

AlphaGo

Zheng Mu

18%

35%

9%

23%

42%

Brief introduction

- Board game program
- Forth place on Go world ranking
- Handicap: handicap stones are placed to make the game equally challenging for both players
- Dan: level for professional players, 9 is the highest.

Deep Neural Network

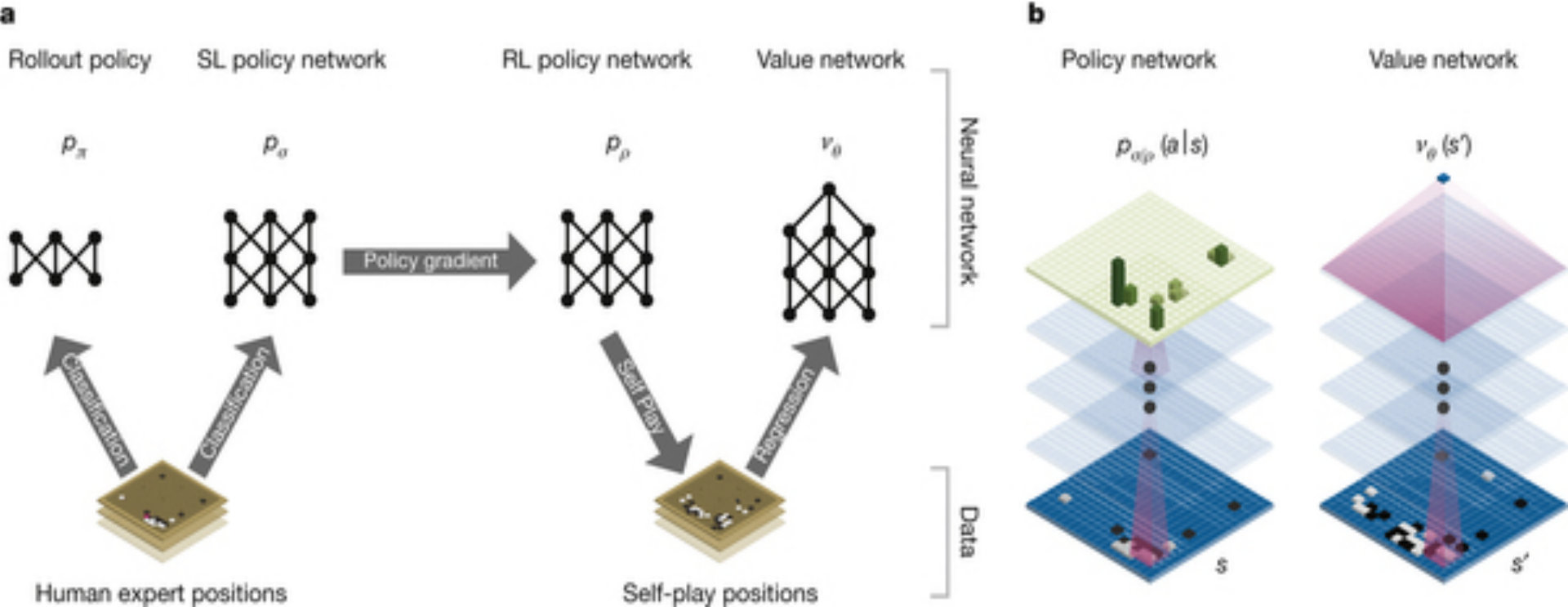
Similar as biological neural network

The brain of a project

The process of training the brain is called machine learning

For AlphaGo: pass in pictures of board position

<http://www.nature.com/nature/journal/v529/n7587/full/nature16961.html>



Rollout policy
Reinforcement policy

Supervised learning policy
Value network

The background consists of a repeating pattern of tilted teal-colored rectangular grids. Each grid is populated with small white dots. Some of the grids have a white horizontal line near the top, and others have a white percentage label in the top-left corner. The percentages visible are 18%, 9%, 35%, 23%, and 42%. The word "Thanks" is centered in the middle of the image in a large, black, sans-serif font.

Thanks

The background of the slide features a complex, stylized illustration of the Antikythera mechanism. It consists of several interlocking gears of different sizes, some with teeth and others smooth. A large circular scale with degree markings from 140 to 260 is prominent on the left side. Various curved lines and arrows suggest the intricate mechanical paths and movements of the device. The entire graphic is rendered in a light, translucent style against a dark blue gradient background that is speckled with small white dots, resembling a starry night sky.

THE ANTIKYTHERA MECHANISM

HANNAH HOLMBERG

4/27/2016

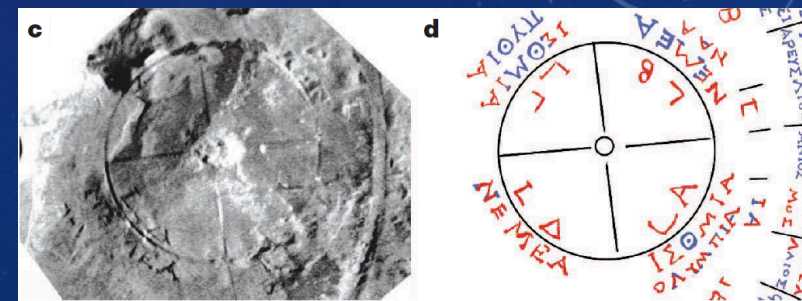
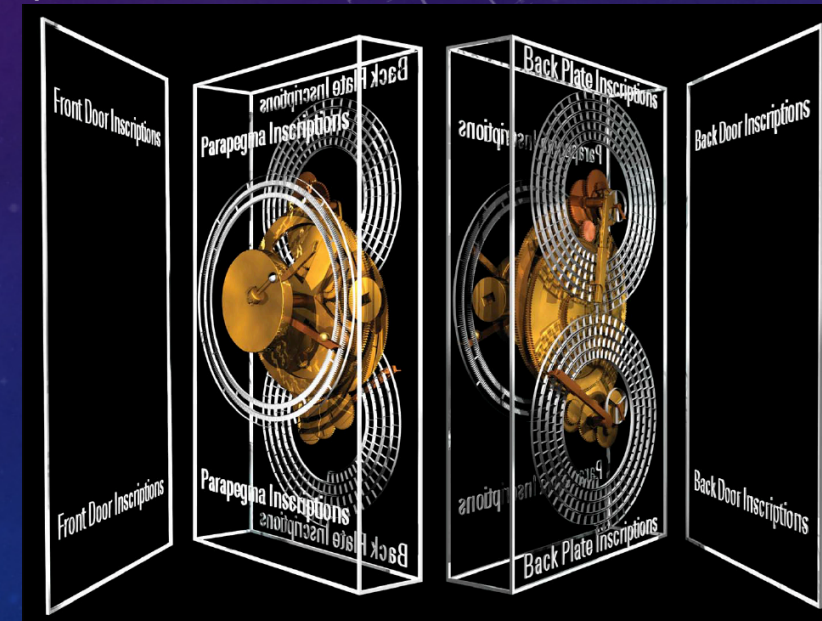
WHAT IS IT?

- Ancient Greek analog computer (used continuous values for calculation)
- Made of bronze gears (30 have been recovered)
- More technically complex than any other device for millennia afterwards
- Three main dials
- Front dial: zodiac dial, Egyptian calendar, pointers that calculated the movements of the sun, moon, and five planets that were known at the time
- Upper back dial: main dial contained Metonic calendar, with two smaller dials within (one predicted the cycle of the Olympic Games, while the purpose of the other dial is currently unclear)
- Lower back dial: predicted eclipses according to the Saros cycle



HOW DID IT WORK? (EXPLORATION OF THE OLYMPIAD DIAL)

- Circular drum was attached to the front dial (crank handle?)
- Output displayed through pointers on the dials (indicated the day, etc.)
- Number of teeth indicated what was being calculated
- Four sectors, each section containing a number and location at which the games would be held
- $\frac{1}{4}$ turn per year
- Underneath: remains of 60-tooth gear
- Variation in when a year started and ended?
- Dial took this into account



CONCLUSION (FUTURE PLANS/WHY IT MATTERS)

- Historical background and context
- More in-depth exploration of different technical issues, such as the eclipse dial
- Relationship between science/technology and the institutions that governed everyday life in ancient Greece
- Ancient Greece as the backbone of Western civilization-what do these connections between science/technology and humanity mean for us today?

