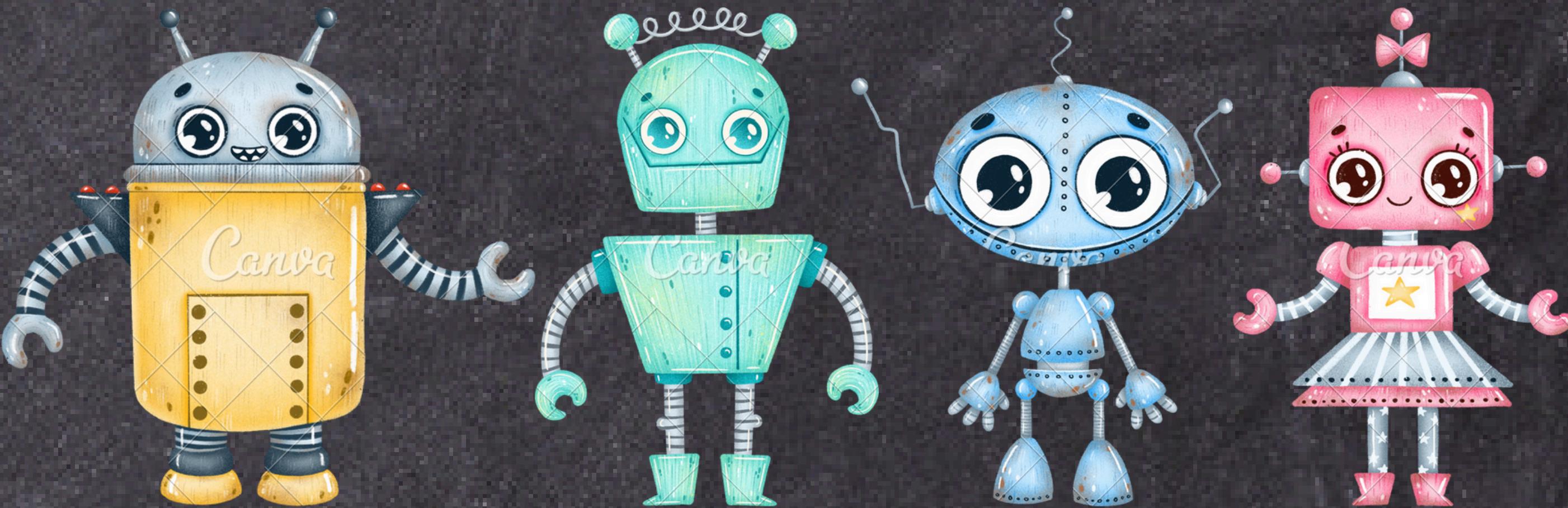


CONNECT-4

TRI-4CE
MARC-ELIO-ROCHAN



OUTLINE:

