Internet & WWW

A brief introduction

What is the Internet and the World Wide Web?

What is the Internet?

"A diverse set of independent networks, interlinked to provide its users with the appearance of a single, uniform network."

A very short history of the Internet

- ○ 1957: USSR launches Sputnik
- ○ 1958: Department of Defense: **A**dvanced **R**esearch **P**rojects **A**gency (ARPA)
- ○ ARPAnet: online in 1969

  …the other small step for mankind…

  - ■ centralized > decentralized > distributed network
  - ■ packet switching (message broken up into chunks, then rearranged at its destination)
- ○ 1973-74: rules for networks to communicate (TCP/IP)
  - ■ the term "Internet" is coined
- ○ 1983: TCP/IP adopted across ARPAnet > birth of the modern Internet

"A diverse set of independent networks, interlinked to provide its users with the appearance of a single, uniform network."

So, what is the World Wide Web?

That's what most people think of when they see the term "internet"

"The Web is an abstract (imaginary) space of information. On the Net, you find computers -- on the Web, you find document, sounds, videos,…. information. On the Net, the connections are cables between computers; on the Web, connections are hypertext links…"
   ***Sir Tim Berners-Lee***
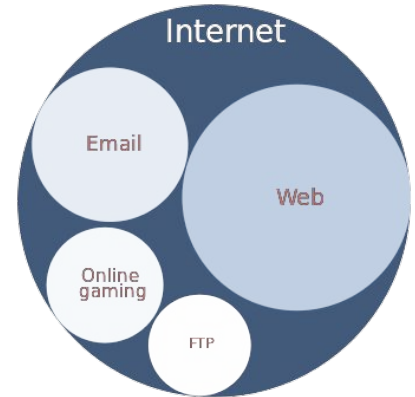
The World Wide Web

○ **Origins:** 1963: concept of hypertext as "nonsequential writing"

○ **WWW invented by Tim Berners-Lee**
The invention of the WWW is attributed to the British **Tim Berners-Lee,** who, along with the Belgian Robert Cailliau, published a proposal in **1990** for a hypertext system while both were working at CERN in Switzerland.

1. Implemented the idea of hypertext
2. Created the World Wide Web
3. Gave the software away for free
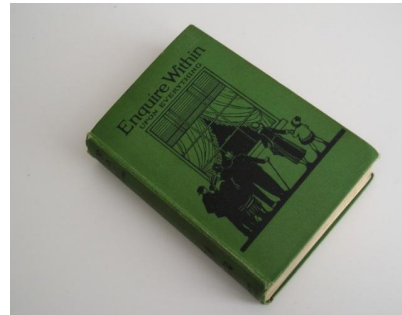
This growth was very much facilitated by the decision of CERN to not patent the work and ideas done by its employee and instead left the web protocols and code-base royalty free.

1994: Berners-Lee helps found the **World Wide Web Consortium** (W3C), the international standards organization that oversees the growth of the web.
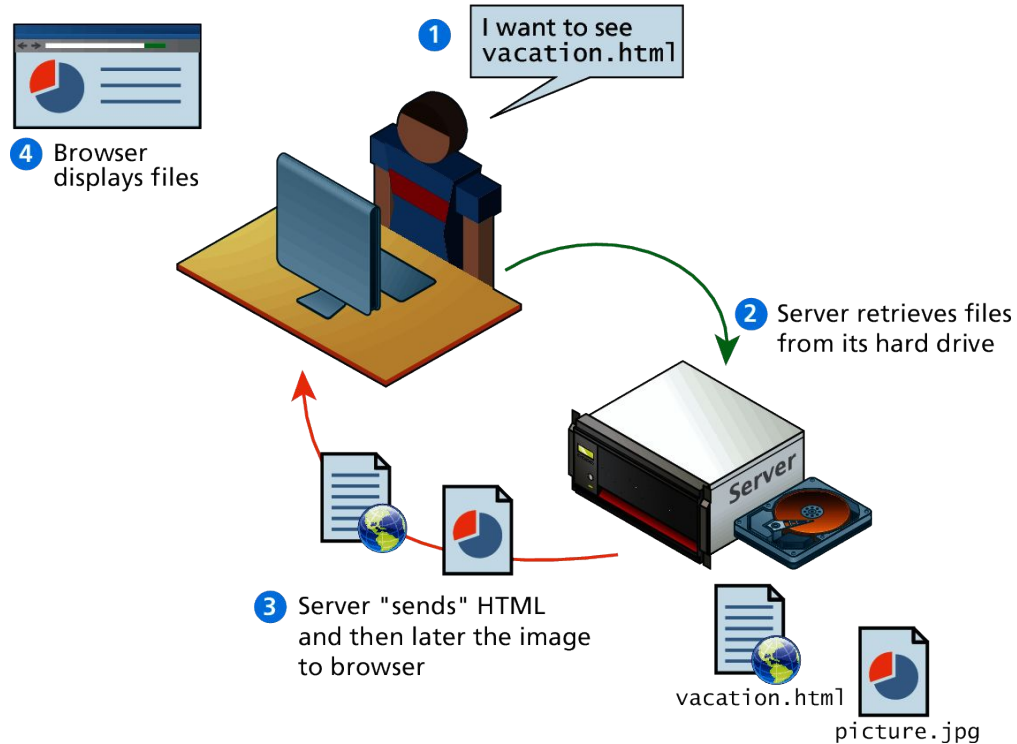
Major Components of the Web

1. **URL** (uniform resource locator)
    a unique address to identify a resource on the Web

2. **HTTP**: hypertext transfer protocol
    a set of rules than enable a client (your local computer) to communicate with a server (a remote computer)

3. **A web server**
    A program that resides on the server (the term server can refer to both, the machine and the software that resides on it and is responsible for handling client requests)

4. **A web browser**
    A program that resides on the client, is capable of making requests to the server based on the provided URL, and then displays the HTML it receives from the server.

