

# *Full Stack Developer*

## *FSD-10*

*Foundations of Web Development*

*420-WA5-AB*

*May 18, 2023*

# Agenda – Class 3

Agenda:

1. Review
2. Concepts – How the Internet Works
3. Operating Systems Concepts and UI
4. Class Exercise 2
5. Exit Quiz

# Review

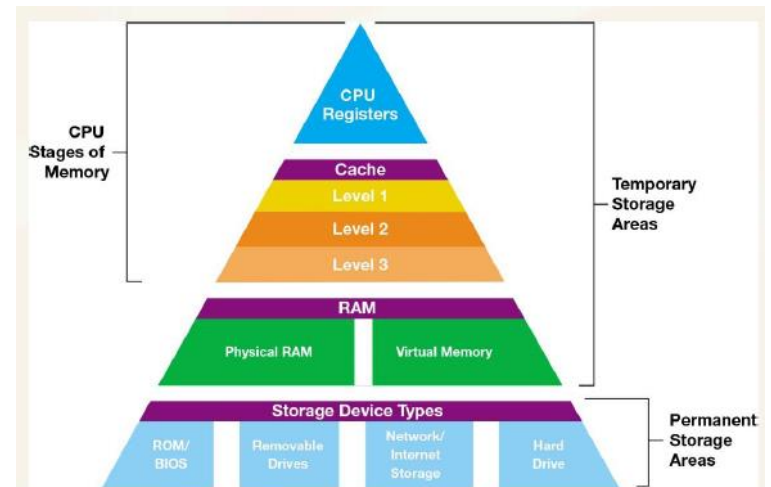
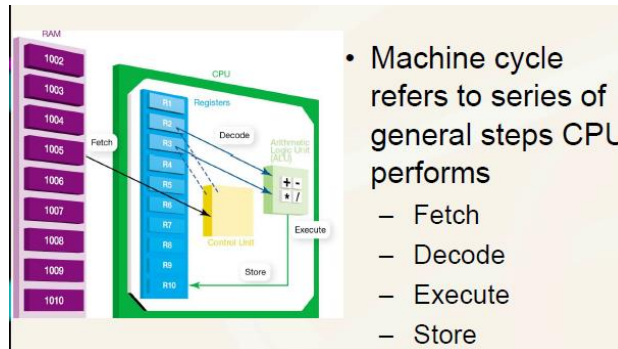
## Lea - Course Documents – Class2\_Under\_The\_Hood Bits and Bytes

$2^3$ 8s place	$2^2$ 4s place	$2^1$ 2s place	$2^0$ 1s place
1	0	1	1

ASCII CODE	REPRESENTS THIS SYMBOL	ASCII CODE	REPRESENTS THIS SYMBOL
01000001	A	01100001	a
01000010	B	01100010	b
01000011	C	01100011	c

DECIMAL NUMBER	BINARY VALUE	HEXADECIMAL VALUE
00	0000	00
01	0001	01
02	0010	02
03	0011	03
04	0100	04
05	0101	05
06	0110	06
07	0111	07
08	1000	08

## CPU



# Review – MyAcronyms Results

- ❖ Class Activity 1 will be graded as Class Exercise 1 worth 5% of the grade for the course.

- ❖ Checklist:

- ☐ Submitted the MyAcronyms file on Lea
- ☐ Submitted the MyAcronyms file on Moodle
- ☐ Added your 3 Acronym entries to the glossary on Moodle for Class 1

Fathy Dutton

11. UI – User Interface



User interface (UI) design or user interface engineering is the design of user interfaces for machines and software, such as computers, home appliances, mobile devices, and other electronic devices, with the focus on maximizing usability and the user experience. In computer or software design, user interface (UI) design primarily focuses on information architecture. It is the process of building interfaces that clearly communicates to the user what's important. UI design refers to graphical user interfaces and other forms of interface design. The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals (user-centered design).

