CS 103000
Prof. Madeline Blount

Week 3:
LOGIC & CONDITIONALS

[ASYNCHRONOUS]

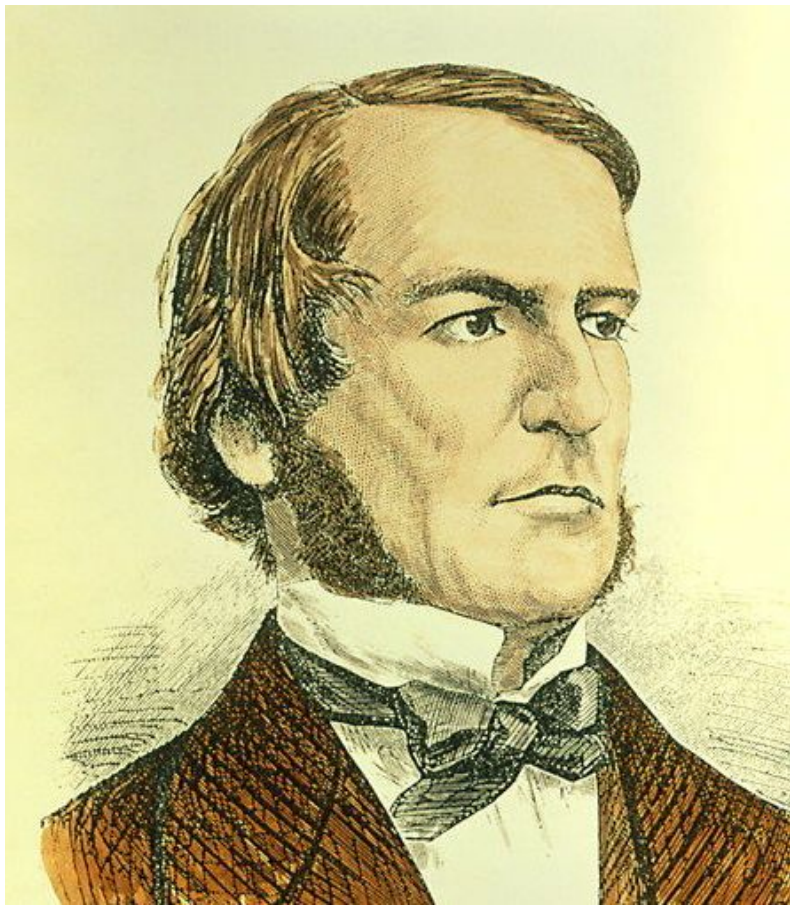*Dall-E 2: cats learning C++ in the forest on '90's technology*
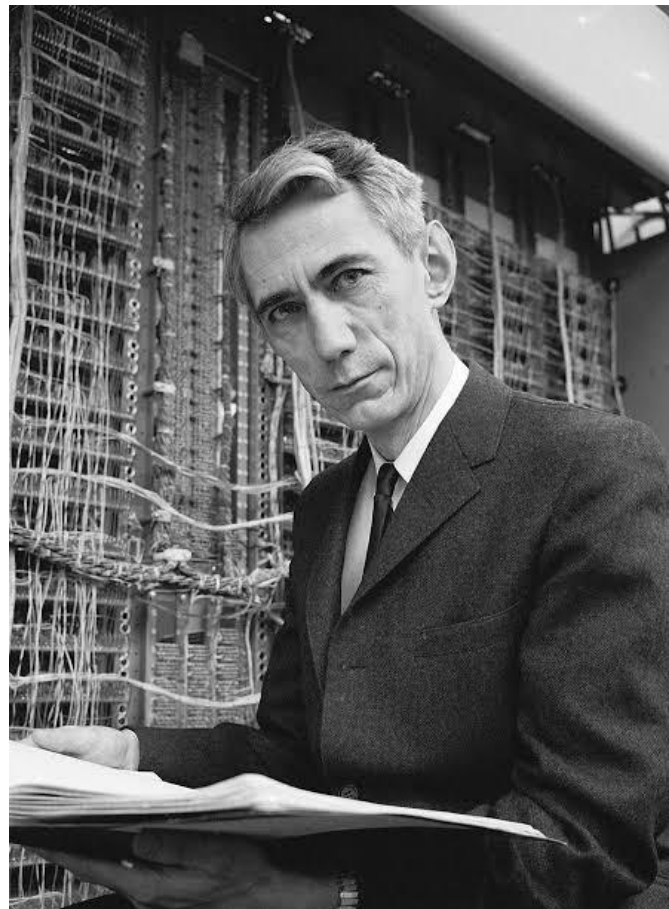
Aristotle

