The Oracle of Bacon
Six Degrees of Kevin Bacon

• Link people to Kevin Bacon based on movies they have been in together
  Morgan Freeman was in Se7en with Brad Pitt
  Brad Pitt was in Sleepers with Kevin Bacon

• Morgan Freeman has a Bacon number of 2

• Who has a Bacon number of 4 or more?
Centers of the Hollywood Universe

• 739,979 people can be connected to Bacon
• Is he the center of the Hollywood Universe?
  – No!
  – Who is?
  – Who are other good centers?
  – What makes them good centers?
The Oracle of Bacon

- **Linking Engine:**
  - Is written in C
  - Stores all movie data in memory
  - Answers link, number, and center queries
  - Doesn’t actually use Oracle™
Inside the Linking Engine

- All three types of queries use breadth-first search
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Inside the Linking Engine

• Link Val Kilmer to Kevin Bacon
Inside the Linking Engine

• How good a center is Kevin Bacon?
  – Average everyone’s Bacon number
  – Currently 2.963, ranked 1222nd

• Who is exactly 2 hops away from Kevin Bacon?
  – This whole column
  – Currently 163,002 people
Caching

- Keep whole BFS trees for common queries
  - Takes about 4MB of memory each
- Perform 75-85% fewer BFS calculations
  - Faster website response time
Spel Cheking

- Oracle of Bacon users can’t spell
  - Dan Ackroyd → Dan Aykroyd
  - Mike Meyers → Mike Myers
  - Sally Fields → Sally Field
- Show everyone with an edit distance of 3 or fewer

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A little bit of history

- Craig Fass, Mike Ginelli, and Brian Turtle invented it as a drinking game at Albright College
- Brett Tjaden and Glenn Wasson put it on the web at UVA in 1995
- I have run it since 1999
  - Full rewrite, with caching and spell check
- Oracles of Baseball, TV stars, and corporate executives
Emails I get

• Journalists
• Actors and actress (and one porn star)
• “Help me write an Oracle of such-and-such”
• “Why isn’t so-and-so in your database?”
  = “I can’t spell”
  = “I don’t know the difference between actors and characters (and animals and muppets)”
• “Why do you link through documentaries?”
• “Please tell me who has a Bacon number of 8”