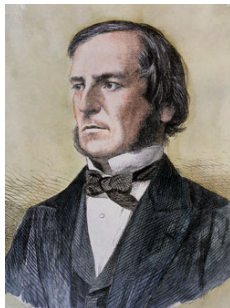
The Origin of Boolean Algebra

Claudia Yun

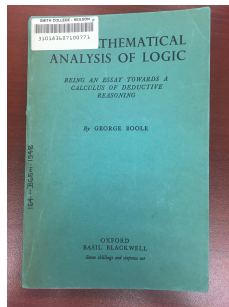
April 27, 2016

Introduction

- George Boole, 1815-1864
- *The Mathematical Analysis of Logic*, 1847



(a) George Boole



(b) his essay

Class

a group of objects that share a common characteristic



Preparation

- 1 is the universe
- X and Y are classes
- The product xy is the intersection of classes X and Y

First Principles

- ① grouping doesn't matter
i.e. $x(u + v) = xu + xv$
- ② order doesn't matter
i.e. $xy = yx$
- ③ a class intersecting itself is the class itself
i.e. $xx = x$

Types of Proposition

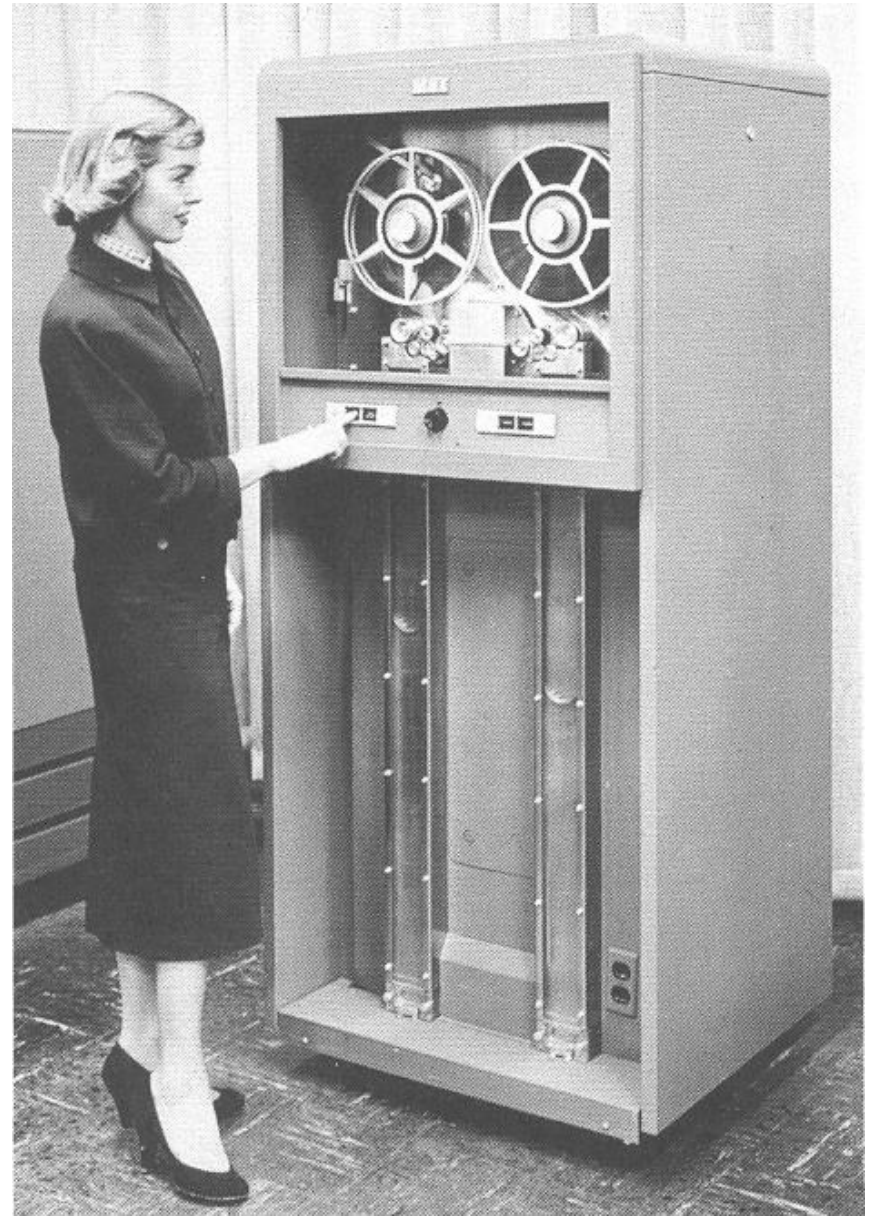
A **proposition** is a sentence which either affirms or denies. It can be universal or particular.

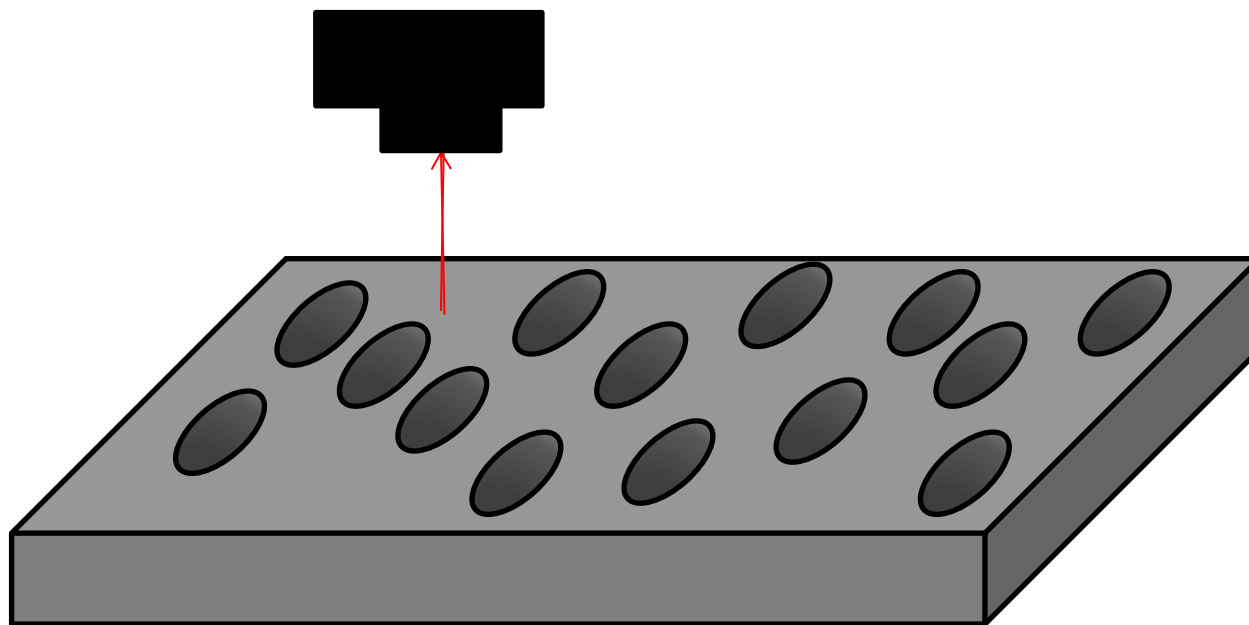
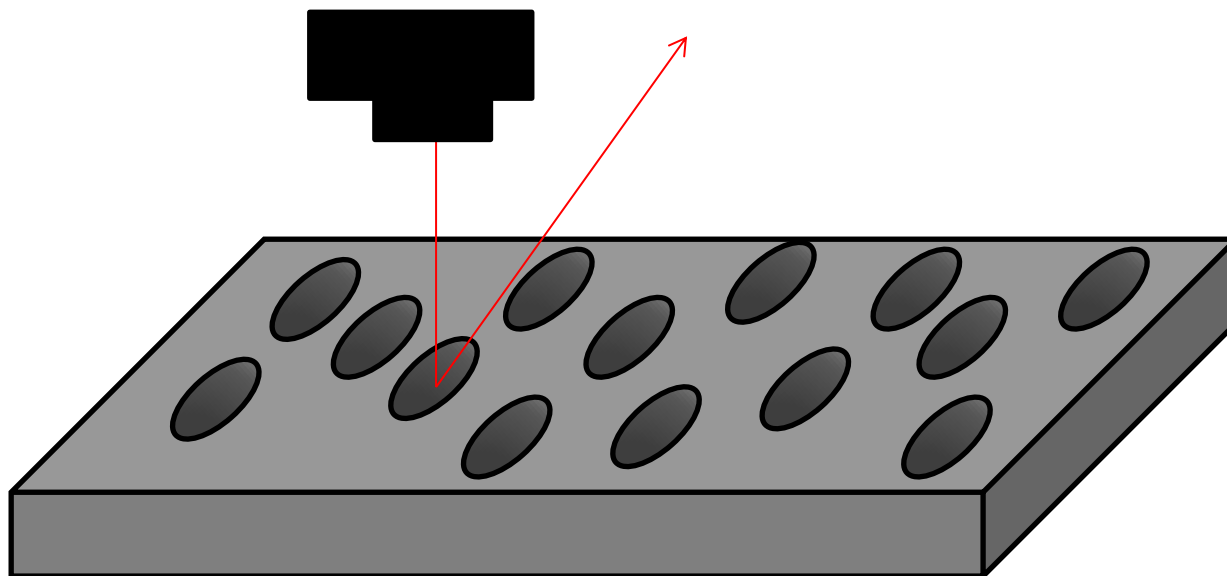
	Affirmative	Negative
Universal	All Xs are Ys $xy = x$	No Xs are Ys $xy = 0$
Particular	Some Xs are Ys $v = xy$	Some Xs are not Ys $v = x(1 - y)$