[https://en.wikipedia.org/wiki/User\\_interface\\_design](https://en.wikipedia.org/wiki/User_interface_design)

# Review

## 3. Lea - Course Documents – Class2\_HowTheInternetWorks

### **All about how the Internet works**

1. Packets explained (3:21)  
<https://www.youtube.com/watch?v=Gfoc3Cxgnpk>
2. What is the Internet - Vint Cerf – History (3 :44)  
<https://www.youtube.com/watch?v=Dxcc6ycZ73M>
3. Wires, Cables, WiFi (6:40)  
<https://youtu.be/ZhEf7e4kopM>
4. DNS (6:44)  
<https://www.youtube.com/watch?v=5o8CwafCxnU>
5. How Search Works (5:12)  
[https://www.youtube.com/watch?v=LVV\\_93mBfSU](https://www.youtube.com/watch?v=LVV_93mBfSU)

# Review

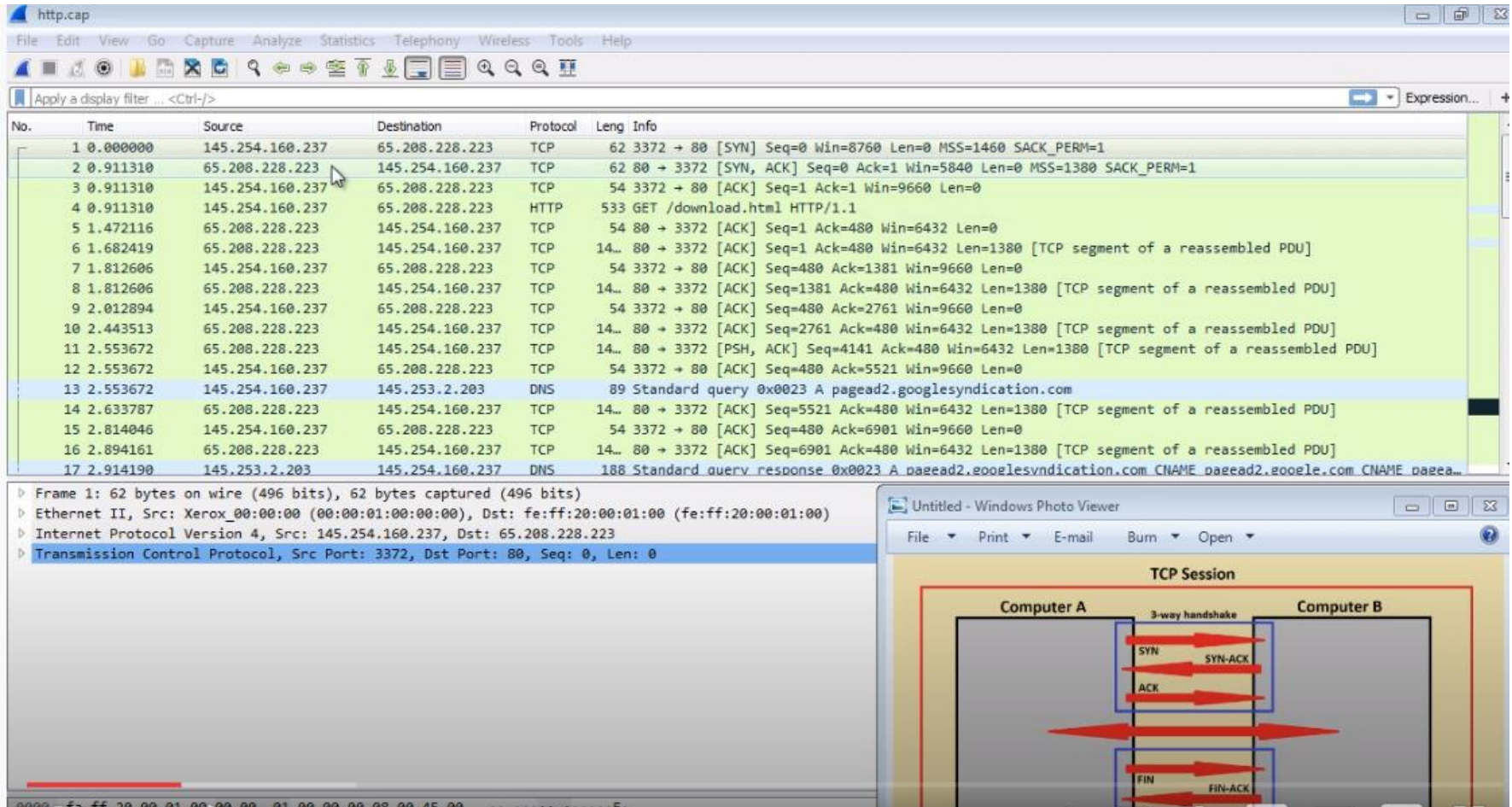
Another video:

