a b c d e f g h

8 8
7 7
6 6
5 5
4 4
3 3
2 2
1 1

a b c d e f g h

It can't be placed at red line.

j̄ →

ī ↓

a b c d e f g h

8 8
7 7
6 6
5 5
4 4
3 3
2 2
1 1

a b c d e f g h
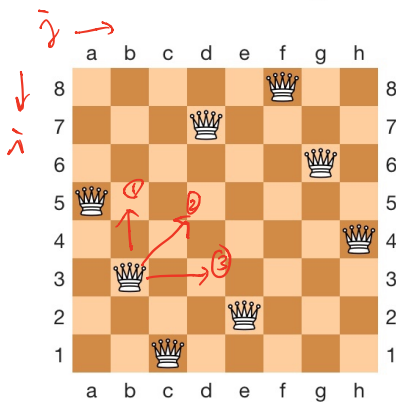
① $(x, \bar{j})$

② $\Delta i ==== \Delta \bar{j}$

③ $(\bar{i}, x)$

```
const fn = ( n, selected = [], output = [] ) => {
    if ( selected.length >= n ) {
        output.push(transform (n, selected ));

        return output;

    }
    for(let j = 0; j < n; j++) {
        const i = selected.length;
        if ( isValid ([ i, j ], selected) {
            selected.push ([ i, j ]);
            fn( n, selected, output);
            selected.pop();
        }
    }
}
```

```javascript
        return output;
}

function isValid (p, selected) {
    for( const q of selected ) {
        if ( p[0] === q[0] ||
            p[1] === q[1] ||
            Math.abs( p[0] - q[0] )
            === Math.abs( p[1] - q[1] ) )) {

            return false;
        }
    }
        return true;
}

function transform (n, selected) {
    const output = [... new Array(n)] .map(() => new Array (n) fill('.'));
    for( const [i,j] of selected ) {
        output[i][j] = 'Q';
    }
    return output.map(row => row.join(''));
}
```