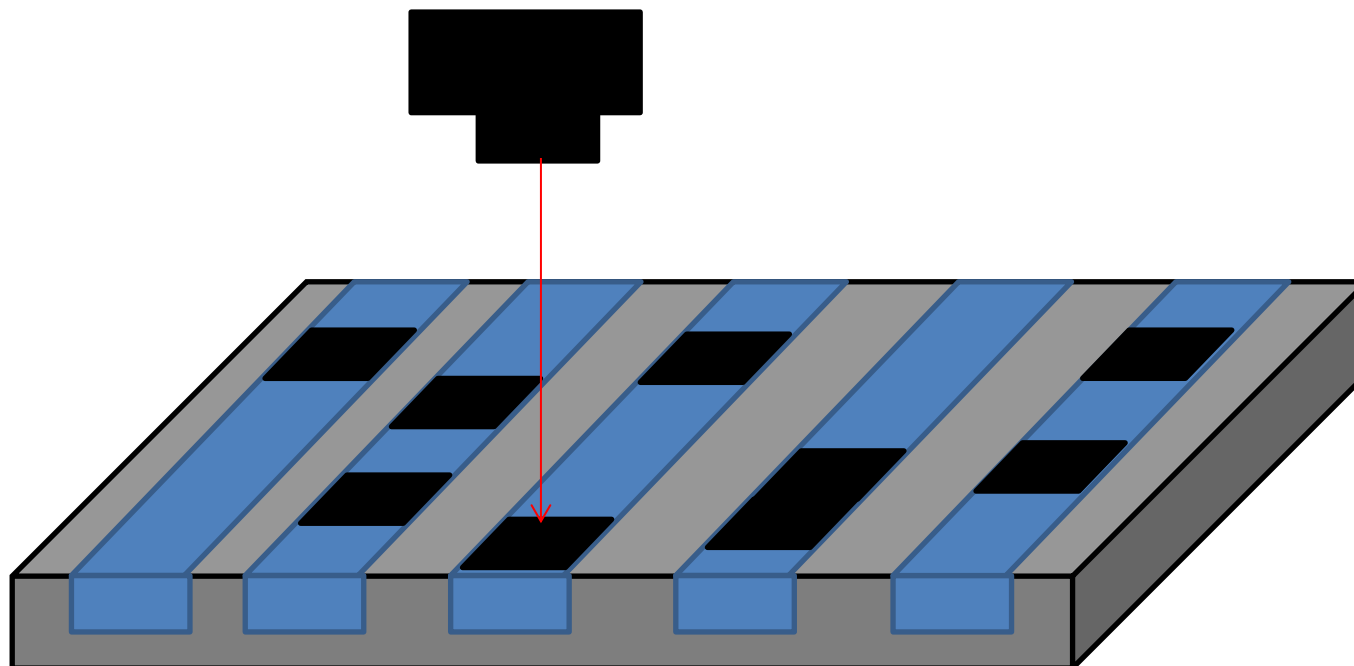
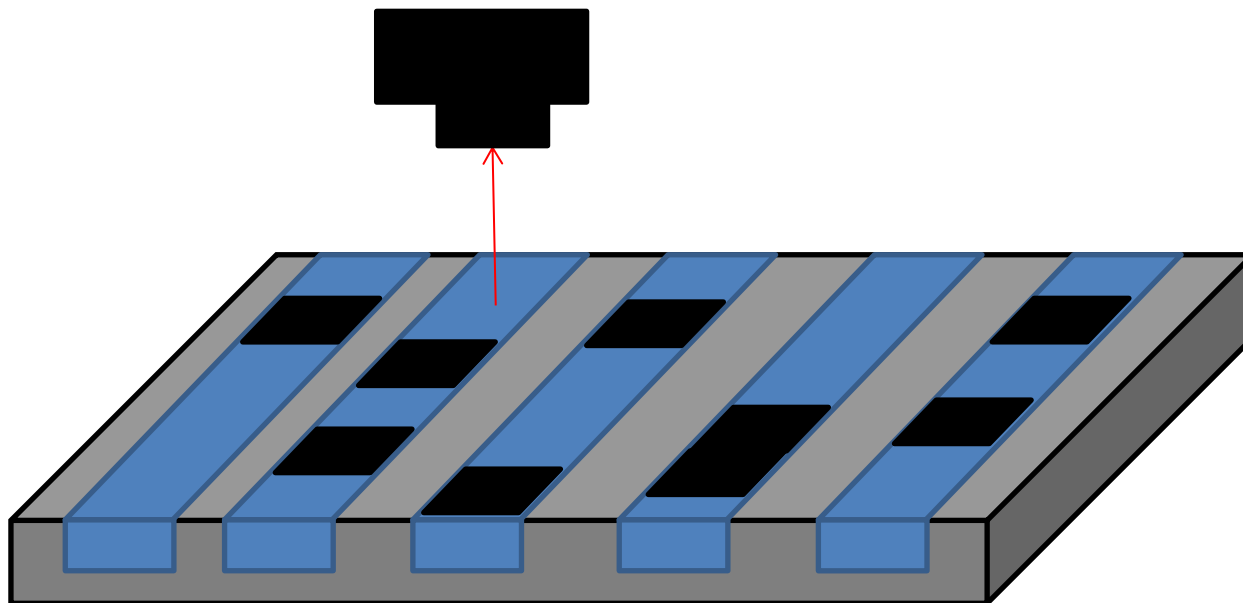
Note: $1 - x$ is the class of not-Xs.

Disk in a Box: Problems in Digital Archiving











Software Library: MS-DOS

Madison

← → ↺

https://archive.org/details/softwarelibrary_msdos_games

☆ 🔔 📄 📁 ☰

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About


Collection

SORT BY

RELEVANCE · VIEWS · TITLE · DATE ARCHIVED · CREATOR

3,455 RESULTS

📶




Oregon Trail, The
by MECC

📄

2.1M

1,253

161




Prince of Persia
by Jul 29, 2014

📄

884,638

735

33




Wolfenstein 3D
by id Software, Inc.

📄

551,628

610

10




Pac-Man
by Namco Limited

📄

543,466

118

1




Oregon Trail Deluxe, The

📄

523,291

726

81




Super Street Fighter II
by Capcom Co., Ltd.

📄

384,093

209

18




SimCity
by Maxis Software Inc.

📄

374,605

394

12




4D Prince of Persia

📄

278,045

196

12




Prehistorik 2
by Titus France SA

📄

259,198

199

3








Stunts
by Distinctive Software, Inc.

📄

246,615

227

9



TOPIC ↓

msdos 63

game 59

MS-DOS games 7

application 7

DOS 5

MS-DOS 4

breakout 4

dos 4

golf 3

pinball 3

DOS Games 2

space 0

I'm Cortana. Ask me anything.

📄 📁 📄 📄 📄 📄

🔊 🔊 🔊 🔊 🔊 🔊

10:28 PM 22-Apr-16

“A computer would deserve to be called intelligent if it could deceive a human into believing that it was human.”

Turing Test

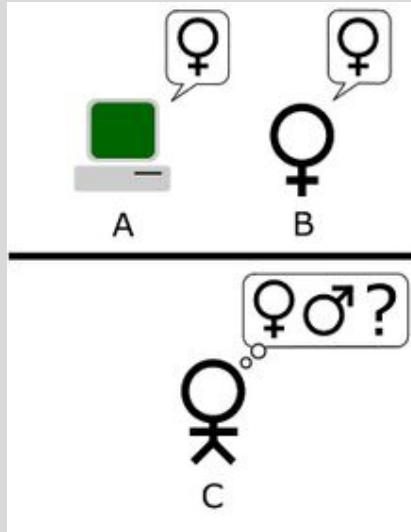
Allison Laughner

April 27th 2016

“We can only see a short distance ahead, but we can see plenty there that needs to be done.”

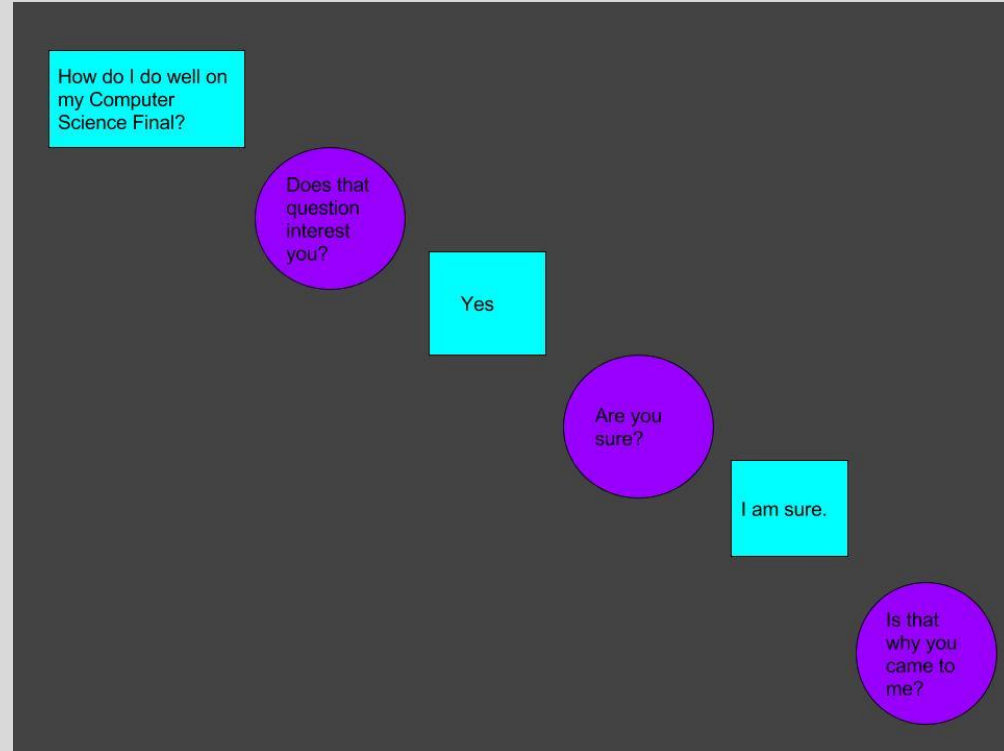
Introduction and brief history

- Alan Turing- 1950
- A test of a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human.
- Imitation Game
- Standard interpretation



Chatterbots or chatbots

- Examples of use: Chatterbots
 - ELIZA
 - PARRY
 - "ELIZA with attitude"



Paper

In my paper I would like to think more about how the turing test could be used in the future.

