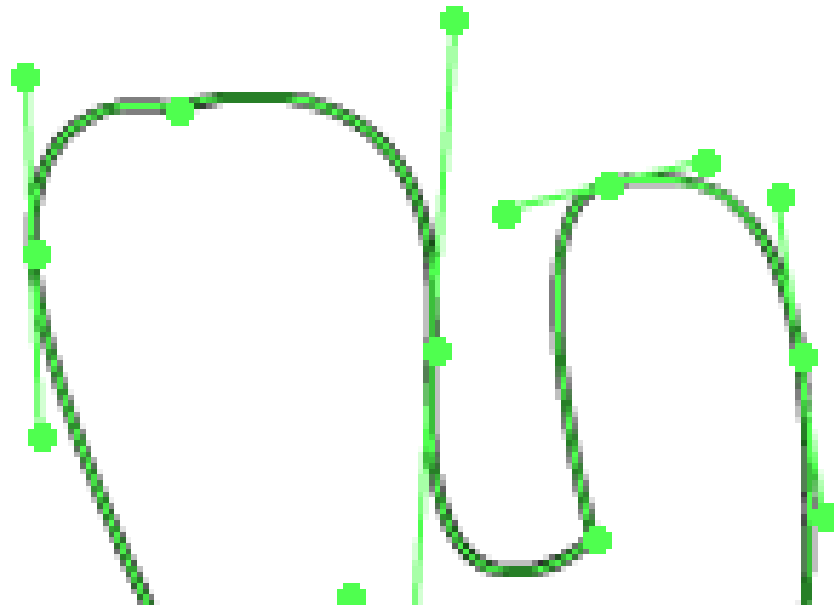
Curves are limited

- They can only have two turns
- If you want more turns, you need more curves
- Flash tools usually make lots of curves at once