Law of Non-Contradiction:
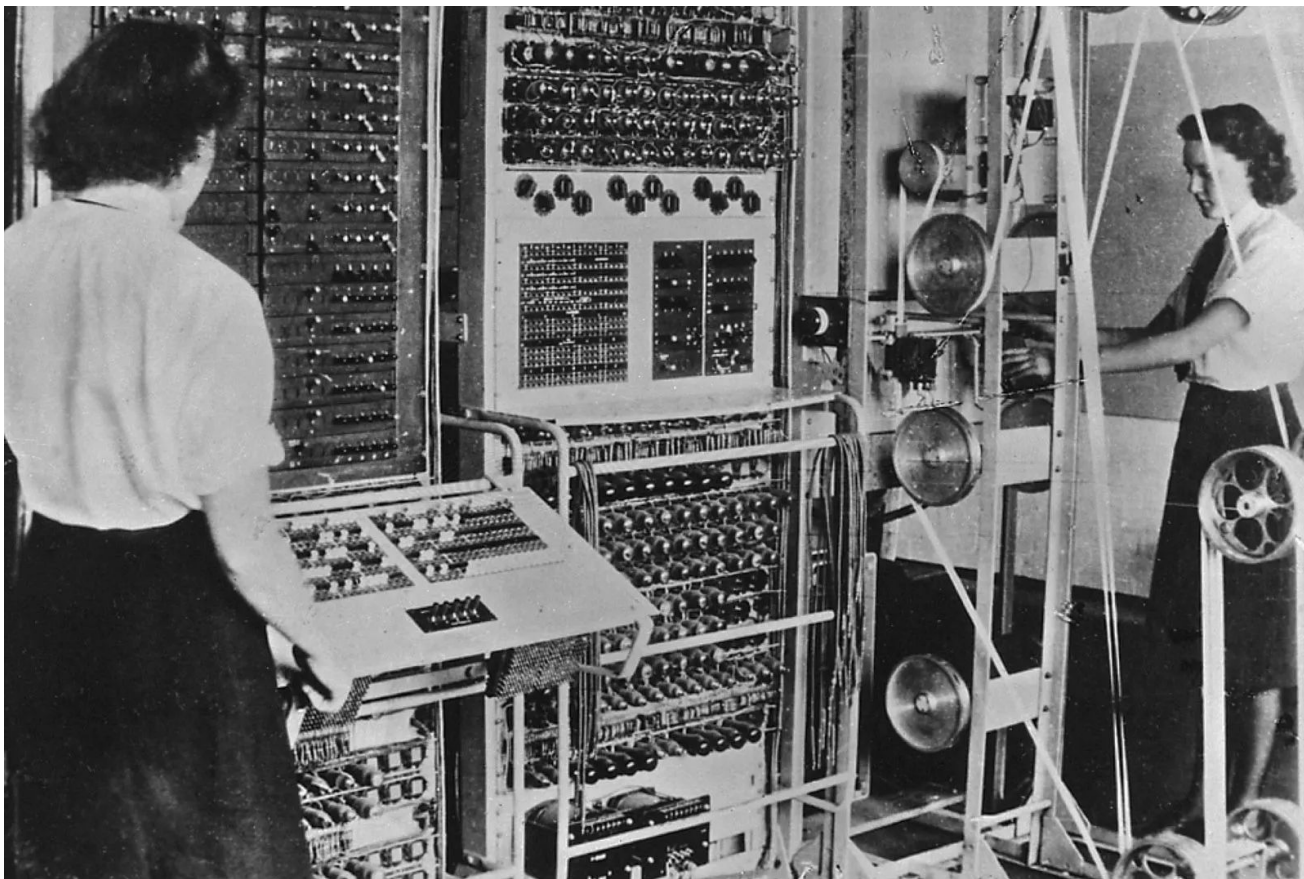● No statement can be both true AND false

Law of Excluded Middle:
● Every statement either true OR false

Boole, *Laws of Thought*, 1854

Shannon, 1938

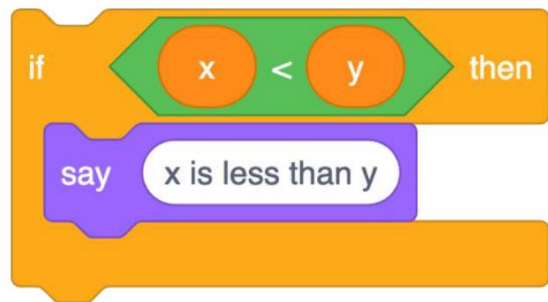Turing machines, Bletchley park WWII - Boolean logic