- Turing predicted that machines would eventually be able to pass the test
 - 2000
 - 2008- 5 years
- Testing the intelligence of robots

Sources

<http://motherboard.vice.com/read/the-electric-turing-acid-test>

<http://psych.utoronto.ca/users/reingold/courses/ai/turing.html>

<http://www.turing.org.uk/publications/testbook.html>

<http://whatis.techtarget.com/definition/Turing-Test>

https://en.wikipedia.org/wiki/Turing_test

Mauldin, Michael L. "CHATTERBOTS, TINYMUDS, and the Turing Test Entering the Loebner Prize Competition." Web. 9 Apr. 2016.

A decorative graphic on the left side of the slide, consisting of a network of thin, light blue lines and small circles, resembling a circuit board or a neural network diagram.

6 DEGREES OF SEPARATION: SOCIAL COMPUTING

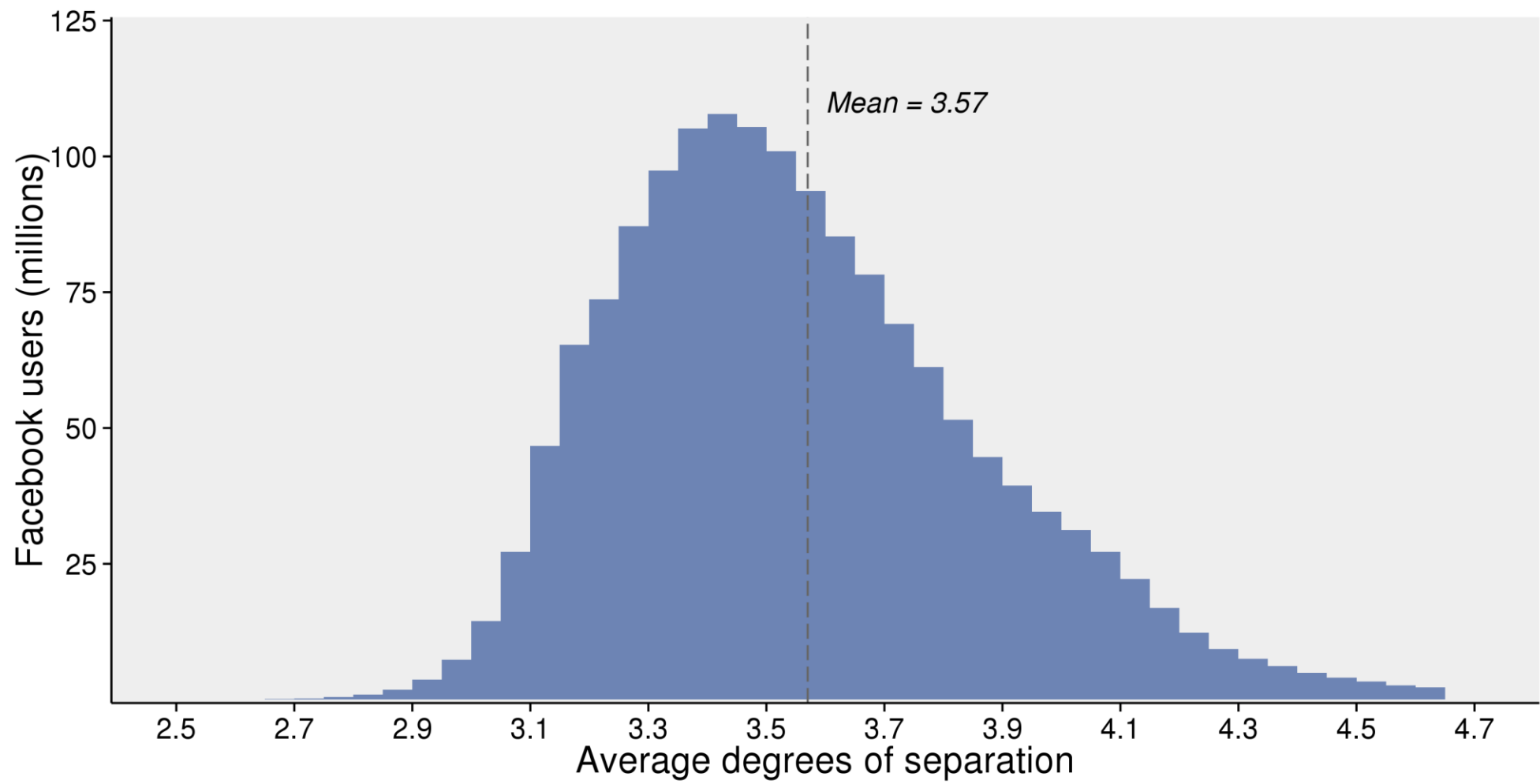
JUL MARCIANO '17

WHO DO I KNOW?

- Do I know Beyoncé? Kevin Bacon? Your Mom?
- How well do I know Beyoncé?
- How well do I know Kevin Bacon?
- How well do I know your mom?
- *“read somewhere that everybody on this planet is separated by only six other people. Six degrees of separation. Between us and everybody else on this planet. The president of the United States. A gondolier in Venice. Fill in the names. . . . How every person is a new door, opening up into other worlds. Six degrees of separation between me and everyone else on this planet. But to find the right six people”*

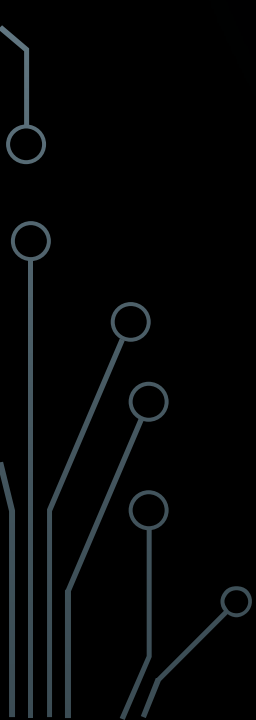
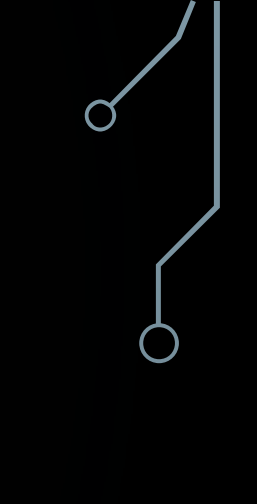
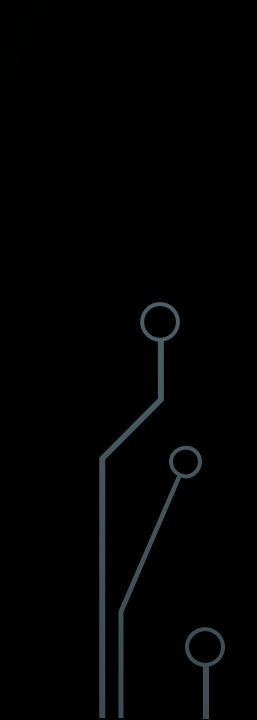
COMPUTING CAN (AND HAS) TOLD US

- Through an approach supported by the basic tenants of Graph Theory and Facebook's social research division.
- This approach tells us that most people are only about 3-4 degrees away from ANYONE ELSE.
- Examining paths between each node or person.
- Finding the average length of said path.
- Matlab. (matrices)





FAILURES?

- All relationships considered identical
 - **Jul Marciano's** average degrees of separation from everyone is **3.36**. I definitely don't actually have that short of a connection to Beyoncé.... Even if I wish I did. The number is simply a number. We don't have a great way to interpret it from this study.
- 
- 
- 

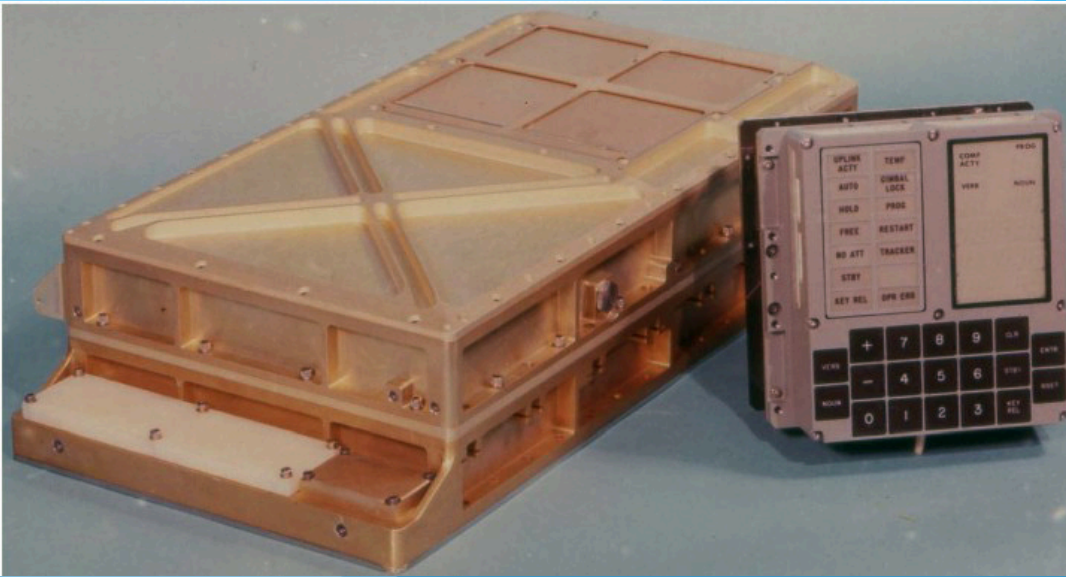
SOURCE KNOWLEDGE

[Three and 1/2 degrees of Separation](https://research.facebook.com/blog/three-and-a-half-degrees-of-separation/)