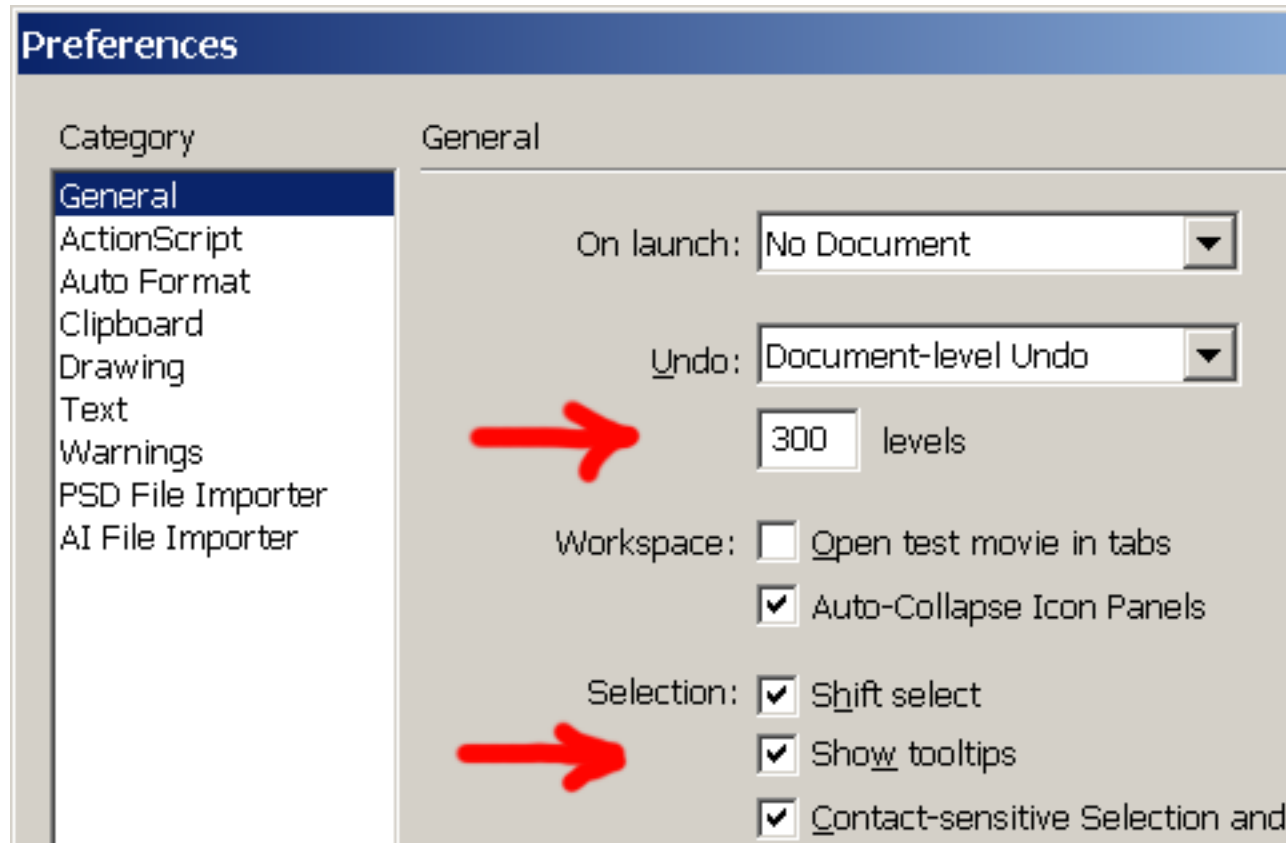
Curves come in sets

- To join two curves, just put their endpoints in the same place.
- To make the curves join smoothly, make the endpoints and two tangents lie on a line



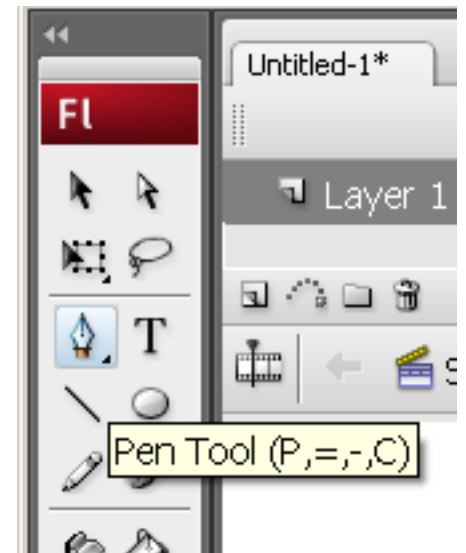
Turn on tooltips, please

- Main Menu -> Edit -> Preferences...
- Make sure you can undo, while you're at it.



the pen tool makes curves

- cursor is a fountain pen
- hotkey is p
- draws curves on the stage
- simple clicks make line segments
- click-drags give tangent information
 - makes curvy lines
- Try drawing an oval!

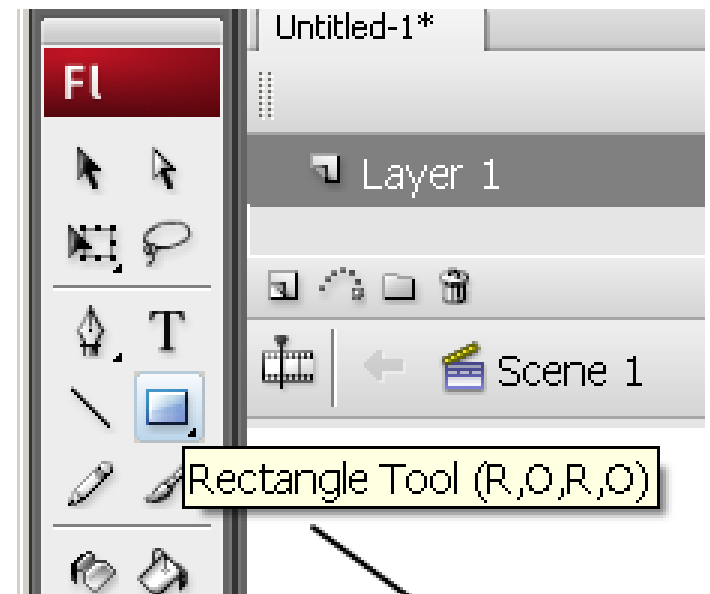
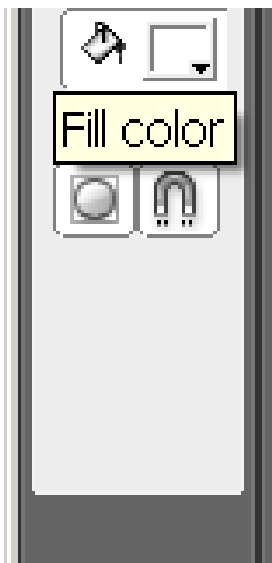


more pen tool

- straight segments are also curves, but the tangents are not in a line
- pen tool's curves are automatically connected
- to start a new line, select another tool, then go back to the pen (try n)
- Play time. Control-z is undo!