How Computers Work: Binary & Data

<https://www.youtube.com/watch?v=USCBCmwMCDA>

# Review

## 4. Packet Tracing



The image displays a Wireshark packet capture window titled 'http.cap'. The main pane shows a list of 17 network packets. The selected packet (No. 17) is a DNS Standard query response from 145.253.2.203 to 145.254.160.237. The packet details pane on the left shows the hierarchy: Frame 1: 62 bytes on wire (496 bits), 62 bytes captured (496 bits) on Ethernet II, Src: Xerox\_00:00:00 (00:00:01:00:00:00), Dst: fe:ff:20:00:01:00 (fe:ff:20:00:01:00), Internet Protocol Version 4, Src: 145.254.160.237, Dst: 65.208.228.223, and Transmission Control Protocol, Src Port: 3372, Dst Port: 80, Seq: 0, Len: 0.

The packet list table is as follows:

No.	Time	Source	Destination	Protocol	Leng	Info
1	0.000000	145.254.160.237	65.208.228.223	TCP	62	3372 → 80 [SYN] Seq=0 Win=8760 Len=0 MSS=1460 SACK_PERM=1
2	0.911310	65.208.228.223	145.254.160.237	TCP	62	80 → 3372 [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1380 SACK_PERM=1
3	0.911310	145.254.160.237	65.208.228.223	TCP	54	3372 → 80 [ACK] Seq=1 Ack=1 Win=9660 Len=0
4	0.911310	145.254.160.237	65.208.228.223	HTTP	533	GET /download.html HTTP/1.1
5	1.472116	65.208.228.223	145.254.160.237	TCP	54	80 → 3372 [ACK] Seq=1 Ack=480 Win=6432 Len=0
6	1.682419	65.208.228.223	145.254.160.237	TCP	14...	80 → 3372 [ACK] Seq=1 Ack=480 Win=6432 Len=1380 [TCP segment of a reassembled PDU]
7	1.812606	145.254.160.237	65.208.228.223	TCP	54	3372 → 80 [ACK] Seq=480 Ack=1381 Win=9660 Len=0
8	1.812606	65.208.228.223	145.254.160.237	TCP	14...	80 → 3372 [ACK] Seq=1381 Ack=480 Win=6432 Len=1380 [TCP segment of a reassembled PDU]
9	2.012894	145.254.160.237	65.208.228.223	TCP	54	3372 → 80 [ACK] Seq=480 Ack=2761 Win=9660 Len=0
10	2.443513	65.208.228.223	145.254.160.237	TCP	14...	80 → 3372 [ACK] Seq=2761 Ack=480 Win=6432 Len=1380 [TCP segment of a reassembled PDU]
11	2.553672	65.208.228.223	145.254.160.237	TCP	14...	80 → 3372 [PSH, ACK] Seq=4141 Ack=480 Win=6432 Len=1380 [TCP segment of a reassembled PDU]
12	2.553672	145.254.160.237	65.208.228.223	TCP	54	3372 → 80 [ACK] Seq=480 Ack=5521 Win=9660 Len=0
13	2.553672	145.254.160.237	145.253.2.203	DNS	89	Standard query 0x0023 A pagead2.googlesyndication.com
14	2.633787	65.208.228.223	145.254.160.237	TCP	14...	80 → 3372 [ACK] Seq=5521 Ack=480 Win=6432 Len=1380 [TCP segment of a reassembled PDU]
15	2.814046	145.254.160.237	65.208.228.223	TCP	54	3372 → 80 [ACK] Seq=480 Ack=6901 Win=9660 Len=0
16	2.894161	65.208.228.223	145.254.160.237	TCP	14...	80 → 3372 [ACK] Seq=6901 Ack=480 Win=6432 Len=1380 [TCP segment of a reassembled PDU]
17	2.914190	145.253.2.203	145.254.160.237	DNS	188	Standard query response 0x0023 A pagead2.googlesyndication.com CNAME pagead2.googlesyndication.com CNAME pagead2.googlesyndication.com

Below the packet list, a diagram titled 'TCP Session' illustrates the communication between Computer A and Computer B. The diagram shows a 3-way handshake: Computer A sends SYN, Computer B responds with SYN-ACK, and Computer A responds with ACK. Below this, a large red arrow indicates data transfer from Computer A to Computer B. At the bottom, Computer A sends FIN, and Computer B responds with FIN-ACK.