<https://research.facebook.com/blog/three-and-a-half-degrees-of-separation/>

[Anatomy of a Facebook](https://www.facebook.com/notes/facebook-data-science/anatomy-of-facebook/10150388519243859/)

<https://www.facebook.com/notes/facebook-data-science/anatomy-of-facebook/10150388519243859/>



The Apollo Guidance Computer (AGC)

Ava Sharma

27/04/16

Introduction: late 1960s, early 1970s



- Apollo 15 CSM (Command and Service Modules)



- Apollo 16 LM (Lunar Module)

Display/ Keyboard Unit (DSKY)



VERB CODES

00	NOT IN USE	51	PLEASE MARK
01	DISPLAY OCTAL COMP 1 IN R1	52	MARK ON OFFSET LANDING SITE
02	DISPLAY OCTAL COMP 2 IN R1	53	PLEASE PERFORM ALTERNATE LOS MARK
03	DISPLAY OCTAL COMP 3 IN R1	54	REQUEST RENDEZVOUS BACKUP SIGHTING
04	DISPLAY OCTAL COMP 1,2 IN R1, R2	55	MARK ROUTINE (R23)
05	DISPLAY OCTAL COMP 1,2,3 IN R1, R2, R3	56	INCREMENT AOC TIME (DECIMAL)
06	DISPLAY DECIMAL IN R1 OR R1, R2 OR R1, R2, R3	57	TERMINATE TRACKING (P28)
07	DISPLAY DOUBLE PREC DECIMAL IN R1, R2 (TEST ONLY)	58	DISPLAY UPDAT STATE OF FULTKFLG
08		59	ENABLE AUTO MANEUVER IN P28
09		60	PLEASE CALIBRATE
10		61	SET ASTRONAUT TOTAL ATTITUDE (M17) TO PRESENT ATTITUDE
11	MONITOR OCTAL COMP 1 IN R1	62	DISPLAY DAP ATTITUDE ERROR
12	MONITOR OCTAL COMP 2 IN R1	63	DISPLAY TOTAL ATTITUDE ERROR WRT NZ
13	MONITOR OCTAL COMP 3 IN R1	64	DISPLAY TOTAL ASTRONAUT ATTITUDE ERROR WRT M17
14	MONITOR OCTAL COMP 1,2 IN R1, R2	65	REQUEST S-BAND ANTENNA ROUTINE
15	MONITOR OCTAL COMP 1,2,3 IN R1, R2, R3	66	OPTICAL VERIFICATION OF PRELAUNCH ALIGNMENT
16	MONITOR DECIMAL IN R1 OR R1, R2 OR R1, R2, R3	67	VEHICLES ATTACHED. MOVE THE VEHICLE STATE VECTOR TO OTHER VEHICLE STATE VECTOR
17	MONITOR DOUBLE PREC DECIMAL IN R1, R2 (TEST ONLY)	68	DISPLAY W MATRIX
18		69	CAUSE RESTART
19		70	UPDATE LIFTOFF TIME
20		71	UNIVERSAL UPDATE - BLOCK ADR
21		72	UNIVERSAL UPDATE - SINGLE ADR
22	LOAD COMPONENT 1 INTO R1	73	UPDATE AOC TIME (OCTAL)
23	LOAD COMPONENT 2 INTO R2	74	INITIALIZE ERASABLE DUMP VIA DOWNLINK
24	LOAD COMPONENT 3 INTO R3	75	BACKUP LIFTOFF
25	LOAD COMPONENT 1,2 INTO R1, R2	76	
26	LOAD COMPONENT 1,2,3 INTO R1, R2, R3	77	
27	DISPLAY FIXED MEMORY	78	UPDATE PRELAUNCH AZIMUTH
28		79	
29		80	UPDATE LM STATE VECTOR
30	REQUEST EXECUTIVE	81	UPDATE CSM STATE VECTOR
31	REQUEST WAITLIST	82	REQUEST ORBITAL PARAMETER DISPLAY (R30)
32	RECYCLE PROGRAM	83	REQUEST RENDEZVOUS PARAMETER DISPLAY (R31)
33	PROCEED WITHOUT DSKY INPUTS	84	
34	TERMINATE FUNCTION	85	REQUEST RENDEZVOUS PARAMETER DISPLAY NO. 2 (R34)
35	TEST LIGHTS	86	REJECT RENDEZVOUS BACKUP SIGHTING MARK
36	REQUEST FRESH START	87	SET VHF RANGE FLAG
37	CHANGE PROGRAM (MAJOR MODE)	88	RESET VHF RANGE FLAG
38		89	REQUEST RENDEZVOUS FINAL ATTITUDE (R43)
39		90	REQUEST RENDEZVOUS OUT OF PLANE DISPLAY (R36)
40	ZERO CDU'S	91	DISPLAY BANK SUM
41	COARSE ALIGN CDU'S	92	OPERATE IMU PERFORMANCE TEST (P07)
42	FINE ALIGN IMU	93	ENABLE W MATRIX INITIALIZATION
43	LOAD IMU ATT ERROR METERS	94	PERFORM CEBLUNAR ATTITUDE MANEUVER (P23)
44	SET SURFACE FLAG	95	
45	RESET SURFACE FLAG	96	TERMINATE INTEGRATION AND GO TO P00
46	ESTABLISH G & C CONTROL	97	PERFORM ENGINE FAIL PROCEDURE
47	MOVE LM STATE VECTOR INTO CM STATE VECTOR	98	
48	REQUEST DAP DATA LOAD (R03)	99	PLEASE ENABLE ENGINE
49	REQUEST CREW DEFINED MANEUVER (R03)		
50	PLEASE PERFORM		

NOUN CODES

NORMAL NOUNS		COMPONENTS & SCALING
00		
01	SPECIFY MACHINE ADDRESS (FRACTIONAL)	3 COMP .XXXXX FOR EACH
02	SPECIFY MACHINE ADDRESS (WHOLE)	3 COMP XXXXX FOR EACH
03	SPECIFY MACHINE ADDRESS (DEGREES)	3 COMP XXX.XX DEG FOR EACH
04		
05	ANGULAR ERROR/DIFFERENCE	1 COMP XXX.XX DEG
06	OPTION CODE	1 COMP OCTAL ONLY FOR EACH
07	LOADING NOUN UT WILL SET OR RESET SELECTED BITS IN ANY ERASABLE LOCATION	1 COMP OCTAL ONLY FOR EACH
08	ECADR OF WORD TO BE MODIFIED	3 COMP OCTAL ONLY FOR EACH
09	ONES FOR BITS TO BE MODIFIED	
10	1 TO SET OR 0 TO RESET SELECTED BITS	
11	TIG OF CSI	3 COMP OCTAL ONLY FOR EACH
12	ALARM DATA	3 COMP OCTAL ONLY FOR EACH
13	ALARM CODES	3 COMP OCTAL ONLY FOR EACH
14	CHANNEL TO BE SPECIFIED	1 COMP 00000. HRS
15	TIG OF CSI	3 COMP 00000. MIN
16		3 COMP 000.00 SEC
17	OPTION CODE (USED BY EXTENDED VERBS ONLY)	1 COMP OCTAL ONLY FOR EACH
18	TIG OF CDH	3 COMP 00000. HRS
19		3 COMP 00000. MIN
20		3 COMP 000.00 SEC
21	INERTIAL VEL MAG AT TLI CUTOFF	1 COMP 00000. FT/SEC
22	INCREMENT MACHINE ADDRESS	1 COMP OCTAL ONLY
23	TIME OF EVENT (USED BY EXTENDED VERBS ONLY)	3 COMP 00000. HRS
24		3 COMP 00000. MIN
25		3 COMP 000.00 SEC
26	ASTRONAUT TOTAL ATTITUDE	3 COMP XXX.XX DEG FOR EACH
27	AUTO MANEUVER BALL ANGLES	3 COMP XXX.XX DEG FOR EACH
28		
29		
30	KCDU ANGLES	3 COMP XXX.XX DEG FOR EACH
31	PIFAS	3 COMP XXXXX. PULSES FOR EACH
32	NEW KCDU ANGLES	3 COMP XXX.XX DEG FOR EACH
33		
34	DELTA TIME FOR AOC CLOCK	3 COMP 00000. HRS
35		3 COMP 00000. MIN
36		3 COMP 000.00 SEC
37	CHECKLIST (USED WITH PLEASE PERFORM ONLY)	3 COMP OCTAL ONLY FOR EACH
38	PRIORITY/DELAY, ADRES, BBCON	1 COMP XXXXX.
39	SELF TEST ON/OFF SWITCH	
40		
41	XEM LAUNCH AZIMUTH	1 COMP XXX.XX DEG
42	TARGET CODES	3 COMP XXXXX. HRS
43	TIME OF W INITIALIZATION	3 COMP 00000. MIN
44		3 COMP 000.00 SEC
45		3 COMP 00000. HRS
46		3 COMP 00000. MIN
47		3 COMP 000.00 SEC
48	TIME FROM PERIGEE	3 COMP 00000. HRS
49		3 COMP 00000. MIN
50		3 COMP 000.00 SEC
51	TIME OF IGNITION	3 COMP 00000. HRS
52		3 COMP 00000. MIN
53		3 COMP 000.00 SEC
54	TIME OF EVENT	3 COMP 00000. HRS
55		3 COMP 00000. MIN
56		3 COMP 000.00 SEC
57	TIME FROM EVENT	3 COMP 00000. HRS
58		3 COMP 00000. MIN
59		3 COMP 000.00 SEC
60	TIME OF AOC CLOCK	3 COMP 00000. HRS
61		3 COMP 00000. MIN
62		3 COMP 000.00 SEC
63	TIG OF TPI	3 COMP 00000. HRS
64		3 COMP 00000. MIN
65		3 COMP 000.00 SEC
66	TIME OF STATE VECTOR	3 COMP 00000. HRS
67		3 COMP 00000. MIN
68		3 COMP 000.00 SEC
69	DELTA TIME FOR TRANSFER	3 COMP 00000. HRS
70		3 COMP 00000. MIN
71		3 COMP 000.00 SEC

