



Objective:

- Object's initialization.
- And a bit of logic as always to keep your brains working 😊

Challenge: Gomoku

(26)

<https://en.wikipedia.org/wiki/Gomoku>
<https://gomokuonline.com>

Gear up guys you have to make a game named as Gomoku 😊

Basic rules of Game:

Gomoku, also called *Five in a Row*, is an abstract strategy board game. It is traditionally played with Go ([https://en.wikipedia.org/wiki/Go_\(game\)](https://en.wikipedia.org/wiki/Go_(game))) pieces (black and white stones) on a Go board, using 15×15 of the 19×19 grid intersections. Speaking programmatically: a 19x19 2D array. This game has two players: one player has white disc and other black.

Aim of the game

The goal of the game is to order unbroken row/line of five signs/discs/pieces horizontally, vertically, or diagonally.

The game is over when neither player has a move. Usually, this means the board is full.

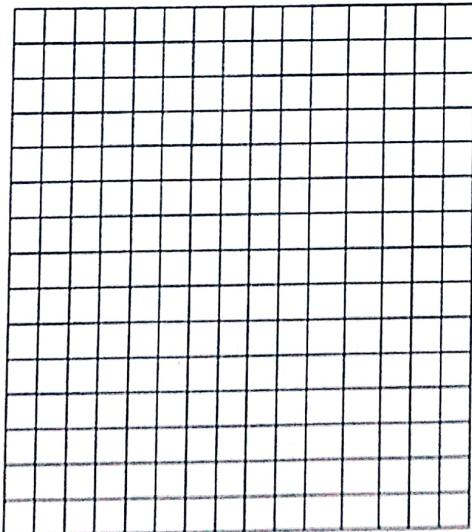
Moves Guide:

A move consists in placing from outside one piece on the board. Placed pieces can never be moved to another square later in the game.

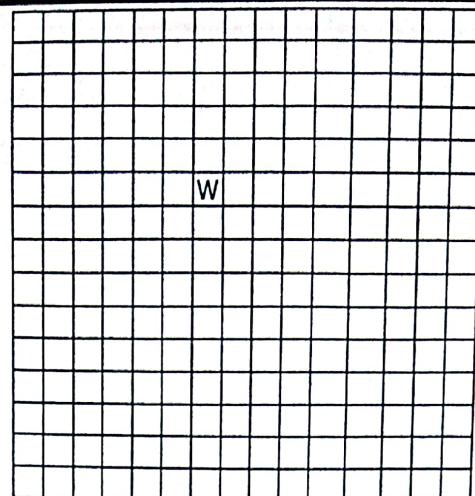
- Players alternate turns placing a stone/disc of their color on an empty intersection/cell.

Start of the game

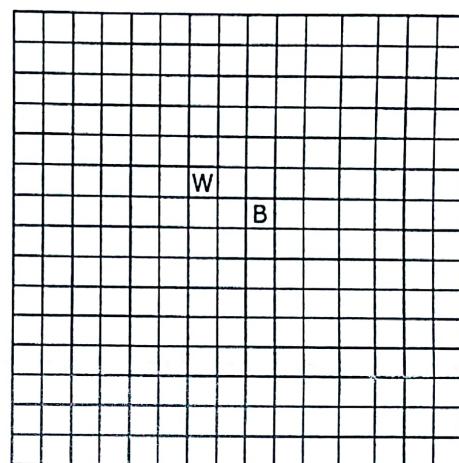
At start of the game Gomoku board looks like this



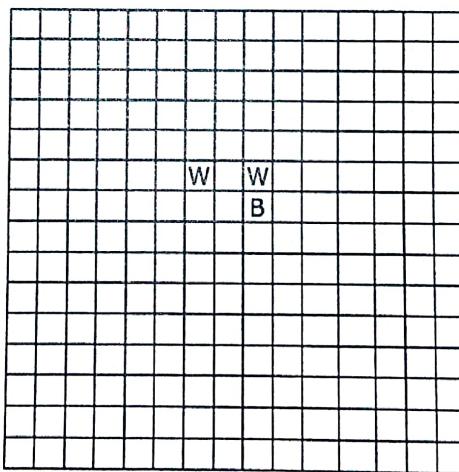
Just suppose the first turn is of Player-1 which has white color Gomoku piece.
So, he can place it on any empty cell.



Alternatively, now second player with black color piece places his disc on board anywhere on an empty cell.



Alternatively, now first player with white color piece places his disc on board anywhere on an empty cell.



And so on..... ☺

End of the game

The game ends when:

- One player wins, by making an unbroken chain of five discs (of his color white/black) horizontally, vertically, or diagonally.
- When the board is full and count of both pieces are equal (Tie/Draw).