5. **HTML**: hypertext markup language
    The markup language used to describe the content of a web page

How the Web works: Client-Server Model

How web pages are delivered to your browser screen:
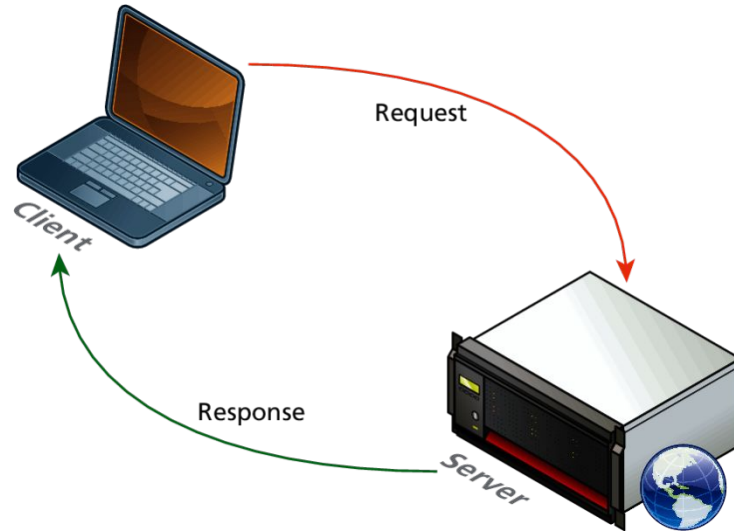
Static Web Sites: web files <u>located on</u> the server