rectangle tool

- hotkey is r
- click and drag to make rectangles
- use the "fill color" button to get a color palette

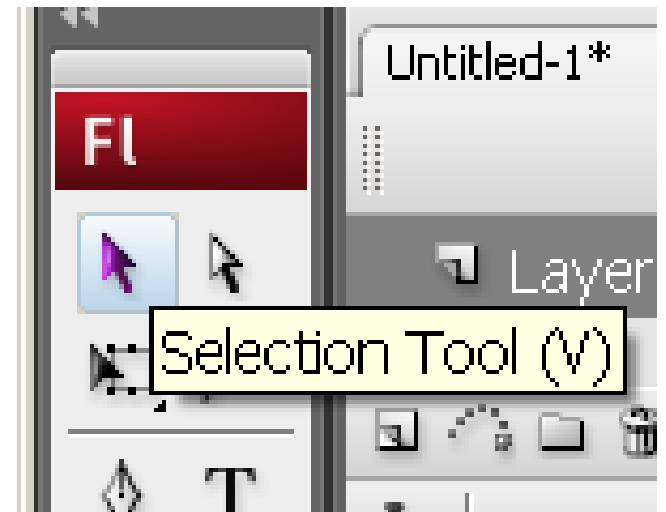


more rectangle tool

- rectangle tools usually create two sets of curves
 - boundary curves-- separate line objects around the rectangle
 - the curves that make up the rectangle itself
- by clicking on the edge of the rectangle, you can select just its boundary marks, and move them away from the fill region of the rectangle

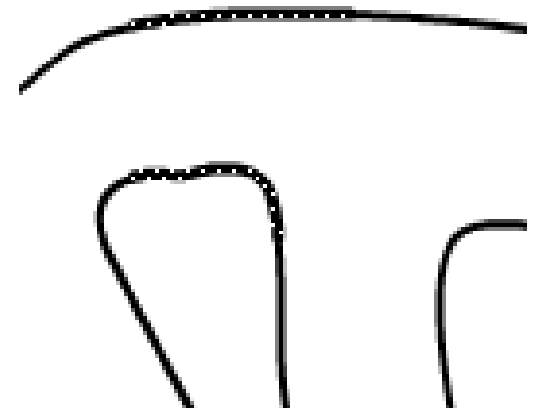
selection tool

- hotkey is v
- selects objects, not components
 - so, whole curves, not control points
- click, release, and drag to move the object
- click-drag to reshape the curve



more selection tool

- drag a box over many things to select them all
 - (delete or backspace deletes)
- when you drag a box over only part of an object, only the contained part is selected
 - objects are split up!

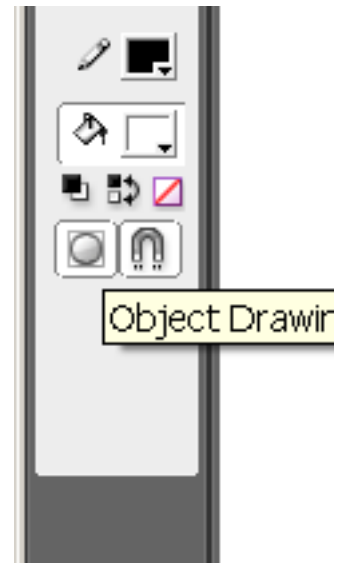


more selection

- by double-clicking on an object, you can select everything that touches it

drawing models: object & merge

- the object/merge button appears when the pen tool is selected
- in merge mode, an object drawn over another modifies the old one
 - lines cut each other
 - a region deletes regions behind it
- in object mode, objects don't modify each other
 - they do hide each other



merge mode simplifies drawings

- Cuts lines where they cross
- Combines points that touch
- deletes parts of shapes that are not visible

- Tends to simplify drawings
 - which makes their files smaller
 - which makes them cheaper to put online