How to operate the AGC from the DSKY

VERB digit digit NOUN digit digit ENTR
or sometimes
VERB digit digit ENTR

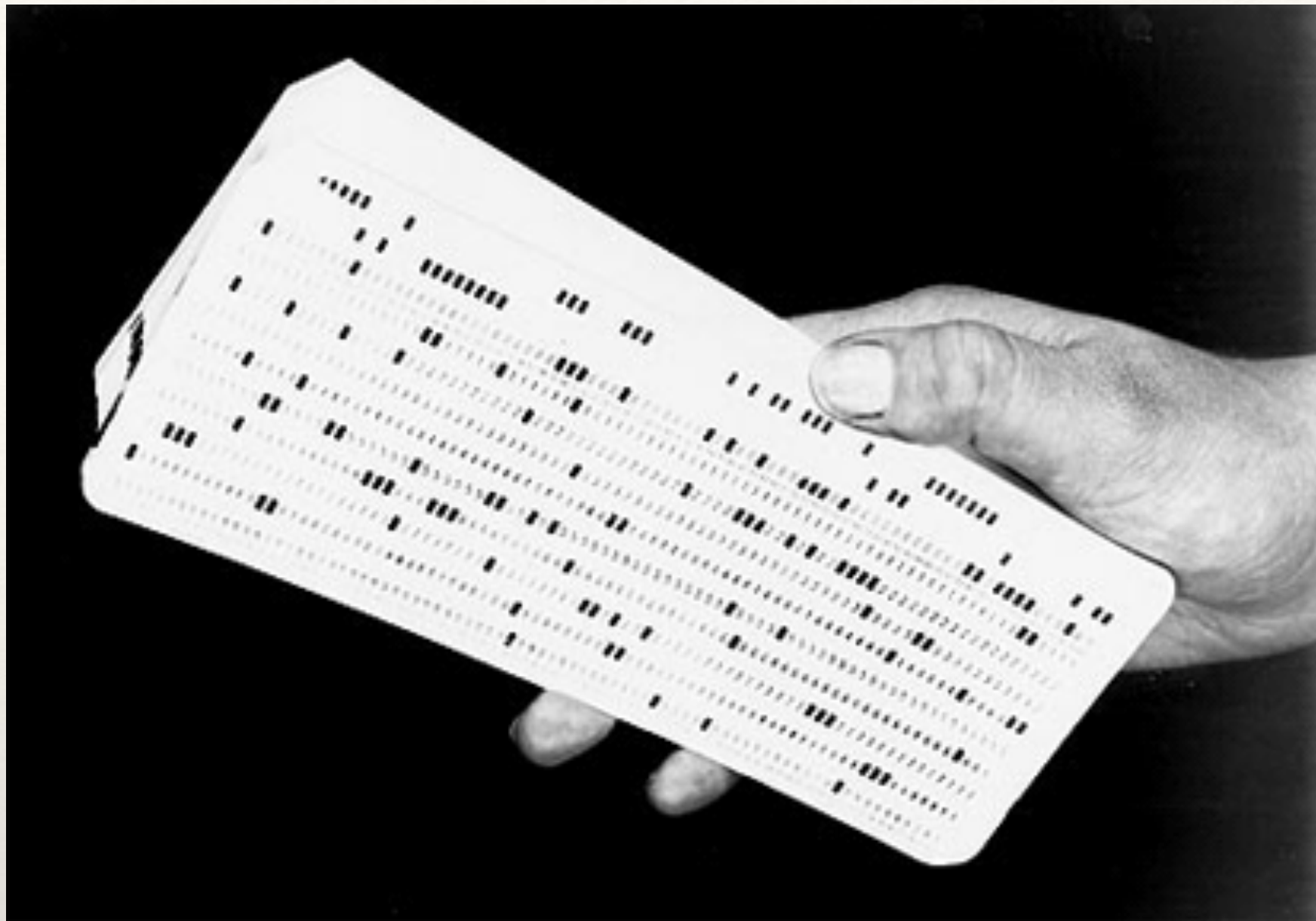
VERB 0 6 NOUN 3 6 ENTR

VERB 0 5 ENTR

Conclusion

- Why “guidance”?
- AGC Software
- How to land on the moon?





Punched cards in early computing

Emily Myers
April 27, 2016

Hollerith cards

- ❖ Patented in the 1890s by Herman Hollerith
- ❖ Initially intended to tabulate the 1890 census
- ❖ Also used by businesses, railroads, and notably the government during WWII.

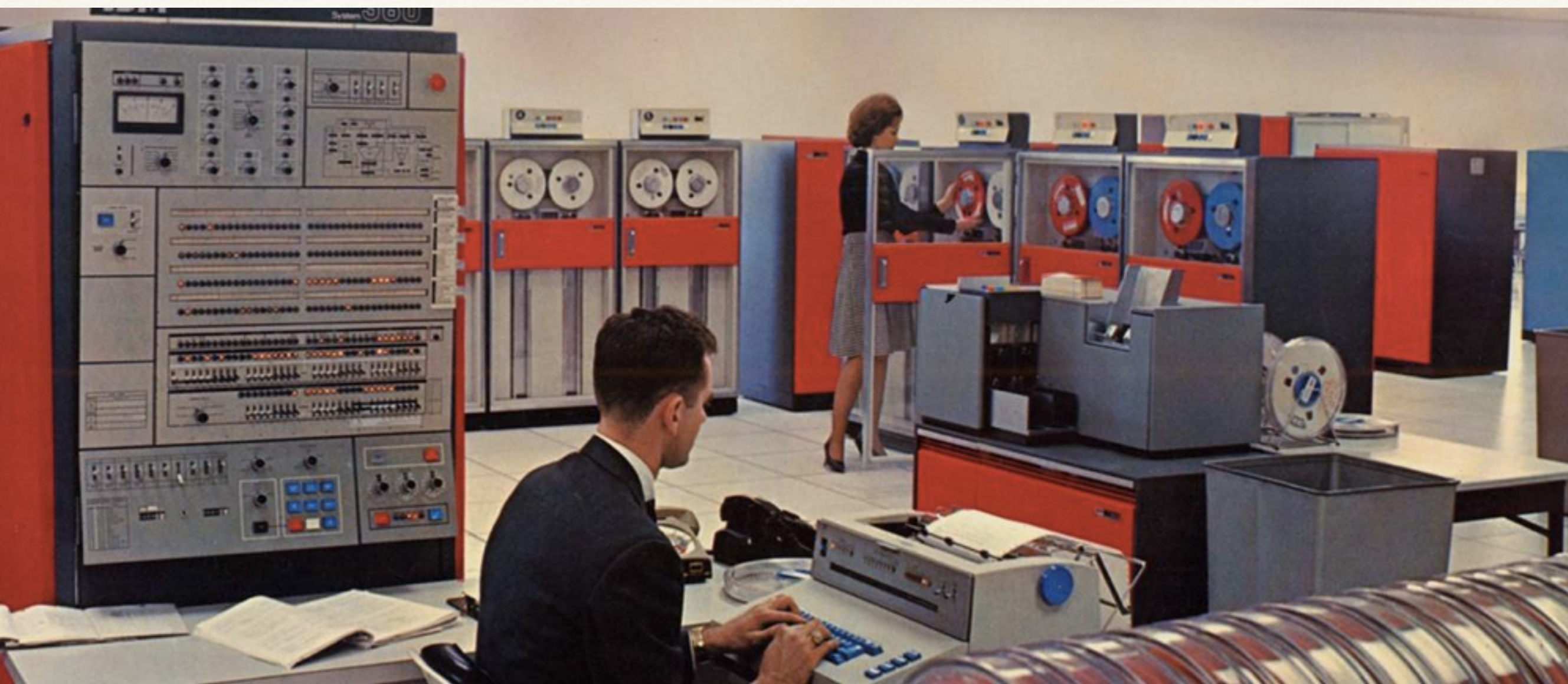
How it worked

- ❖ Code was written out by hand, then punched into card
- ❖ Each card had up to 80 columns for information
- ❖ Automated card readers read hundreds of cards per minute
- ❖ Each card was one instruction in the program
- ❖ A complete program could be up to a box of punched cards



How to write a punched-card program (On an IBM 360)

1. Write a program on coding forms
2. Give your coding sheets to the keypunch machine operator
3. Collect your source deck
4. Source deck is compiled by the computer, which produces program deck
5. Run program
6. Debug
7. Repeat steps 1-6