# Dynamic Web Sites: files <u>generated by</u> the server

1 I want to see `vacation.php`

2 Server recognizes that it must run a dynamic script that is on its hard drive.

3 Server executes or interprets the script.

`vacation.php`

4 Scripts "outputs" HTML

5 Server "sends" generated HTML and the image file to user.

6 Browser displays files

First Webpage: 1991

http://info.cern.ch/hypertext/WWW/TheProject.html
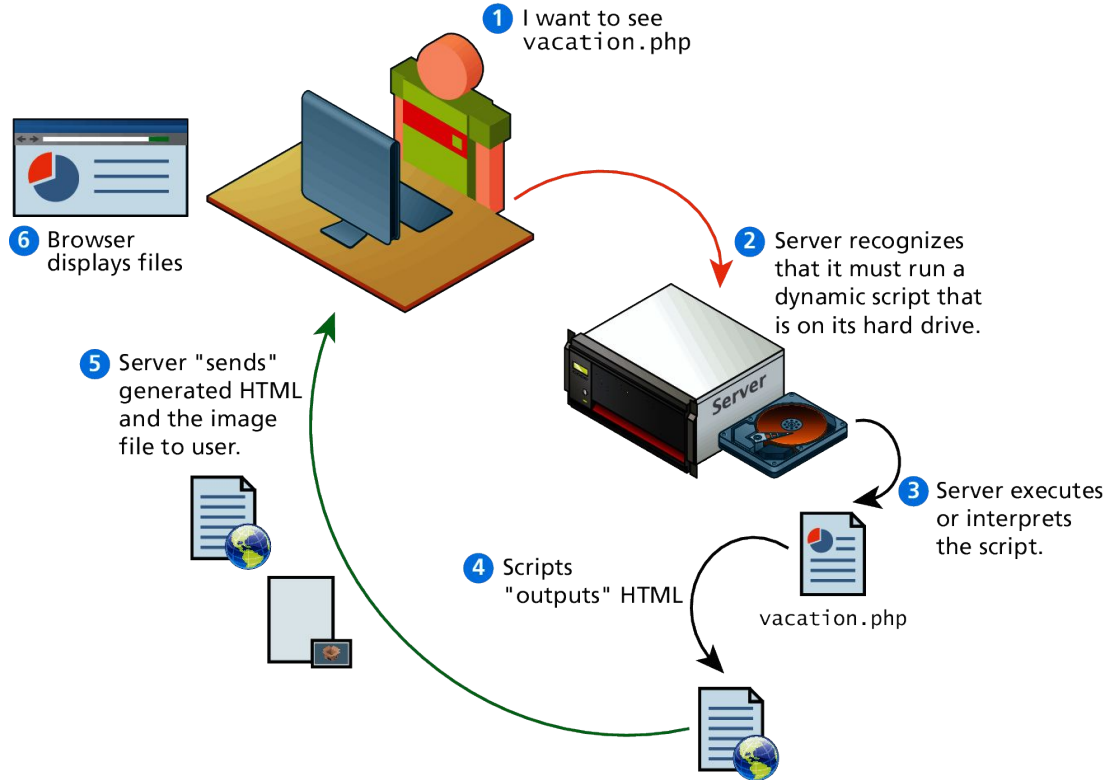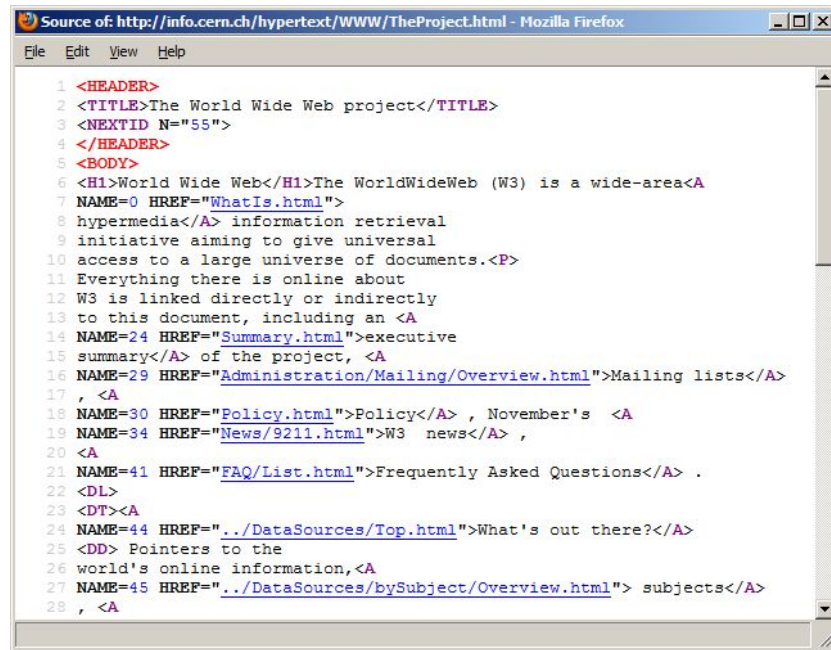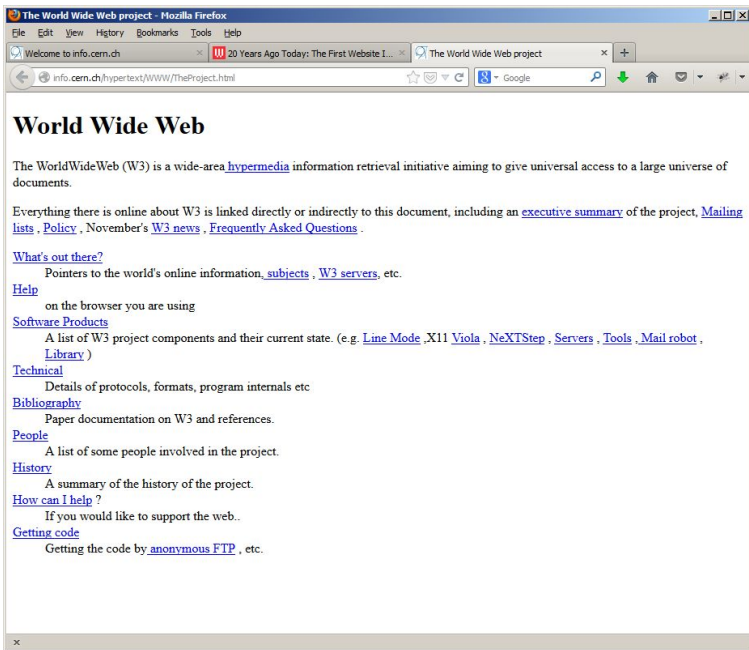
'Ancient" web pages