01 - MINIMAX

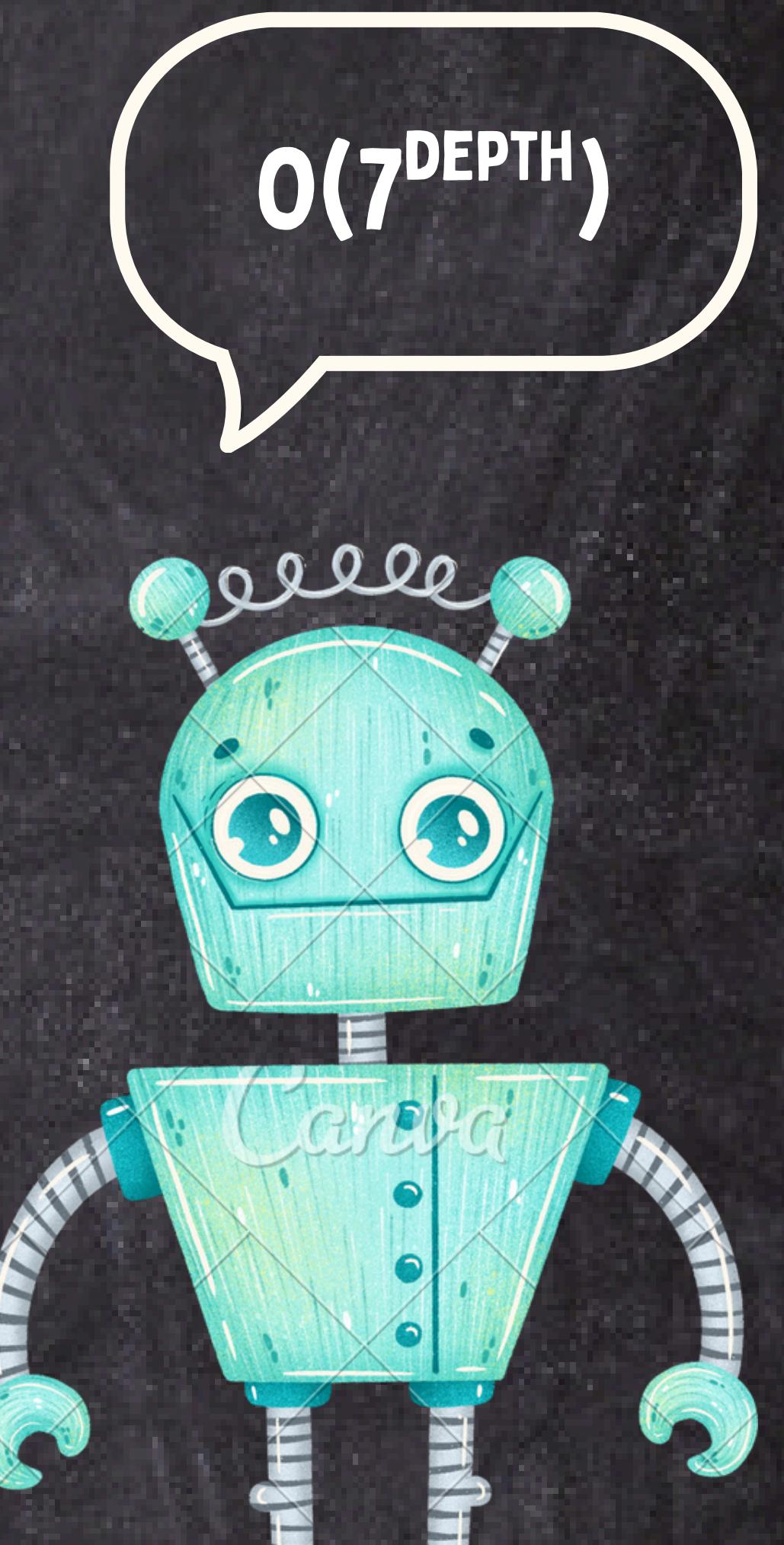
02 - ALPHA-BETA PRUNING

03 - MULTITHREADING

01 - MINIMAX

WHAT IS MINIMAX?

