

## Data Structure and Algorithm Practicals

15. Practical based on backtracking- N Queen's problems

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <title>Document</title>

</head>
<body>
  <script>
```

```
function getnqueens (order) {
  if (order<4) {
    console.log ("n queens problem apply for order bigger than 3");
    return;
  }
```

```
var nqueens=[];
var backtracking=false;
rowloop:
for (var row=0;row<order;row ++ ) {
  if (nqueens [row] === undefined) {
    nqueens [row]=[];
  }
```

```
for (var col=0;col<order;col ++ ) {
  if (nqueens [row] [col] === 0) {
    continue;
  } else if (backtracking && nqueens [row] [col] == 1) {
    if (col === order-1) {
      resetrow (nqueens, order, row);
      row=row-2;
      continue rowloop;
    }
    nqueens [row] [col]=0;
    backtracking=false;
    continue;
  }
  nqueens [row] [col]=1;
  if (isqueenvalid (nqueens, row, col)) {
    continue rowloop;
  } else if (col == order-1) {
```

```

backtracking=true;
resetrow (nqueens, order, row);
row=row-2;
continue rowloop;
} else {
nqueens [row] [col]=0;
continue;
};
}
}

```

```

return nqueens;
}

```

```

function resetrow (nqueens, order, row) {
for (var col=0;col<order;col++) {
nqueens [row] [col]=undefined;
}
}

```

```

function isqueenvalid (nqueens, row, col) {
for (var i=0;i<col;i++) {
if (nqueens [row] [i] == 1) {
return false;
}
}
for (var j=1;j<row + 1;j++) {
if (nqueens [row-j] [col] == 1 || (nqueens [row-j] [col-j]!=undefined
&& nqueens [row-j] [col-j] == 1) || ( nqueens [row-j] [col + j]!=undefined
&& nqueens [row-j] [col + j] == 1)) {
return false;
}
}
return true;
}

```

```

function printqueens (queens) {
for (var row=0;row<queens.length;row++) {
var rowtext="";
for (var col=0;col<queens.length;col++) {
if (queens [row] [col] === undefined) {
queens [row] [col]=0;
}
rowtext=rowtext + queens [row] [col] + " ";
}
console.log (rowtext);
}
}

```

```
}
```

```
var queens=getnqueens (4);  
printqueens (queens);  
</script>  
</body>  
</html>
```