The very first browser: Mosaic (1993)
(by Mark Andreessen and Eric Bina at U of Illinois)
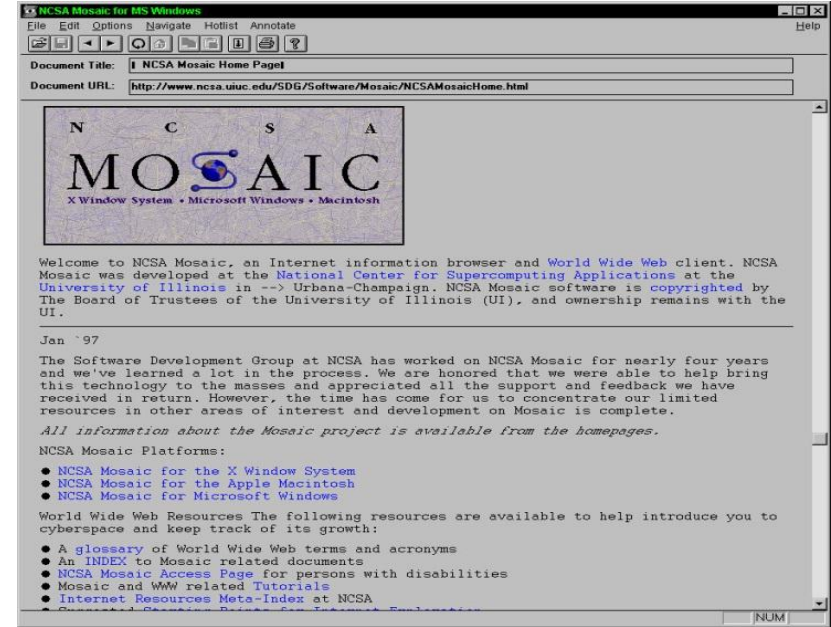
'Ancient" web pages
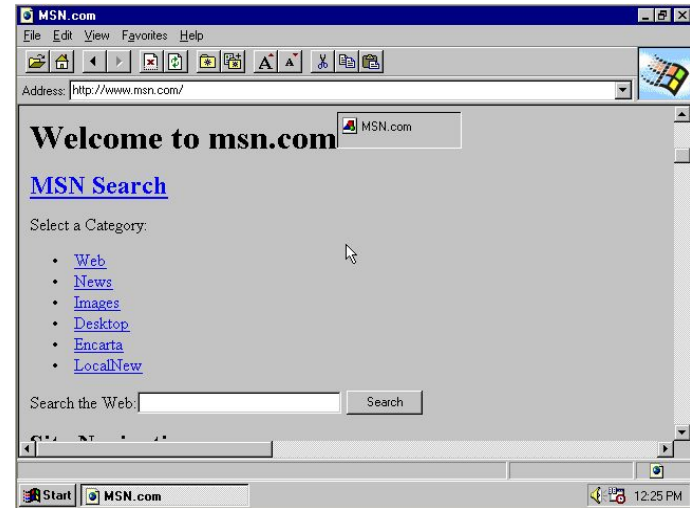
'Ancient" web pages
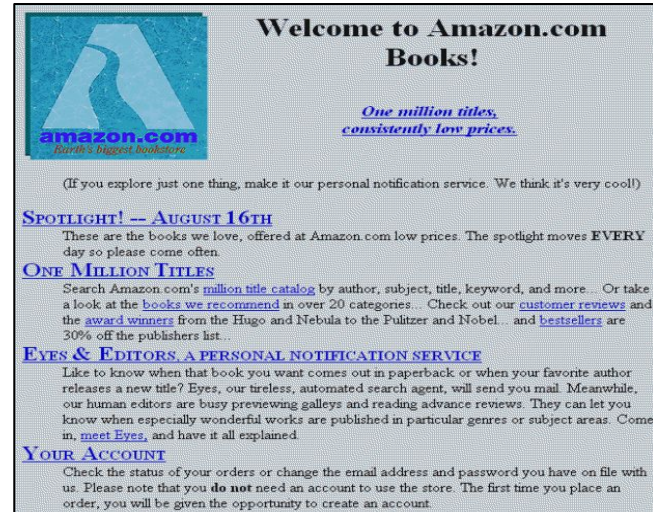
Our "tech" focus

- **HTML** (**H**yper**t**ext **M**arkup **L**anguage) for structure
  - text, lists, tables, forms, images links, etc…

```
<p>I am a paragraph!
```

- **CSS** (**C**ascading **S**tyle **S**heets) for presentation
  - format, layout, font size, font face, border width, background color, etc…

```
p {
    color: gray;
    font-weight: bold;
}
```

On to building websites!

- What is a web page?
  - It's just a plain text file!
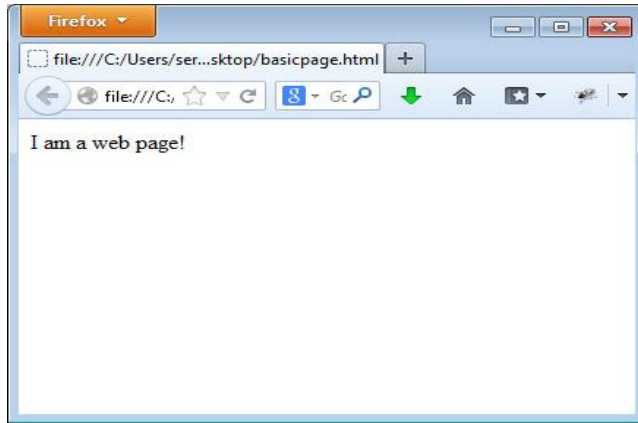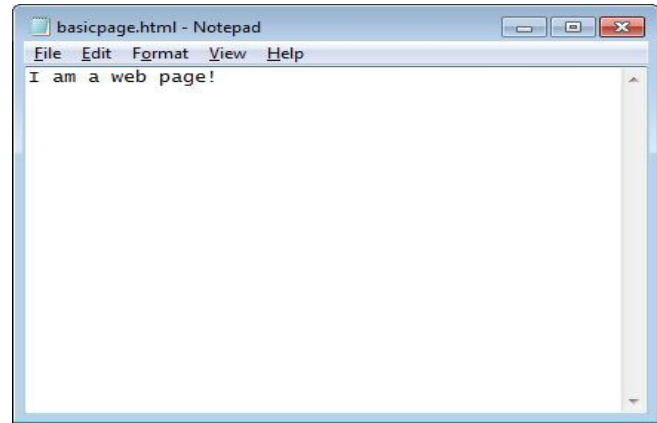
How to Create Web Pages

You can create a web page using any text editor
(Notepad, Notepad++, TextEdit, TextWrangler, Brackets, etc…)

Do NOT use a word processor (Microsoft Word)