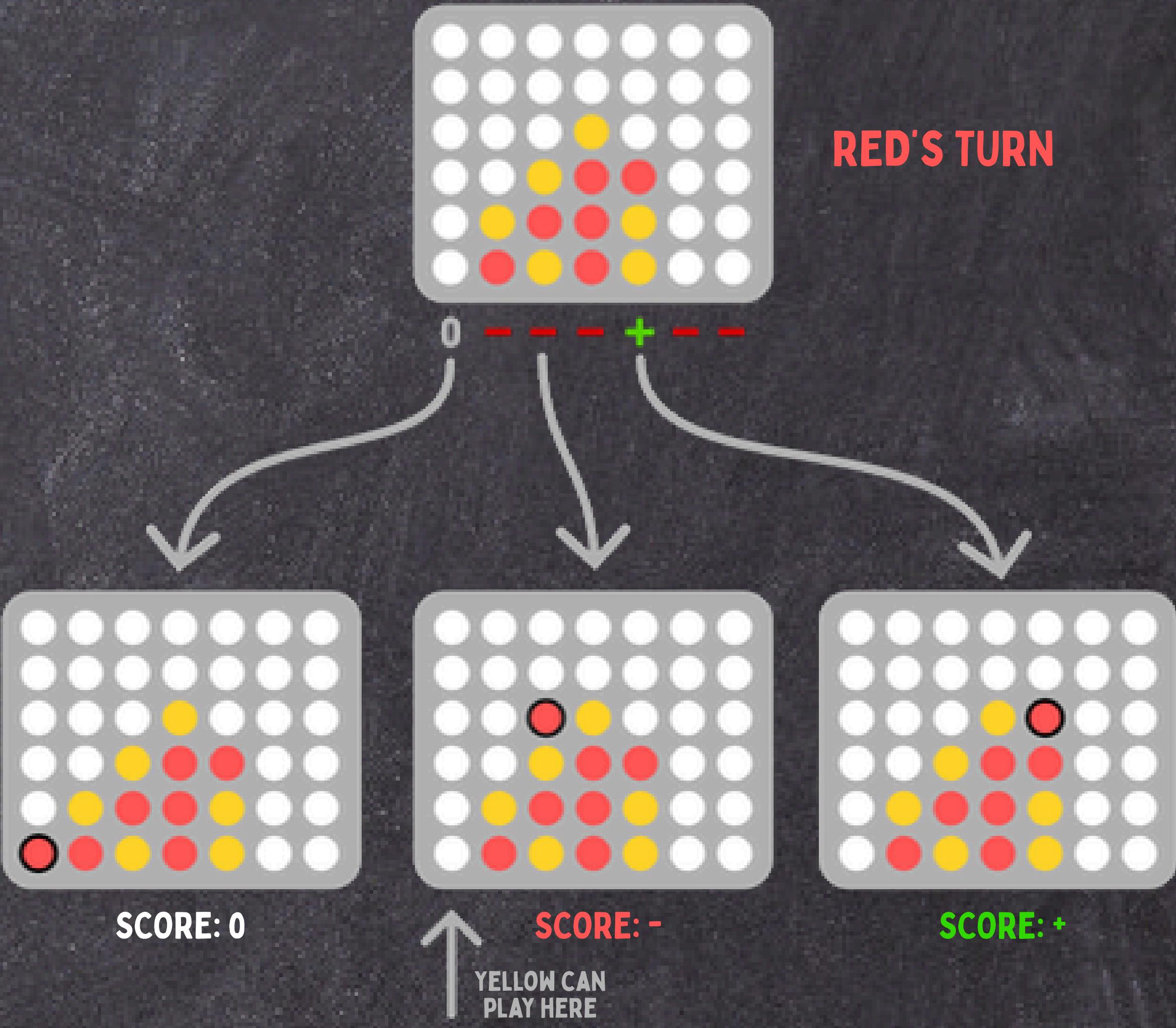
- A SEARCH ALGORITHM THAT EVALUATES POSSIBLE FUTURE MOVES
- THE GAME TREE ALTERNATES BETWEEN:
 1. MAXIMIZING PLAYER (TRIES TO CHOOSE THE BEST SCORE)
 2. MINIMIZING PLAYER (TRIES TO REDUCE THAT SCORE)



HOW DOES IT WORK?