Classes for the Game

GameBoard.h	
enum PlayerTurn { FIRST_PLAYER = 'W', SECOND_PLAYER = 'B' };	
enum PlayerSymbol { FIRST_PLAYER_SYMBOL = 'W', SECOND_PLAYER_SYMBOL = 'B' };	
enum GameStatus { FIRST_PLAYER_WIN, SECOND_PLAYER_WIN, DRAW, IN_PROGRESS };	
#define ROWS 19	
#define COLS 19	
class GomokuBoard	
{	
char board[ROWS][COLS];	Represents Game Board
GameStatus gameStatus = IN_PROGRESS;	
PlayerTurn currentPlayer = FIRST_PLAYER;	
int validMovesCount = 0;	
public:	
GomokuBoard();	Initializes the Board.
GameStatus getGameStatus();	Return the game status stored in gameStatus data member.
int getValidMovesCount();	Getter for the validMovesCount data member.
void displayBoard();	Display the game board/2D-Array on console.
PlayerTurn getCurrentPlayer();	Returns the Current Player.
void switchPlayerTurn();	Switch the current Player Turn by updating currentPlayer data member.
int markBoard(int r, int c);	Place Disc at the given row, col. Return 0 if given r,c are not on game board Return -1 if the r,c are on board but not valid move (cell already marked). Return 1 if successful.
};	
Gomoku.h	
class GomokuGame	
{	
public:	
void playGame();	It's the game controller. Deals with the interfacing and handling of the Game.
};	

Game Interface / Sample Run

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19



Player W Enter Position (row column):7 8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4
5
6
7
8	W
9
10
11
12
13
14
15
16
17
18
19

Player B Enter Position (row column):8 8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4
5
6
7	W	W
8	B
9
10
11
12
13
14
15
16
17
18
19

Player W Enter Position (row column):7 9

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4
5
6
7	W	W
8	B
9
10
11
12
13
14
15
16
17
18
19

Player B Enter Position (row column):6 8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19



6	B
7	W	W
8	B
9
10
11
12
13
14
15
16
17
18
19

Player W Enter Position (row column):7 10

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4
5
6	B
7	W	W	W
8	B
9
10
11
12
13
14
15
16
17
18
19

Player B Enter Position (row column):5 8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4	B
5	B
6	W	W	W
7	B
8
9
10
11
12
13
14
15
16
17
18
19

Player W Enter Position (row column):7 11

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1
2
3
4	B
5	B
6	B
7	W	W	W	W
8	B
9
10
11
12
13



Winners fail until they succeed.
Losers quit when they fail.

-- Robert Kiyosaki --

```
14 . . . . . . . . . . . . . . . . . . . . .  
15 . . . . . . . . . . . . . . . . . . . . .  
16 . . . . . . . . . . . . . . . . . . . . .  
17 . . . . . . . . . . . . . . . . . . . . .  
18 . . . . . . . . . . . . . . . . . . . . .  
19 . . . . . . . . . . . . . . . . . . . . .  
Player B Enter position (row column):4 8  
1 . 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19  
2 . . . . . . . . . . . . . . . . . . . . .  
3 . . . . . . . . . . . . . . . . . . . . .  
4 . . . . . . . . . . . . . . . . . . . . .  
5 . . . . . . . . . . . . . . . . . . . . .  
6 . . . . . . . . . . . . . . . . . . . . .  
7 . . . . . . . . . . . . . . . . . . . . .  
8 . . . . . . . . . . . . . . . . . . . . .  
9 . . . . . . . . . . . . . . . . . . . . .  
10 . . . . . . . . . . . . . . . . . . . . .  
11 . . . . . . . . . . . . . . . . . . . . .  
12 . . . . . . . . . . . . . . . . . . . . .  
13 . . . . . . . . . . . . . . . . . . . . .  
14 . . . . . . . . . . . . . . . . . . . . .  
15 . . . . . . . . . . . . . . . . . . . . .  
16 . . . . . . . . . . . . . . . . . . . . .  
17 . . . . . . . . . . . . . . . . . . . . .  
18 . . . . . . . . . . . . . . . . . . . . .  
19 . . . . . . . . . . . . . . . . . . . . .  
Player W Enter Position (row column):7 12  
1 . 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19  
2 . . . . . . . . . . . . . . . . . . . . .  
3 . . . . . . . . . . . . . . . . . . . . .  
4 . . . . . . . . . . . . . . . . . . . . .  
5 . . . . . . . . . . . . . . . . . . . . .  
6 . . . . . . . . . . . . . . . . . . . . .  
7 . . . . . . . . . . . . . . . . . . . . .  
8 . . . . . . . . . . . . . . . . . . . . .  
9 . . . . . . . . . . . . . . . . . . . . .  
10 . . . . . . . . . . . . . . . . . . . . .  
11 . . . . . . . . . . . . . . . . . . . . .  
12 . . . . . . . . . . . . . . . . . . . . .  
13 . . . . . . . . . . . . . . . . . . . . .  
14 . . . . . . . . . . . . . . . . . . . . .  
15 . . . . . . . . . . . . . . . . . . . . .  
16 . . . . . . . . . . . . . . . . . . . . .  
17 . . . . . . . . . . . . . . . . . . . . .  
18 . . . . . . . . . . . . . . . . . . . . .  
19 . . . . . . . . . . . . . . . . . . . . .
```

W Player Win!