Do select plain text format (NOT rich text format)

How to Create Web Pages
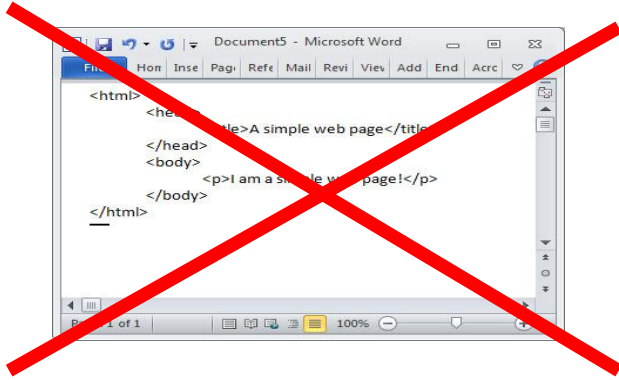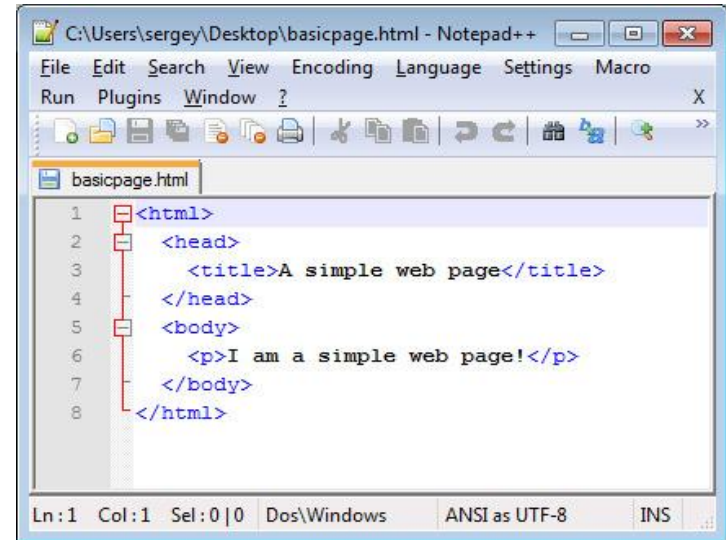
Never, use a word processor (or rich text format in an editor)!
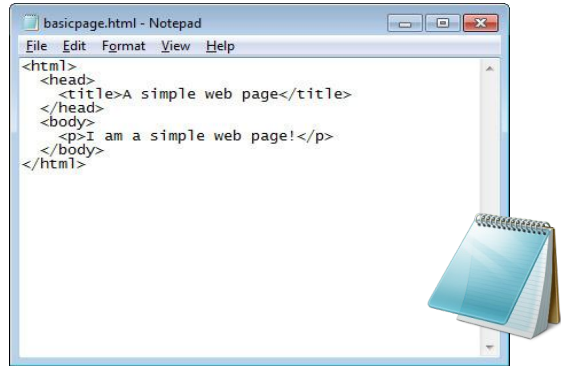
Notepad is a very basic choice: it will get the job done, but you can use something much better

Editing Web Pages

A much better choice: Notepad++
(or any other text editor – most will support HTML)

Internet & WWW

Exercise: On to building web pages!

