Notes

• Office hours are back in EPS 348
  • Door is sometimes locked, if so, just knock (loudly) or email me

• Midterms/Proposals Graded
  • I will try to figure out “Ferpa Friendly” way to give back your exams
  • In the meantime, you can come get yours (if you choose to do so) during office hours

• Recitations (Today/Thursday)
  • Hands on: Roberts 208 – Overview of software development strategies (i.e. how teams of software engineers work together. Waterfall development vs Agile methods.
  • Discussion: Roberts 412
A few notes on Proposals

• If you are in a group – in the future, please only submit one document on D2L.

• Some concerns have come up about similar topics between groups. Yes, there are a few overlaps – repeated topics are fine.

• The number one feedback I gave: this project has to relate to this course in some way. If you are coding, you could explain how you are going to protect your intellectual property.
Midterm

• Speaking of the midterm, how was it?
  • Was it what you expected?
  • What about the format?

• A common mistake was what FSF stood for, there was a hint from question 1 in the Stallman description

• Why did everybody guess “Wabbit” for “What virus from 1971 printed “I’m the [omitted], catch me if you can!”?”
Internet – a history

**Telegraph 1843**

- Congress gave $30,000 to Samuel Morse to build 40 mile telegraph line between Washington D.C and Baltimore, Maryland.
- Up to this point, messages had to be hand delivered
- On May 1, Morse sent a bible verse from US Capital to partner in Baltimore “What hath God Wrought?”
Internet – a history

Telephone 1876

• Alexander Graham Bell wanted to improve issues with the telegraph, including the fact that telegraphs can only transmit one message over a wire at a time.

• Suggested a “harmonic or musical telegraph” that transmitted different sound frequency to each message.

• From here, realized he could transmit human voice. Him and Thomas Watson transmitted speech electronically in 1876.

• Telephones took off in 1890’s, after Bell’s first patent expired.

• Note: Privacy was a concern even then – telephone men responsible for operating systems were accused of eavesdropping on sensitive conversations.
Internet – a history

Radio 1895 and Television 1927 (The original wireless)
• Guglielmo Marconi successfully transmitted radio waves in Italy.
• Marketed as “a superior way to transmit telegraph messages”

• Philo Farnsworth made first successful transmission in 1927, introduced to the public at the world’s fair in 1939.
Internet – a history

Remote Computing 1937

Bell Labs (remember them?) researchers George Stibitz and Samuel Williams built a system which allowed them to perform complex number calculations over the telephone.

Stibitz demonstrated to American Mathematical Society by using teletype machine to enter numbers, send to calculator 250 miles away. Once calculator was done, it sent the answer back to the teletype machine, which then printed the answer.
Internet – a history

ARPA

• DoD created the Advanced Research Projects Agency (ARPA) in response to the Soviet Union’s launch of Sputnik (remember the space race?)
• The agency’s first director, Lidlicker, imagined a “Galactic Network”, or a global computer network that could exchange programs and data.
• This vision did not align with computer manufacturers, who thought of computers as number-crunching machines
• Also did not work well over existing telephone lines
Internet – a history

ARPANET 1967

• Fear of a nuclear attack led ARPA to commission ARPANET
• Built on a concept that the lose of any computer or communication links would be a devastating loss, so networks should be decentralized.
• 1972, Ray Tomlinson wrote software allowing messages to be sent and received by ARPANET computers (Birth of Email)
• The next step, ARPA researchers thought, would be connecting ARPANET to other networks based on different designs.
• So, they created an internetworking architecture that allowed networks to inter connect (TCP/IP Protocol)
• Many consider this to be the Birth of the Internet – which happened on Jan 1, 1983
Internet – a history

NSFNET

• National Science Foundation (NSF) saw this networking as a potentially powerful tool for academia (universities), and so created TCP/IP-based network called NSFNET

• NSF encouraged universities to use network to work collaboratively, and also sell subscriptions (although it banned the use of commercial traffic)

• In April 1995, NSF stopped funding NSFNET, at which point commercial networking providers took over.
Internet – a history

Sweet Sweet Broadband

• Broadband was introduced and offered high-speed Internet (at least 10x faster than dial – up) and did not tie up phone lines
• Better yet, Fiber Optic networks are replacing copper networks
# Internet – a history

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<th>Country</th>
<th>Average Speed in Mbps</th>
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<td>24.6</td>
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<tr>
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<td>Hong Kong</td>
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<td>3</td>
<td>Switzerland</td>
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Source: Akamai
Internet

• What is the difference between internet and Internet?
The Internet

• On the physical aspect of the internet
Coming Up

• The Dark Net
• Internet of Things
• Net Neutrality
Questions Closing Remarks?

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