Networking Tutorial for Beginners - 03 - The packet trace  
[https://www.youtube.com/watch?v=BnJ5KVA\\_i1g](https://www.youtube.com/watch?v=BnJ5KVA_i1g)

# Concepts - How the Internet Works

## Packet Tracing

## Wireshark packets

No.	Time	Source	Destination	Protocol	Length	Info
12	0.222347	192.168.0.1	192.168.0.2	TCP	74	55951 → 22 [SYN] Seq=0
4	0.069237	192.168.0.2	192.168.0.1	Socks	71	Version: 5
6	0.212734	192.168.0.1	192.168.0.2	Socks	68	Version: 5
8	0.213561	192.168.0.2	192.168.0.1	Socks	77	Version: 5
10	0.216805	192.168.0.1	192.168.0.2	Socks	68	Version: 5
11	0.217095	192.168.0.2	192.168.0.1	Socks	76	Version: 5
15	0.222837	192.168.0.1	192.168.0.2	Socks	76	Version: 5

▶ Frame 8: 77 bytes on wire (616 bits), 77 bytes captured (616 bits)  
▶ Ethernet II, Src: PcsCompu\_ab:cb:63 (08:00:27:ab:cb:63), Dst: PcsCompu\_ad:b6:11 (08:00:27:  
▶ Internet Protocol Version 4, Src: 192.168.0.2, Dst: 192.168.0.1  
▶ Transmission Control Protocol, Src Port: 55951, Dst Port: 1080, Seq: 6, Ack: 3, Len: 11  
▶ Socks Protocol

[Version: 5]

Subnegotiation Version: 1

User name: bob

Password: alice

InfosecMatter

0000	08 00 27 ad b6 11 08 00	27 ab cb 63 08 00 45 00	..'. .... '...c..E..
0010	00 3f 8b 5f 40 00 40 06	2e 06 c0 a8 00 02 c0 a8	..?_@.@. ....
0020	00 01 da 8f 04 38 ae 49	ad 96 47 6e 1a 01 80 18	.....8.I ..Gn....
0030	03 91 10 54 00 00 01 01	08 0a 00 0b 27 00 00 0b	...T.... ....'....
833 x 531	08 fc 01 03 62 6f 62 05	61 6c 69 63 65	(...bob..alice



# Concepts – How the Internet Works – Class Discussion

Ask Google - What is my IP?

Trace a route to yahoo.com:

Use the Windows Command Prompt - Cmd

Tracert yahoo.com

Exit (to exit Windows Command)

```
n>tracert yahoo.com
```

```
Tracing route to yahoo.com [98.137.11.163]  
over a maximum of 30 hops:
```

```
 3    19 ms    16 ms    44 ms  10.170.192.186  
 4    31 ms    24 ms    39 ms  216.113.126.102  
 5    33 ms    25 ms    37 ms  de-cix.pat2.nyc.yahoo.com [206.82.104.78]  
 6    33 ms    40 ms    72 ms  ae-7.pat1.dcz.yahoo.com [209.191.64.157]  
 7    55 ms    52 ms    42 ms  et-8-0-0.pat1.che.yahoo.com [209.191.64.50]  
 8    70 ms    71 ms    66 ms  ae-8.pat2.dnx.yahoo.com [209.191.64.75]  
 9   102 ms    91 ms    89 ms  ae-8.pat1.gqb.yahoo.com [209.191.64.238]  
10    92 ms    91 ms    89 ms  et-19-1-0.msr2.gq1.yahoo.com [66.196.67.111]  
11    94 ms    96 ms    98 ms  et-18-0-0.clr2-a-gdc.gq2.yahoo.com [98.136.158.219]  
12    90 ms    88 ms    88 ms  lo0.fab3-1-gdc.gq2.yahoo.com [98.136.159.245]  
13   105 ms    98 ms   107 ms  usw2-1-lbc.gq2.yahoo.com [98.136.158.193]  
14    93 ms   112 ms    92 ms  yahoo.com [98.137.11.163]
```

```
Trace complete.
```

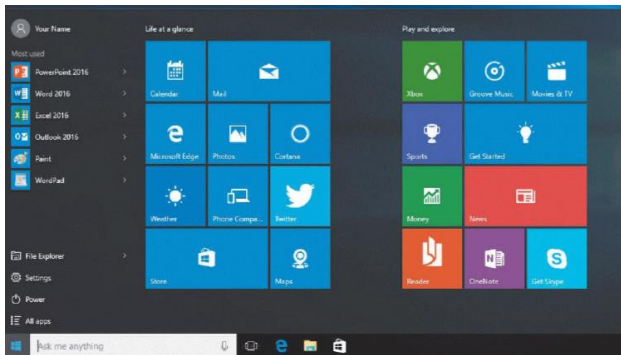
# Operating Systems Concepts

- Client OS
- Server OS
- Cloud computing – Azure, O365, AWS
- Virtualization – VMWare, Oracle Virtual Box, Hyper-V
- Cloud storage – Google Drive, One Drive

