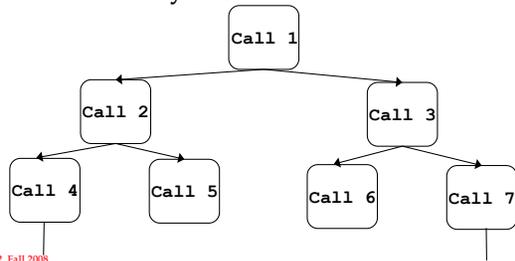


## Analyzing a phone tree

- 30 seconds per call, each person calls two.
  - When does person 7 know? Person 15?
  - Number of last person on fifth row?
  - When do they know?



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10.1

## When does person N get information?

- We're looking for a pattern
  - Solve the easy cases first, try to generalize
  - When does person 2, 4, 8, 16, 32, ... get info?
  - What about person 1, 3, 7, 15, ...?
- When you hear depends on when the person telling you heard
  - If you hear first, 30 seconds later, else...?
  - Are you first/second, left/right?
- What about person #27?
  - From 13, 6, 3, 1, answer?

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10.2

## Finding person one million

- 500,000 then 250,000 then 125,000 then 62,500, then
  - This way works, but it's time-consuming
  - What is 1,000,000 in base 2?
- Leverage the power and wisdom of crowds
  - Sometimes it works, sometimes ...
  - For test questions, close is good enough, that's what big-Oh is about:  $N$ ,  $N-1$ ,  $N+5$ , all the same

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10.3

## From IP to IP via copyright and patents

- Intellectual Property
    - What does this mean? Can we own it?
- when Jefferson and his fellow creatures of the Enlightenment designed the system that became American copyright law, their primary objective was assuring the widespread distribution of thought, not profit. Profit was the fuel that would carry ideas into the libraries and minds of their new republic. Libraries would purchase books, thus rewarding the authors for their work in assembling ideas; these ideas, otherwise "incapable of confinement," would then become freely available to the public. But what is the role of libraries in the absence of books? How does society now pay for the distribution of ideas if not by charging for the ideas themselves? [Economy of Ideas](#)

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10.4

## Copyright and Patent

- **In the US, patent law respects**
  - First to invent, not first to file
  - Lasts 20 years, but possible to extend
  - Doesn't stop people from using your invention
    - That's for licensing and the courts to decide
- **Copyright law**
  - Originally for 14 years + renewal
  - 75 years or life+50
  - 95/120 years or life+70

Wikipedia Copyright Extension

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10.5

## Open Source

- **Absolutely about copyright**
  - Copyright preserves legal rights on how to use
  - Creative Commons
  - Public Domain
  - Copyright infringement? DMCA?
- **Patents are more recent**
  - Software and business patents
  - Defensive patent portfolios
  - Patent trolls v non-practicing entity

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10.6

## Linux, LAMP, the web

- **Dominant webserver is open source, netcraft.com**
  - Apache is open source, what does this mean?
  - Where do we find different licenses? Who interprets these licenses?
- **Linux is open source, different license**
  - GPL now has different versions
  - From the web to Dreamworks to Google
- **MySQL is a database engine**
  - From open source to commercial licenses

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10.7

## Open Source

- **Why do some people love open source?**
- **Why do some people hate open source?**
- **Is this a left/right, Democrat/Republic, ... thing?**
- **Will software change the world?**
- **What about other legal issues, e.g., DMCA?**

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10.8