

[Project #4] Battleship II - (1)

- Ships should not be adjacent to each other

	A	B	C	D	E	F	G	H	I	J
1	■	■		■			■	■	■	■
2				■	■	■	■	■	■	
3	■			■	■	■	■	■	■	■
4	■		×		■	■	■	■	■	■
5	■					×	×			
6	■	×				■		×		×
7				×		■				×
8	×	×						×		■
9										
10					■	■	■	■	■	■

[Project #4] Battleship II - (2)

- Goal is to give knowledge to the player to bomb all ships with lesser number of bombs
- Randomly places ships according to PA#3 + PA#4-(1)
 - Coordinates are hidden to the player
- Knowledge (player auto-mode)
 - e.g.) randomly choose coordinate (not recommend)
 - Find your own winning algorithm
- # of bombs = 100
 - Program ends when all ships sink
 - Program prints the number of bombs used

PA #3 Remind

- Board initialization *pseudo* code with random

```
loop(for each ship in range from 'Aircraft Carrier' to 'Patrol Boat') {  
  var x = random in range [A..J]  
  var y = random in range [1..10]  
  var vh = random in range [0..1] // 0 = vertical 1 = horizontal  
  
  if (isOverlap(x, y, vh) == false)  
    Position the ship  
    next loop  
  else  
    loop again  
}
```

PA #3 Remind

- random seed = 100

	A	B	C	D	E	F	G	H	I	J
	-	-	-	-	-	-	-	-	-	-
1		S								
2		S			P	P				S
3		S							P	S
4		P	P		B	B	B	B	P	S
5					A	P	P			
6					A					
7					A					
8					A	D				
9					A	D	B	B	B	B
10					A	D				

rand()

X, Y	0=vertical, 1=horizontal	Ship	isOverlap
F, 7	1	Aircraft	true
E, 5	0	Aircraft	false → position "A"
I, 3	1	Battleship	true
J, 1	1	Battleship	true
E, 4	1	Battleship	false → position 1 st "B"
G, 9	1	Battleship	false → position 2 nd "B"
J, 2	0	Submarine	false → position 1 st "S"
B, 1	0	Submarine	false → position 2 nd "S"
F, 8	0	Destroyer	false → position "D"
J, 2	1	Patrol	true
I, 3	0	Patrol	false → position 1 st "P"
F, 4	1	Patrol	true
I, 3	1	Patrol	true
E, 7	0	Patrol	true
E, 2	1	Patrol	false → position 2 nd "P"
F, 5	1	Patrol	false → position 3 rd "P"
D, 10	0	Patrol	true
B, 4	1	Patrol	false → position 4 th "P"

PA #4

- PA #3 보드 초기화 알고리즘을 명확하게 구현할 것
- **“Patrol Boat”의 개수를 2개로 감소**

Type of Ship	Size	#Ships
Aircraft Carrier	6	1
Battleship	4	2
Submarine	3	2
Destroyer	3	1
Patrol Boat	2	2

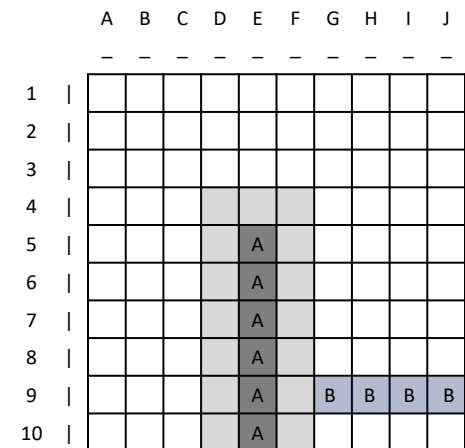
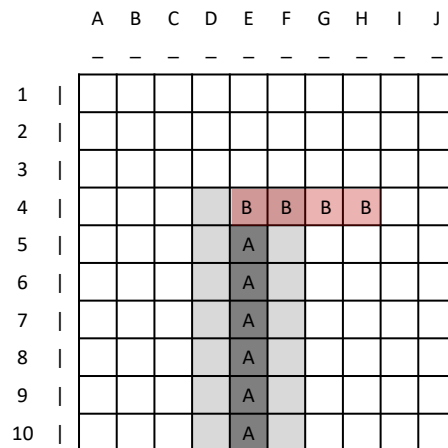
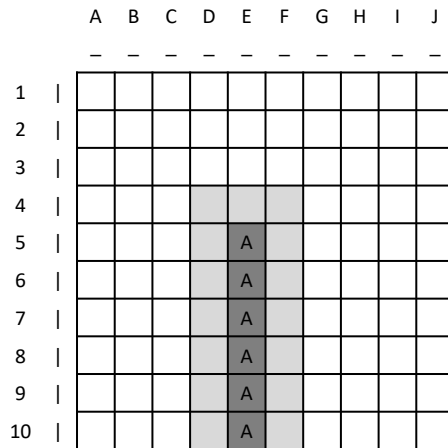
- Random Seed 100일 때의 초기 Board

	A	B	C	D	E	F	G	H	I	J
1		S								
2		S			S	S	S			B
3		S								B
4										B
5		P			A					B
6		P			A					
7					A					
8	D	D	D		A					
9					A		B	B	B	B
10		P	P		A					

PA #4

- isOverlap() 확장
 - 다른 배와의 Overlap 부분을 해당 배 및 그를 둘러싼 Sea(Empty) 부분으로 확장

X, Y	0=vertical, 1=horizontal	Ship	isOverlap
E, 5	0	Aircraft	false → position "A"
E, 4	1	Battleship	true
G, 9	1	Battleship	false → position "B"



PA #4

- AI Player
 - **Player는 Computer의 Board를 알지 못함**
 - 해당 사항 코드 확인 후, 제출 무효 처리
 - Player가 랜덤 혹은 특정 좌표에 자동으로 폭탄을 던지고, Computer는 “Hit” or “Miss” 대답
 - Player는 폭탄을 던졌던 좌표와 그에 따른 Computer로부터 받은 대답만을 알 수 있으며, 이를 토대로 다음 폭탄 좌표를 자동으로 선정