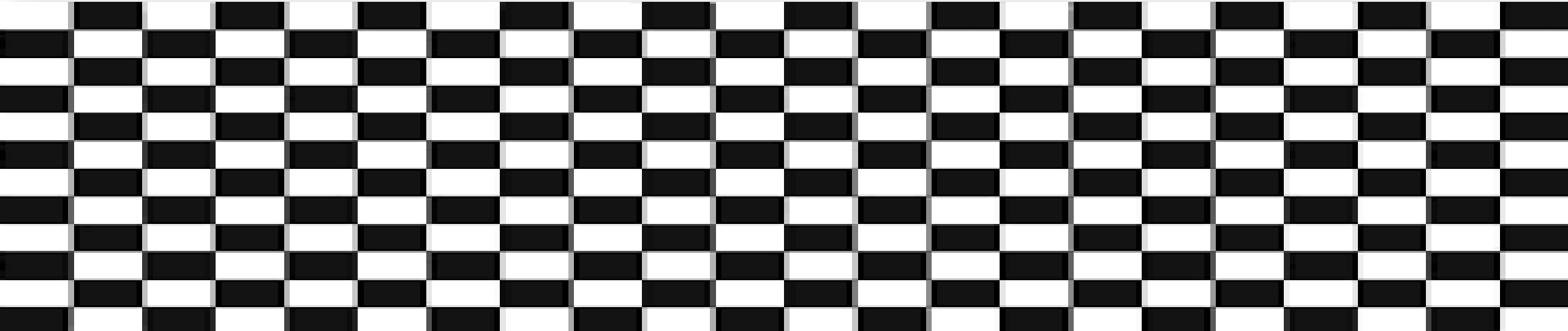
Future work & conclusions

- ❖ Understand internal workings of punched card readers
- ❖ Evolution of punched card both as a cultural object & as technology advanced

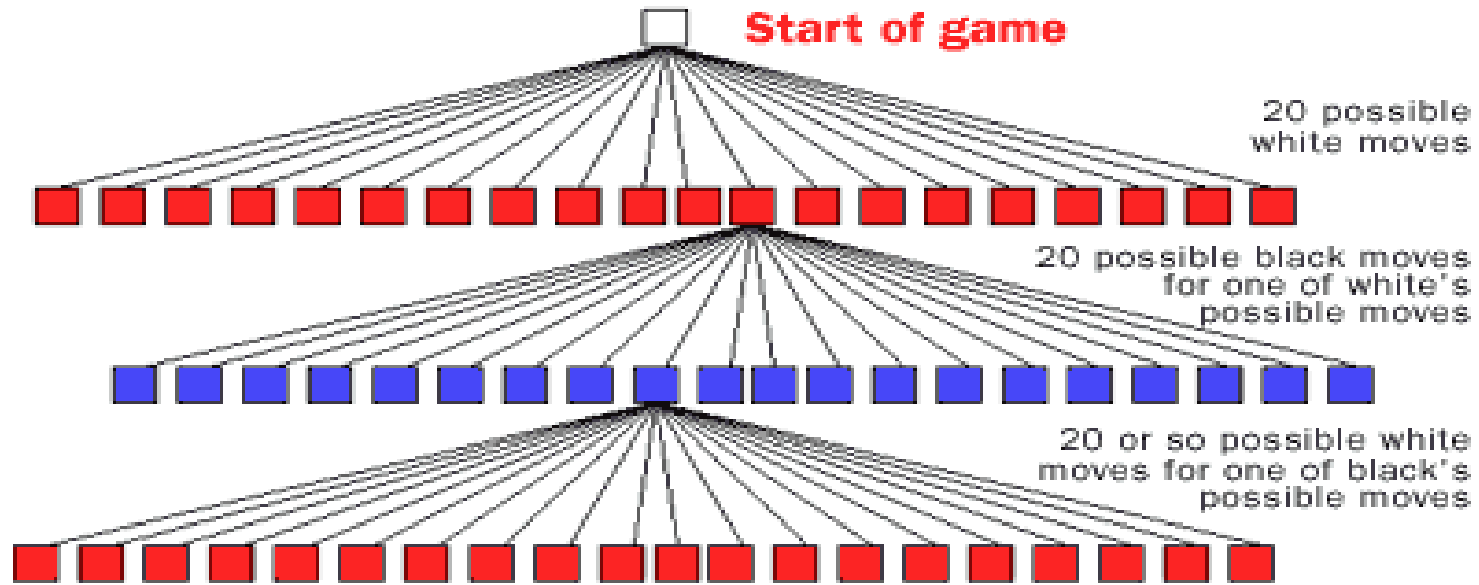


Computer That Play Chess

Meaghan Haff
April 27th, 2016

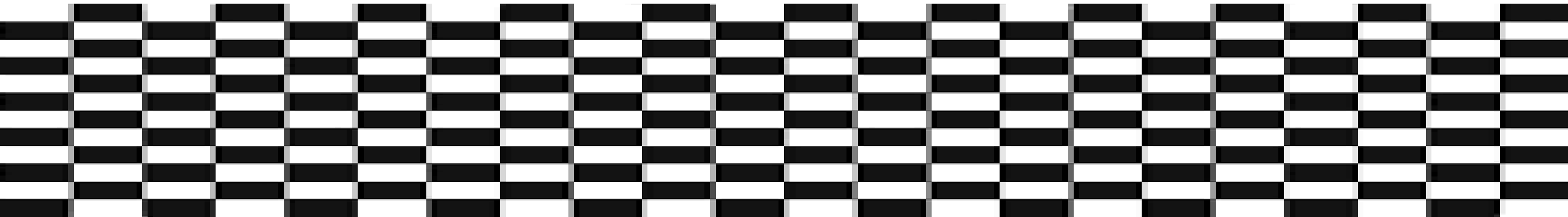


Depth-First Traversal

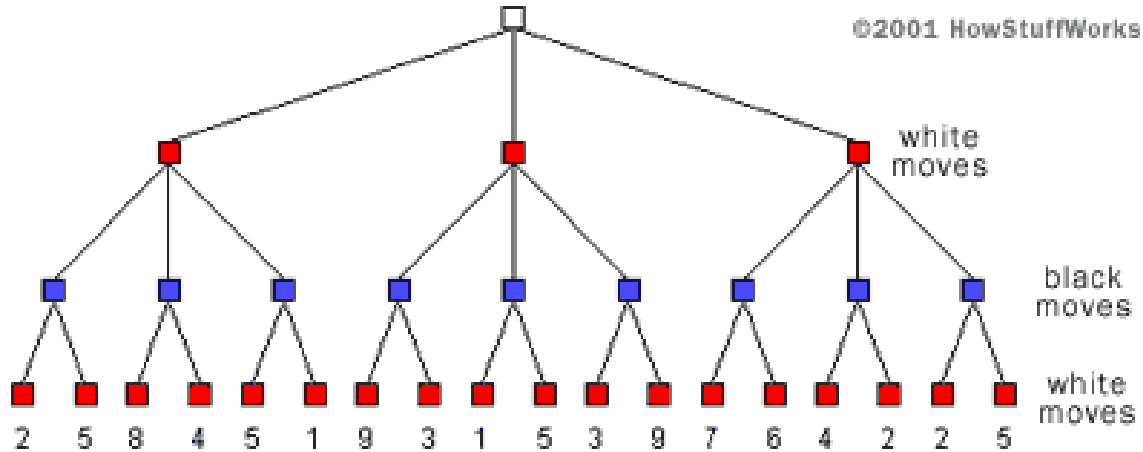


Brain, Marshall. *Chess1*. 2001. How Chess Computers Work. *How Stuff Works*. Web. 2001. HowStuffWorks

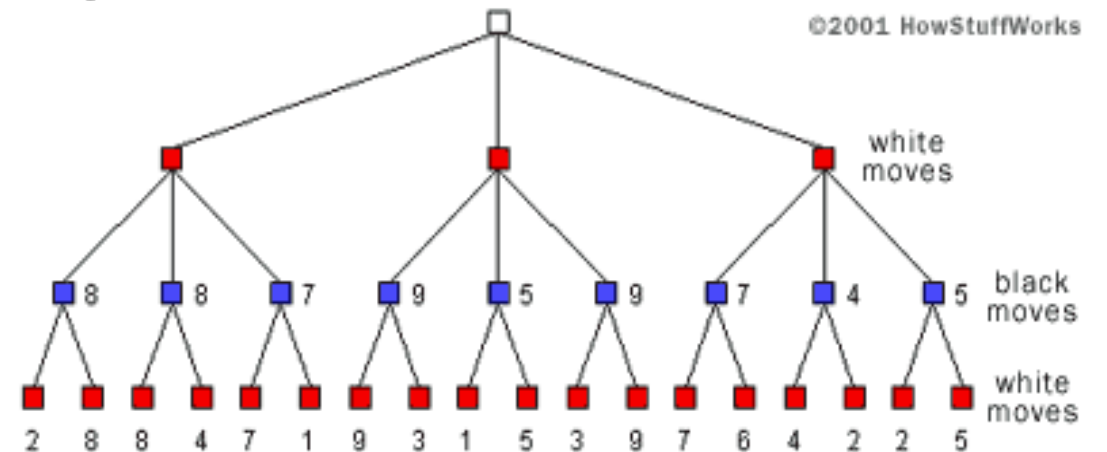
102,400,000,000,000,000,000,000,000

[illegible]