1. SIMULATE A MOVE
2. SWITCH PLAYER
3. CONTINUE UNTIL A WIN, LOSS, TIE, OR DEPTH LIMIT IS REACHED
4. ASSIGN A SCORE TO THAT OUTCOME
5. RETURN THE BEST SCORE BACK UP THE TREE

RED'S TURN



02 - ALPHA-BETA PRUNING

1. WE KEEP TRACK OF 2 VALUES

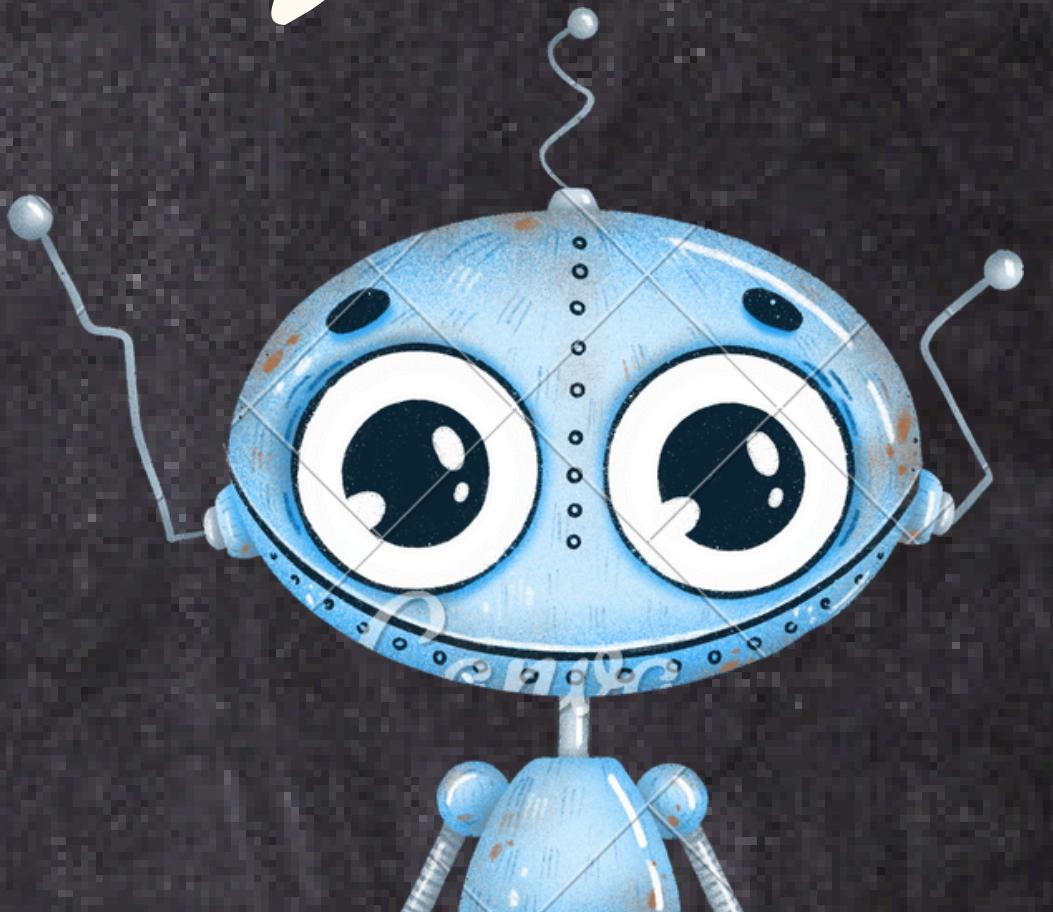
A. ALPHA: BEST SCORE MAX CAN GUARANTEE SO FAR