Even advanced neural networks based on Boolean logic, classification

⬇️ Boolean expression

say x is less than y

⬇️ Boolean expression

```
if (x < y)
{

}
```

bool <name>

TRUE or FALSE

1 or 0

Data Type	Memory Size
bool	1 byte
char	1 byte
int	4 bytes
float	4 bytes
double	8 bytes
std::string	24 bytes

&& AND (x == y && y == z)

|| OR (x == y || y == z)

! NOT !(x == y) NOT

```
!!(x == y)
```

NOT NOT ... TRUE!
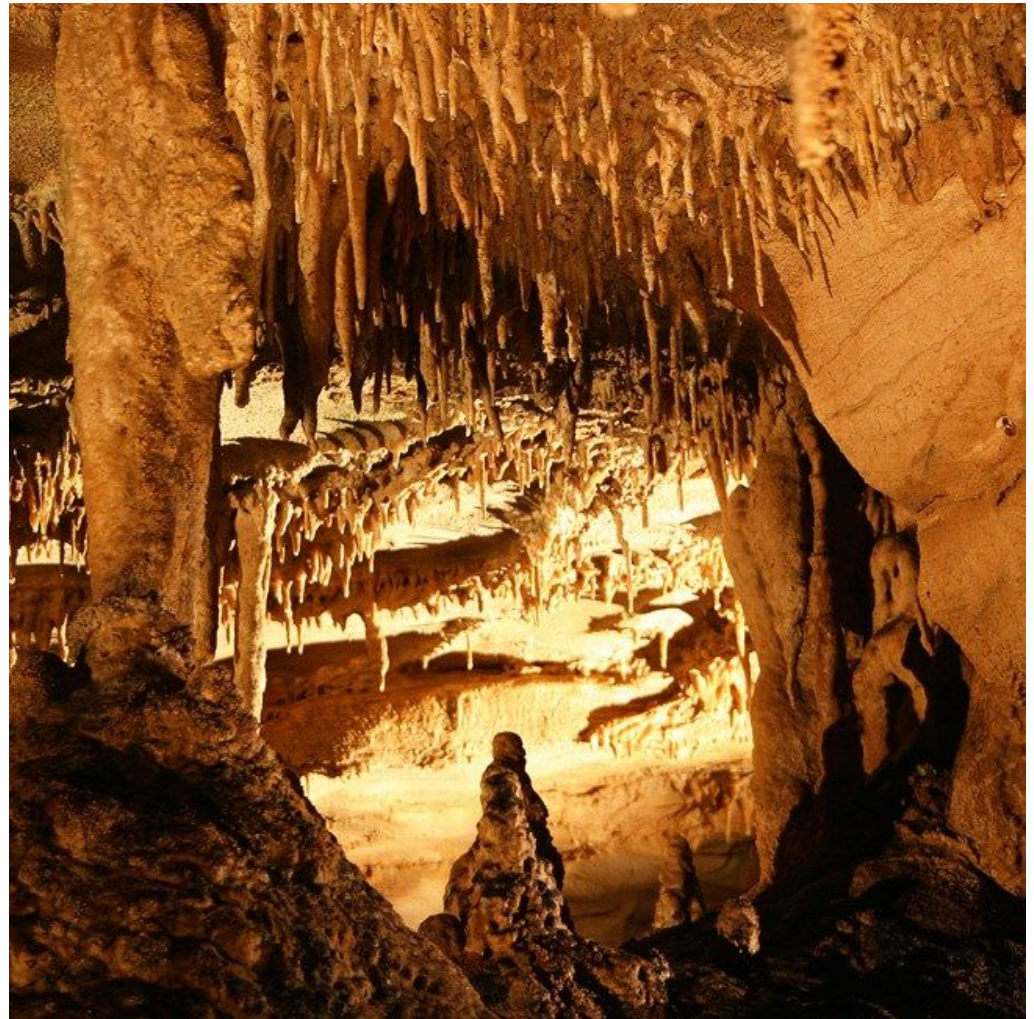
BANG BANG!

