

# SUDOKU

AARON CUNNINGHAM

# SUCCESS!

- SUCCESSFULLY IMPLEMENTED AN AI THAT SOLVES SEVERAL TYPES OF SUDOKU
- CREATED A SUDOKU GENERATOR



# SUDOKU SOLVER

1. CREATED SUDOKU CLASS TO HOLD DATA AND HANDLE IT RESPONSIBLY
2. CREATED FUNCTION THAT SOLVED VERY BASIC SUDOKU PROBLEMS
3. IMPLEMENTED NEW FUNCTION THAT USED BACKTRACKING FEATURE TO SOLVE MORE DIFFICULT PROBLEMS



# SUDOKU SOLVER

P(SUDO) CODE:

IF THE SUDOKU ISN'T VALID, QUIT

LOOP (

    UPDATE\_DOMAINS()

    IF SUDOKU ISN'T VALID AND THERE ARE BACKTRACKS, REVERT BACK

    FIND SQUARE WITH ONE VALUE IN DOMAIN, AND WRITE IT

    IF NOT FOUND, FIND NEXT EMPTY SQUARE, SAVE STATE, AND GUESS

    STILL NOT FOUND, BREAK

CHECK IF SOLVED



# SUDOKU SOLVER

SHOW THE CODE TO THEM



# SUDOKU CREATOR

- STARTED AFTER PROBLEM OF SOLVING WAS COMPLETE
- MODIFIED SOLVE FUNCTION TO RETURN TOTAL NUMBER OF SOLUTIONS A PROBLEM HAD
- CREATED FUNCTION FOR CREATING VALID SUDOKU AND THEN REMOVING HINTS



# SUDOKU CREATOR

P(SUDO) CODE:

GENERATE RANDOM FIRST ROW

SOLVE SUDOKU BASED ON FIRST ROW

WHILE COUNTER < 5:

    FIND RANDOM PAIR OF SQUARES

    REMOVE THEM

    IF PUZZLE STILL HAS ONE SOLUTION:

        COUNTER = 0

    ELSE:

        ++COUNTER



# SUDOKU CREATOR

SHOW THEM THE CODE AGAIN