Exercise Part 1: Create a web page

1. Create new folder (any name OK)
2. In this folder, create a blank text file: index.html
   (make sure you did not create test.html.txt)
3. Open your file in Notepad++
4. Add some content (feel free to add plain text, or copy the HTML from the example used in class)
5. Save the file and open it in Firefox or Chrome or Safari or any other Internet browser
6. Congratulations - you have a web page!
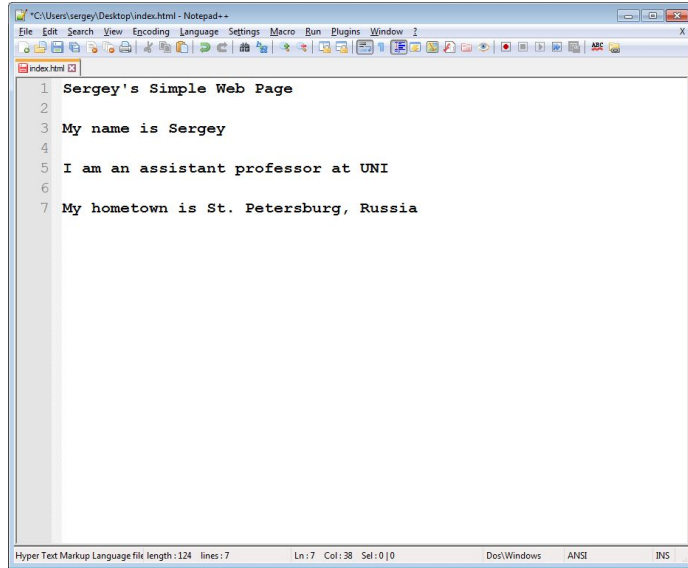
Let's make a basic web page
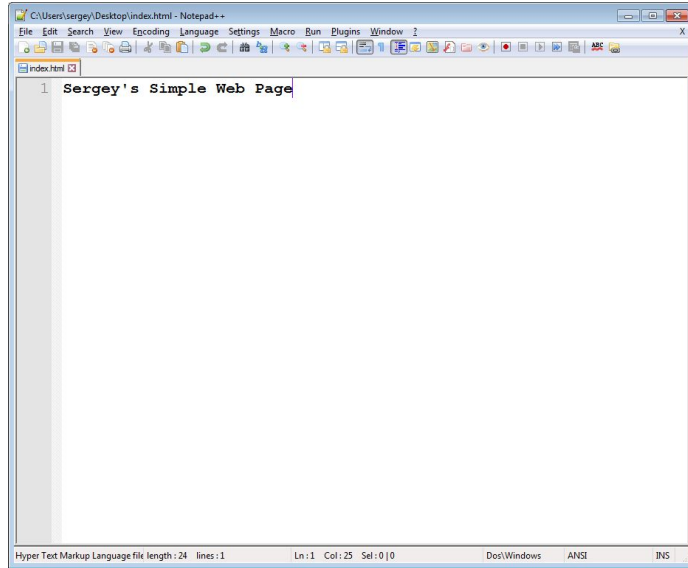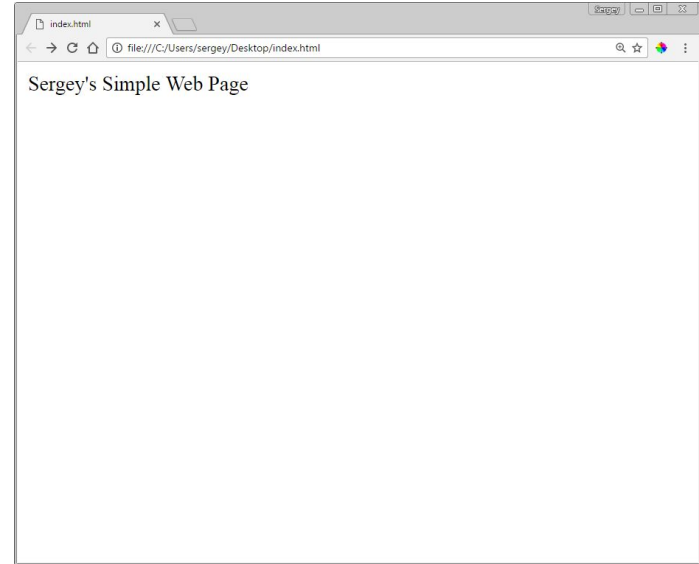
Now add more text
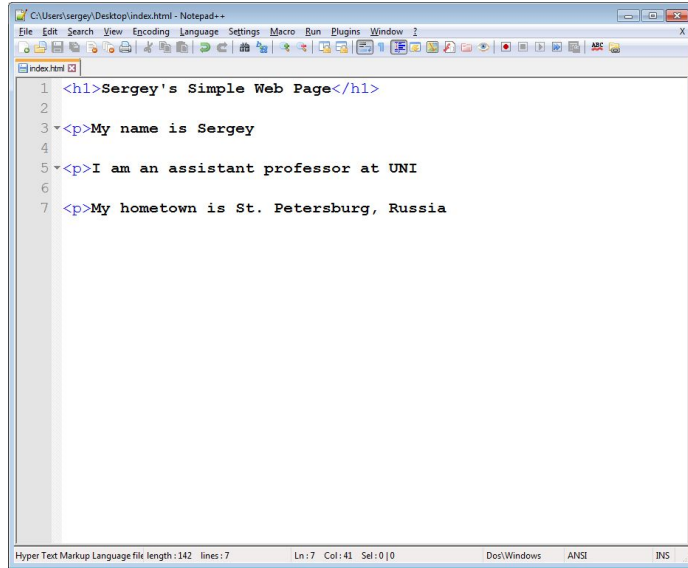
Sergey's Simple Web Page