COLOSSAL CAVE ADVENTURE

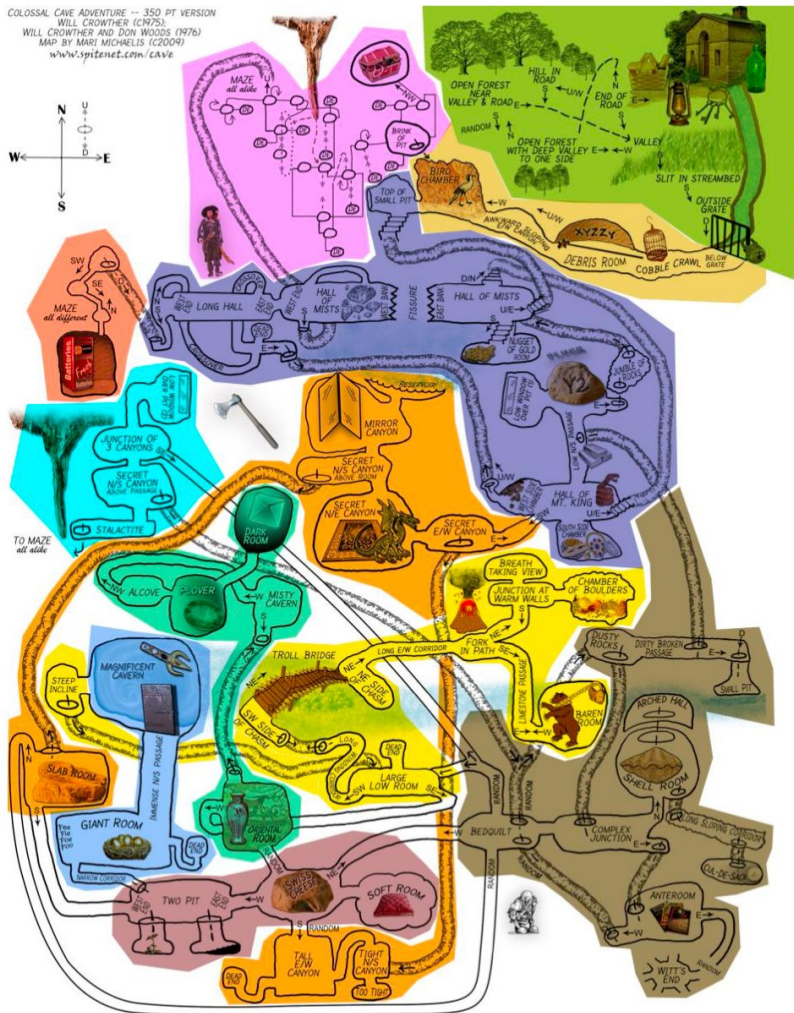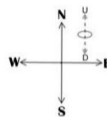Will Crowther (1976)
Patricia Crowther
Don Woods (1977)

Mammoth Cave, Kentucky
Longest cave in the world

FORTRAN, 700 lines of code

Legend:

- WellhouseVR
- CobbleCrawl
- HallOfMists
- SecretCanyon
- TwoPit
- GiantRoom
- Orient
- Junction
- MazeAlike
- MazeDifferent
- Bedquilt
- Troll

Compass: N, U, W, E, D, S

MAZE all alike

BRINK OF PIT

TOP OF SMALL PIT

BIRD CHAMBER

OPEN FOREST NEAR VALLEY & ROAD

HILL IN ROAD

END OF ROAD

OPEN FOREST WITH DEEP VALLEY TO ONE SIDE

VALLEY

SLIT IN STREAMBED

OUTSIDE GRATE

RANDOM

XYZZY

AWKWARD SLOPING

DEBRIS ROOM

COBBLE CRAWL

BELOW GRATE

MAZE all different

SW SE N

LONG HALL

HALL OF MISTS

FISSURE

HALL OF MISTS

NUGGET OF GOLD ROOM

PLUGH

Y2

LOW N/S PASSAGE

JUNCTION OF 3 CANYONS

SECRET N/S CANYON ABOVE PASSAGE

STALACTITE

TO MAZE all alike

MIRROR CANYON

RESERVOIR

SECRET N/S CANYON ABOVE ROOM

SLAB ROOM WINDOW

SECRET N/E CANYON

SECRET E/W CANYON

HALL OF MT. KING

SOUTH SIDE CHAMBER

DARK ROOM

SW ALCOVE

PLOVER

W MISTY CAVERN

BREATH TAKING VIEW

JUNCTION AT WARM WALLS

CHAMBER OF BOULDERS

TROLL BRIDGE

LONG E/W CORRIDOR

FORK IN PATH

DUSTY ROCKS

DIRTY BROKEN PASSAGE

SMALL PIT

STEEP INCLINE

MAGNIFICENT CAVERN

SW SIDE CHASM

LIMESTONE PASSAGE

BAREM ROOM

ARCHED HALL

SHELL ROOM

SLAB ROOM

IMMENSE N/S PASSAGE

LARGE LOW ROOM

ORIENTAL ROOM

BEDQUILT

COMPLEX JUNCTION

CUL-DE-SAC

LONG SLOPING CORRIDOR

GIANT ROOM

NARROW CORRIDOR

SWISS CHEESE ROOM

SOFT ROOM

ANTEROOM

TWO PIT

TALL E/W CANYON

TIGHT N/S CANYON

TOO TIGHT

WITT'S END

RANDOM