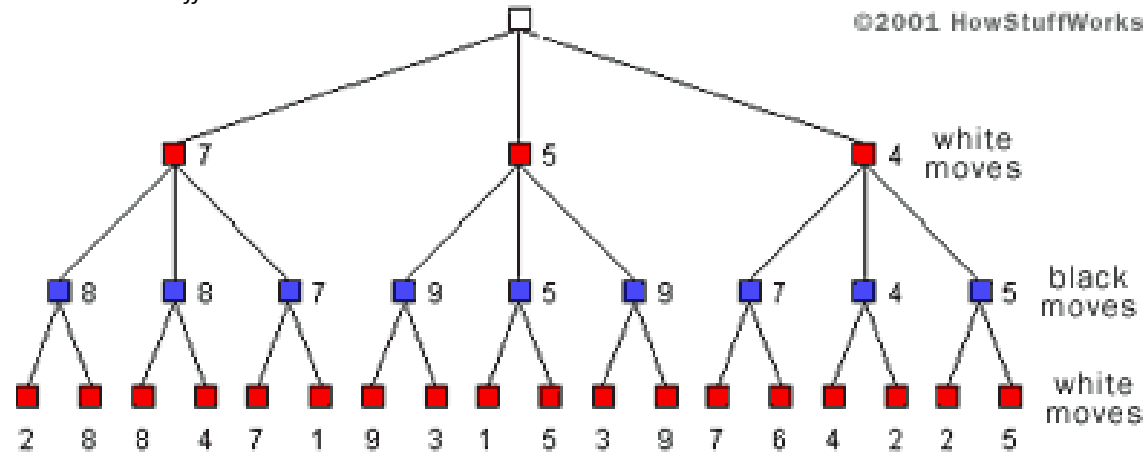
Minimax Algorithm



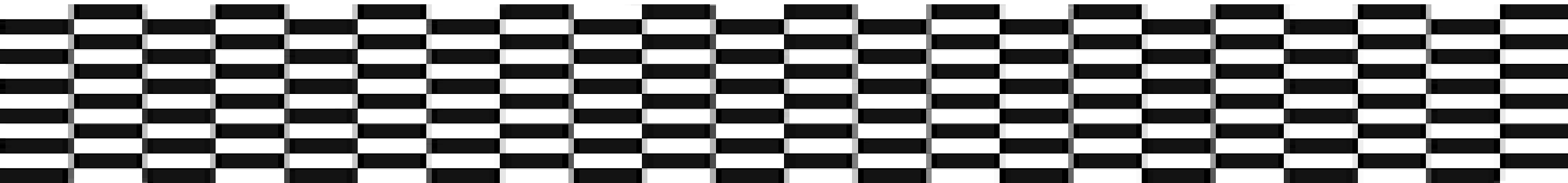
Brain, Marshall. *Chess-tree1*. 2001. How Chess Computers Work. *How Stuff Works*. Web



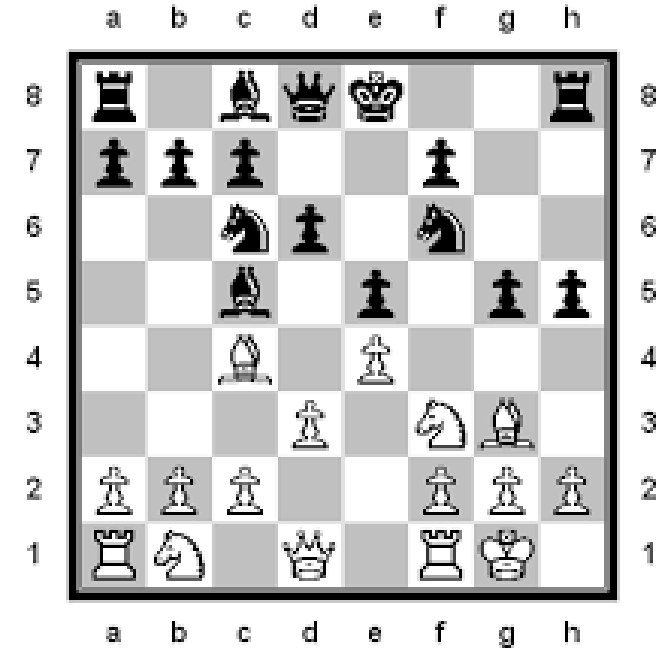
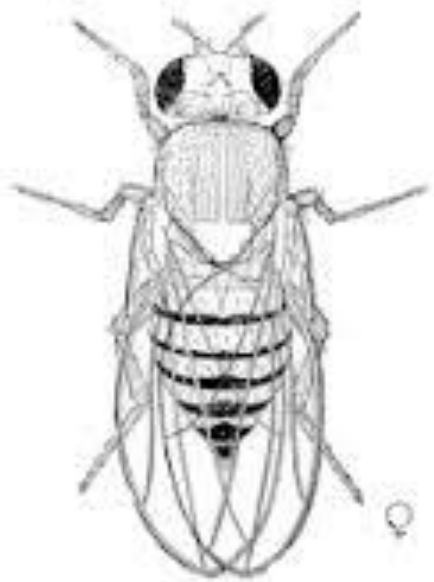
Brain, Marshall. *Chess-tree2*. 2001. How Chess Computers Work. *How Stuff Works*. Web



Brain, Marshall. *Chess-tree3*. 2001. How Chess Computers Work. *How Stuff Works*. Web



The Drosophila of Artificial Intelligence

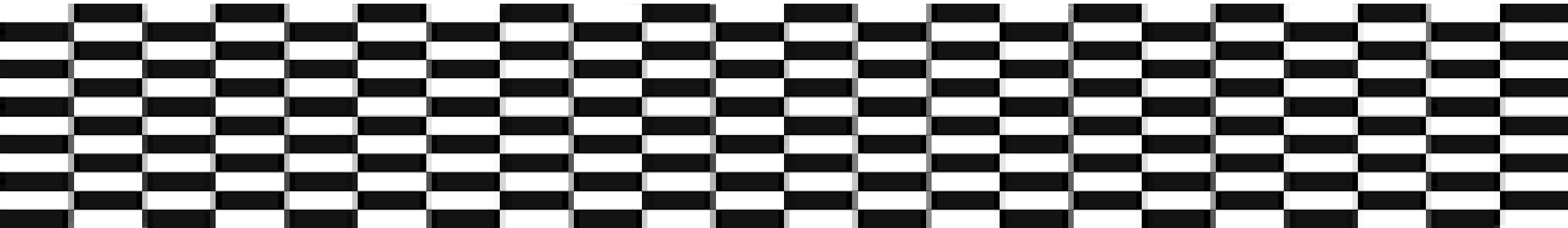


"The Interactive Fly." *The Interactive Fly*. N.p., n.d. Web. 24 Apr. 2016.

"Coding Horror." *Chess: Computer v. Human*. N.p., n.d. Web. 24 Apr. 2016.

I Will Never Win

- How is deep-tree searching programmed?
- What exactly does an 'evaluation function' look like?



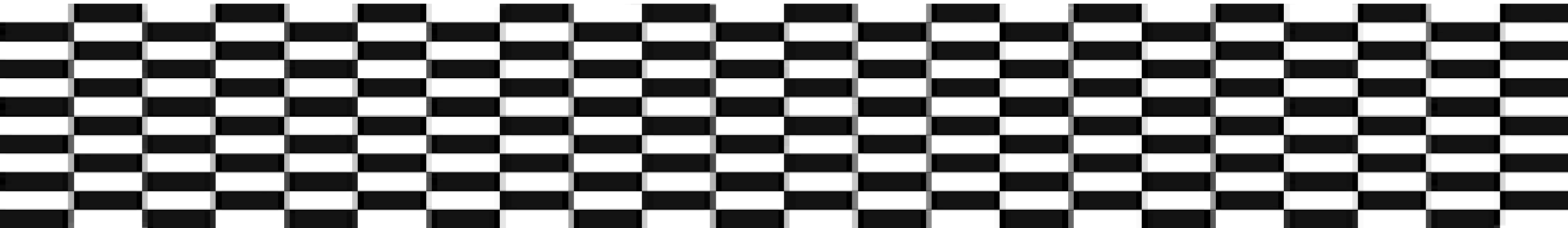
References

Literary Sources:

- Ensmenger, Nathan. "Is Chess The Drosophila Of Artificial Intelligence? A Social History Of An Algorithm." *Social Studies Of Science (Sage Publications, Ltd.)* 42.1 (2012): 5-30. *Historical Abstracts with Full Text*. Web. 5 Apr. 2016.
- David, Omid E., Jaap Van Den Herik, Moshe Koppel, and Nathan S. Netanyahu. "Genetic Algorithms for Evolving Computer Chess Programs." *IEEE* 18.5 (2014): 779-89. Web.

Photos:

- Brain, Marshall. *Chess-tree1*. 2001. How Chess Computers Work. *How Stuff Works*. Web
- Brain, Marshall. *Chess-tree2*. 2001. How Chess Computers Work. *How Stuff Works*. Web
- Brain, Marshall. *Chess-tree3*. 2001. How Chess Computers Work. *How Stuff Works*. Web
- Brain, Marshall. *Chess1*. 2001. How Chess Computers Work. *How Stuff Works*. Web
- "Coding Horror." *Chess: Computer v. Human*. N.p., n.d. Web. 24 Apr. 2016.
- "The Interactive Fly." *The Interactive Fly*. N.p., n.d. Web. 24 Apr. 2016.



COBOL and Grace Hopper

Maxine Ainetchi

Grace Hopper

- Grew up in New York City
- World War II – how did she get there?
- Why was she important?

How did COBOL come to be?

- From English to the computer
- What was their goal?
- Who was against her?

The Divisions of COBOL

- Identification: provides user identification information
- Environment: provides machine-dependent information
- Data: defines files and records
- Procedure: specifies executable actions

How is COBOL like the human mind?

COBOL understands 'implied objects', like humans understand English, or whatever their native language is. In contrast with other computer languages, COBOL can understand a simple command and make its own inferences to a certain extent.

COBOL Conditional Statements

```
IF X=Y MOVE A TO B;  
IF GREATER ADD A TO Z;  
OTHERWISE MOVE C TO D.
```

C Conditional Statements

```
if (X == Y) ...;  
if (X > Y) ...;  
if (X < Y) ...;
```

What I Want to Know More About

- How was COBOL later implemented into life for the average American citizen post-WWII
- What was Grace Hopper's role in COBOL after WWII?
- How did COBOL help with the Y2K issue?

Questions?