My name is Sergey

I am an assistant professor at UNI

My hometown is St. Petersburg, Russia

=

Sergey's Simple Web Page My name is Sergey I am an assistant professor at UNI My hometown is St. Petersburg, Russia
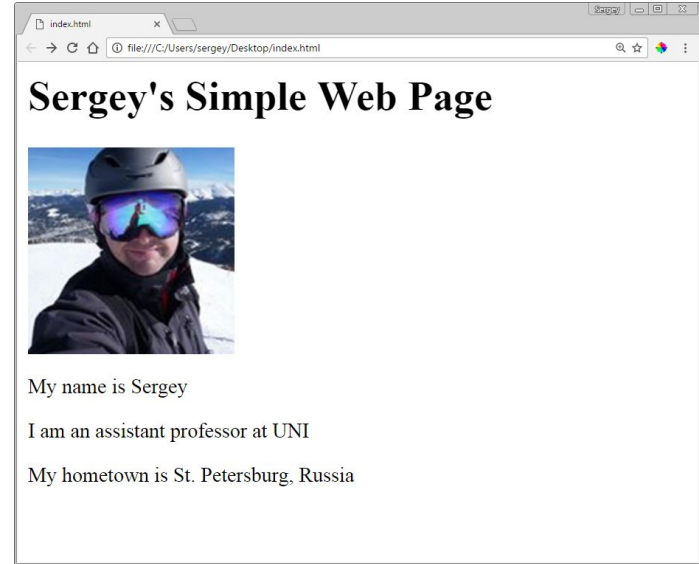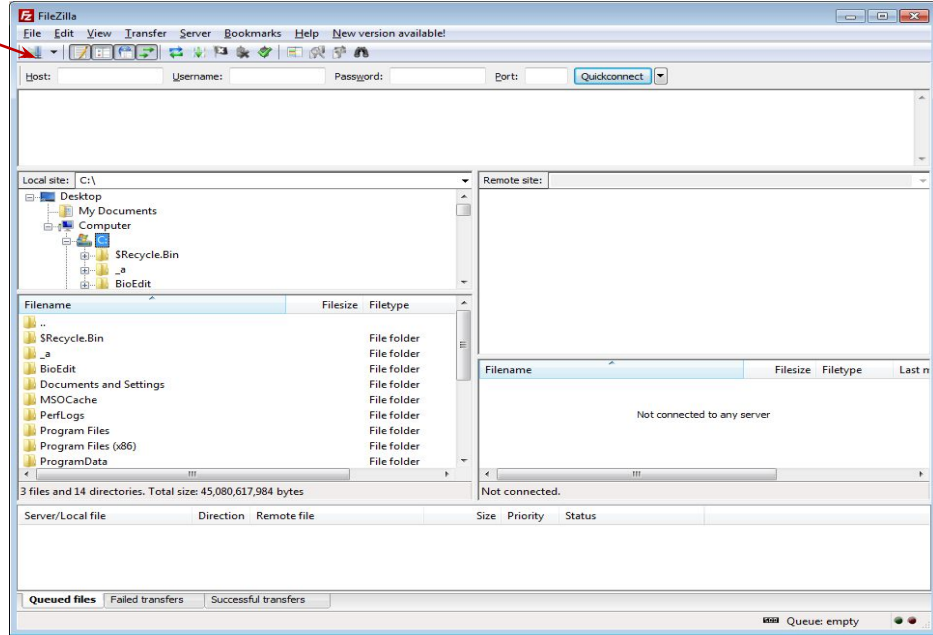
Now add some formatting

=

..And a picture!

Exercise Part 2: Publish your web page

- To view your web page online, you need to upload your files to a web server - for which you need a special program
- I recommend WinSCP (for Windows) or Cyberduck (for Macs)
- In class: we have to use Filezilla
  Do NOT use at home (may come with adware)
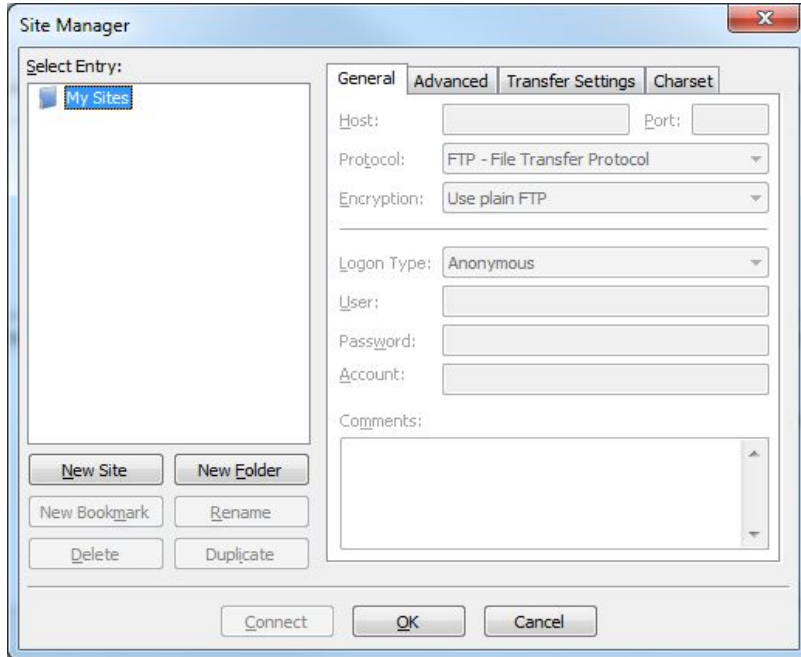- Configuration settings are the same for any such program

Configuring Filezilla
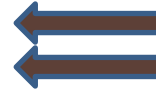
Click here to access Site Manager

Configuring Filezilla

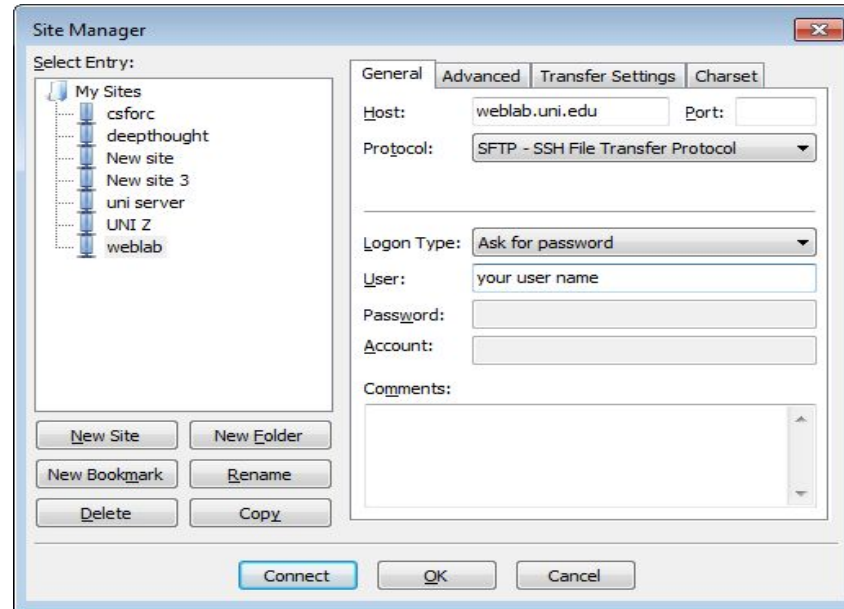You need to fill out:

Host
Protocol

Logon Type
User
(your UNI username)

Configuring Filezilla
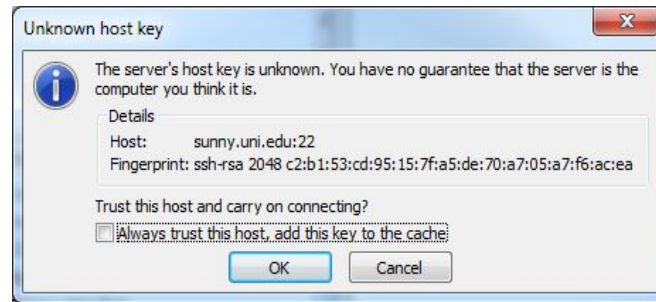

Now click **Connect**
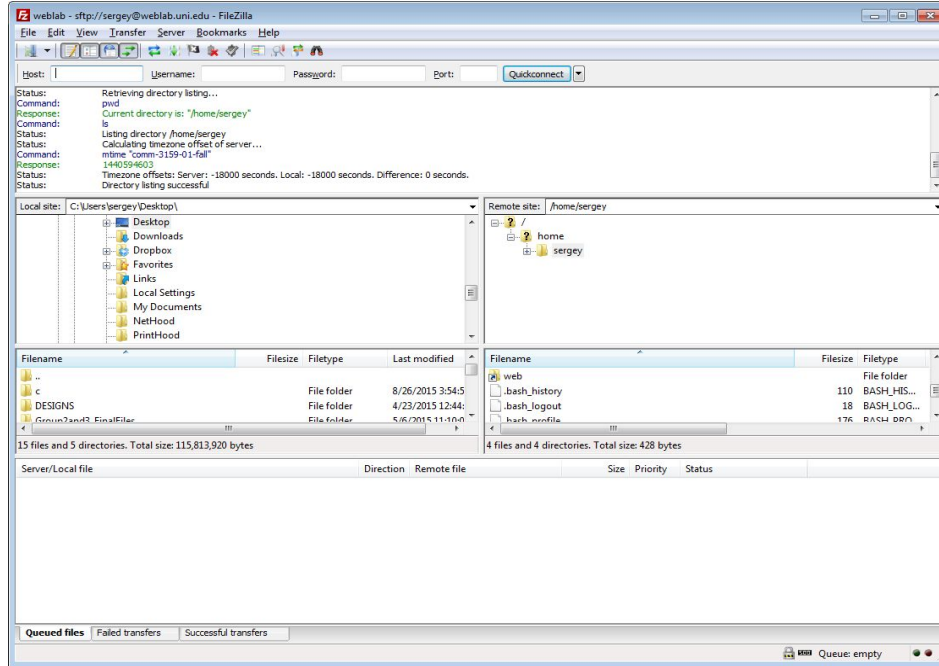
Using Filezilla

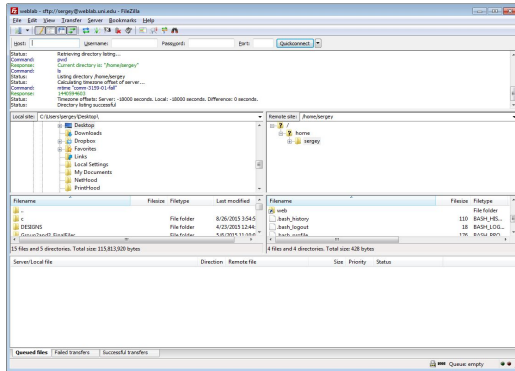Type in your CatID password

Using Filezilla

Just click OK

Using Filezilla

And we're in!

Using Filezilla

- The left part of the screen is your **local computer**
- The right side of the screen is the **remote server**
- Don't mix them up! ☺
- To upload a file from your computer to the server, simply drag and drop the file icon to the server
- To download a file to your computer from the server, drag and drop the file from the server to your computer
- Make sure you are **in the right directories** on both, your computer and the server!

Using Filezilla

Home vs Web directory

- When you log into weblab.uni.edu you will be placed in your home directory *(for example, /home/johnsnow)*.
- Files created in your home directory are private and only accessible by you (and your instructor).
- You will notice that your home directory contains a sub-directory called *web*. This is where you should place html files that you would like to be accessible from your web url (*http://weblab.uni.edu/johnsnow*).

Example: /home/johnsnow/web/index.html is publicly viewable at http://weblab.uni.edu/johnsnow/index.html

Now try and upload our simple web page + the image you used

Congratulations – You are online!