B. BETA: BEST SCORE MIN CAN GUARANTEE SO FAR

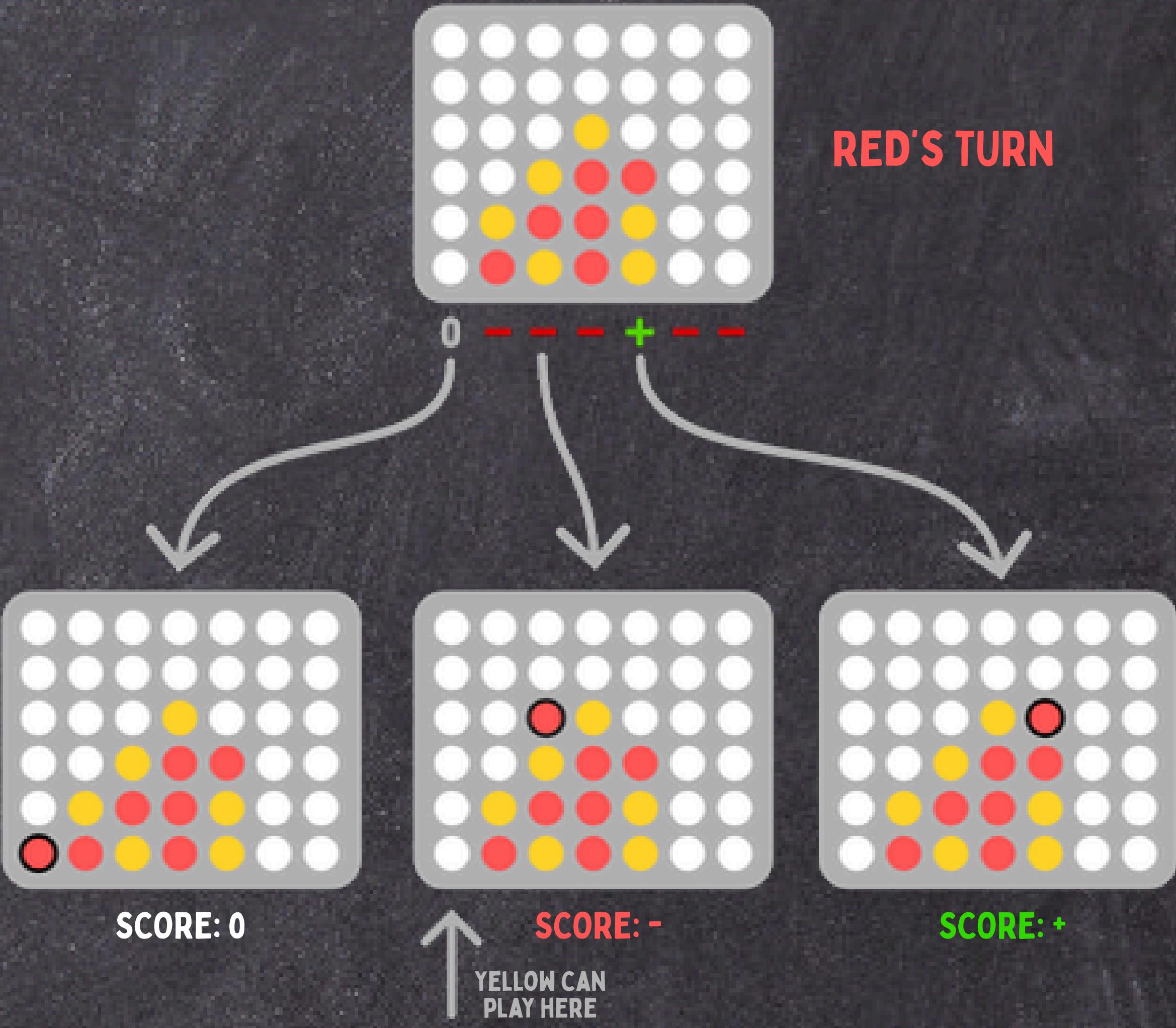
2. IF ALPHA >= BETA, WE PRUNE

A. MAX HAS A MOVE THAT MIN WOULD NEVER ALLOW TO
GET WORSE

B. MIN HAS A MOVE THAT MAX WOULD NEVER ALLOW TO
GET BETTER



RED'S TURN