# Operating Systems UI

- User interface (UI) are controls that let you interact with Windows 10
- Tiles, live tiles
- Quick Access toolbar
- Files and folders - path – desktop – documents - Users
- Create and save a folders and files – docx, txt, pdf, zip
- Change file and folder views
- Open, edit, and save files
- Copy vs move
- Cortana

## Common dialog box controls

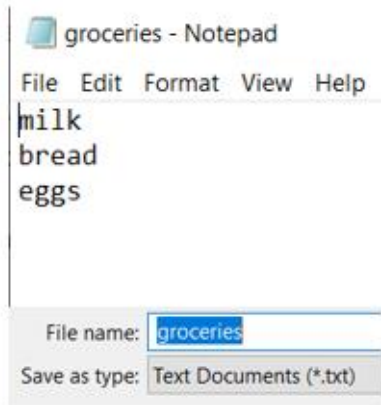


element	example	description
Text box	<input type="text" value="1 - 27"/>	A box in which you type text or numbers
Spin box	<input type="spin" value="1"/>	A box with up and down arrows; you can click or tap arrows or type to increase or decrease value
Option button	<input type="radio"/>	A small circle you click or tap to select the option; only one in a set can be selected at once
Check box	<input type="checkbox"/>	A small box that turns an option on when checked or off when unchecked; more than one in a set can be selected at once
List box	<div>DAY 1001 MUSIC 01 MUSIC 02 MUSIC 03</div>	A box that lets you select from a list of options
Button	<input type="button" value="Save"/>	A button you click or tap to issue a command

# Class Exercise 2 – Part I

1. Create a folder named wa5
2. In the wa5 folder, create 2 new folders named  
html      shopping
3. In the html folder, create 1 new folder named  
images

4. In the shopping folder:



- a. Create a groceries file using Notepad as shown
- b. Add your 2 initials on a line before milk.
- c. Save the file
- d. Start Word, then open the groceries txt file in Word
- e. Save the groceries file as a Word Document
- f. Save the groceries file as a PDF
- g. View the properties to see the number of bytes stored for each of these file types
- h. View the properties to see which application is associated with each of these file types

## Class Exercise 2 – Part 2

1. Using a text editor such as Notepad++, create a html file named index.html in the html folder. Use the w3schools HTML introduction to start your code.

The file may contain any html based on the learning from the Beginning HTML & CSS e-Book chapter 1 or from w3schools. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>My First Web Page</title>
</head>
<body>
  <h1>My First Heading</h1>
  <p>My first paragraph</p>
</body>
</html>
```

## Class Exercise 2 – Part 2

2. In the images folder, place a small jpg named mypic.jpg with a size less than 100KB.
3. Use this image on your webpage, using the following code but replace the height and width values with your image properties.

```

```

4. View your webpage in a browser.
5. Validate your html file using the HTML validator, <https://validator.w3.org>
6. Correct/debug any errors

# Class Exercise 2

Work on Class Exercise 2 in your Meeting Room.

Each student is working on their own webpage, but you may assist each other with debugging as needed.

Use the following Teams of 3 for the meeting rooms.

Location	Teams of 3		
Meeting Room 01	1	8	15
Meeting Room 02	2	9	16
Meeting Room 03	3	10	17
Meeting Room 04	4	11	18
Meeting Room 05	5	12	19
Meeting Room 06	6	13	20
Meeting Room 07	7	14	21
Starts the meeting in the Meeting Room			

## Class Exercise 2

Select all of the files in the **wa5** folder

– right click – send to – compressed (zipped) folder

Rename the newly created zip file ex2.zip

Submit your ex2.zip file to the Class Exercise 2 dropbox in the Assignments section on Lea.



# Exit Quiz

## ❖ Exit Quiz

<https://b.socrative.com/login/student/>

Room name 6118

Question 3: Using the ASCII code table, what are the first two letters of your first name in hexadecimal? *For example: The name Marie would be 0x4D61*

3 of 3

Please answer the teacher's question.

Enter Answer Here

SUBMIT ANSWER