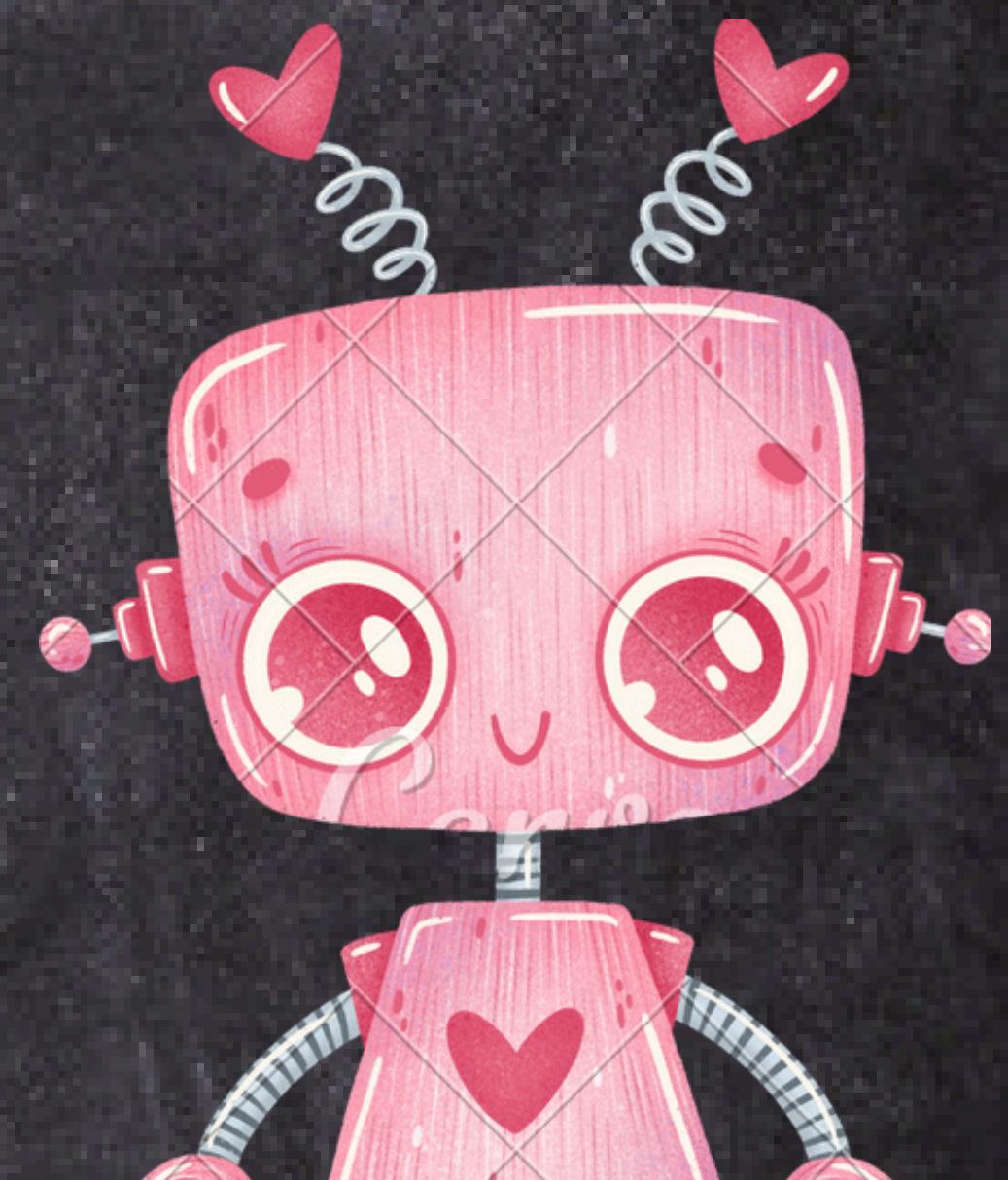


03 - MULTITHREADING

1. WE USE OPENMP TO PARALLELIZE AND SPEED UP THE FOR LOOP
2. WE HAVE TO MODIFY HOW WE GET THE BEST SCORE TO FIX RACE

CONDITION

	T_1	T_2	T_3	T_4	T_5	T_6	T_7
COLUMN	1	2	3	4	5	6	7
SCORE	-10	3	2	10	-5	-10	3



END