**Practice Book**

**function printPyramid(n)** {

for(let i = 1; i <= n; i++) {

let str = giveMeNSpaces(i-1);

for(let j = i; j <= n; j++) {

str+=j+" ";

} console.log(str);

}

}

function giveMeNSpaces(n) {

let str = "";

for(let i = 0; i<n; i++) {

str+= " ";

}

return str;

}

let arr=[[1,0,0,6],

[0,5,2,0],

[3,0,1,0],

[0,0,4,1]]

function IsSparse(array=[]){

let count = 0;

for(i=0; i<arr.length ; i++){

for(j=0; j<arr[i].length ; j++){

if(arr[i][j]==0){

count++;

}

}

}

if(count> (arr.length\*arr[0].length)/2){

return true;

}else{

return false;

}

}

IsSparse(arr);

function seperatePosNeg(arr) {

let s = 0;

let p = arr.length-1;

while(s<p) {

if(arr[p] < 0) {

p--;

}

else if(arr[s] > 0) {

s++;

} else {

let temp = arr[p];

arr[p] = arr[s];

arr[s] = temp;

}

}

return arr;

}

**let A2 =[ 2,4,6,8,9,3,6,1]**

let start= 0;

end = A2.length -1 ;

let temp;

while(start<end){

temp = A2[start];

A2[start] =A2[end];

A2[end]=temp;

start++;

end--;

}

console.log(A2);

**function maxcons(arr) {**

arr.sort((a,b)=>a-b);

if(arr.length == 0) {

return 0;

}

let highest = 1;

let current = 1;

for(let i =0; i<arr.length-1; i++) {

if((arr[i] + 1) == arr[i+1] ) {

current++;

} else {

current = 1;

}

if(current > highest) {

highest = current;

}

}

return highest;}

**function printSpiralMatrix(matrix, r,c) {**

let top = 0;

let down = r-1;

let left = 0;

let right = c-1;

//0 = ----->

//1 = v

//2 = <-----

//3 = ^

let dir = 0;

while( top<=down) {

//we are going left to right, top(row) is constant

if(dir == 0) {

for(let i = left; i<=right; i++) {

console.log(matrix[top][i]);

}

top++;

} else if(dir == 1) { //we are going top to down, right(col) is constant

for(let i = top; i<=down; i++) {

console.log(matrix[i][right]);

}

right--;

} else if(dir == 2) {

for(let i = right; i >= left; i--) {

console.log(matrix[down][i]);

}

down--;

} else if(dir == 3) {

for(let i = down; i>=top; i--) {

console.log(matrix[i][left]);

}

left++;

}

dir = (dir + 1) % 4; //reset to 0 after 3

}

}

printSpiralMatrix(

[

[1, 2, 3],

[5 , 6 , 7],

[9, 10, 11],

[13, 14, 15]

],

4,3

);

**function printWaveMatrix(matrix)** {

let r = matrix.length;

let c = matrix[0].length;

let dir = 0;

for(let i = 0; i<c; i++) {

if(dir == 0) {

for(let j = 0; j < r; j++) {

console.log(matrix[j][i]);

}

} else if(dir == 1) {

for(let j = r-1; j >= 0; j--) {

console.log(matrix[j][i]);

}

}

dir = (dir+1)%2;

}

}

printWaveMatrix([

[1,2,3],

[4,5,6],

[7,8,9]

])

**function printTranspose(matrix) {**

let r = matrix.length;

let c = matrix[0].length;

let dir = 0;

let output = [];

for(let i = 0; i<c; i++) {

output[i] = [];

for(let j =0; j < r; j++) {

output[i][j] = matrix[j][i];

} }

console.log(output);

}

printTranspose([ [1,2], [4,5], [7,8] ])

function printTranspose(matrix) {

let r = matrix.length;

let c = matrix[0].length;

let dir = 0;

let output = [];

for(let i = 0; i<c; i++) {

output[i] = [];

for(let j =0; j < r; j++) {

output[i][j] = matrix[j][i];

}

for(let j = output[0].length-1; j>=0; j--) {

let res = "";

for(let i = 0; i<output.length; i++) {

res = res + ' ' + output[i][j];

}

console.log(res);

}

console.log(output);

}}

**printRotate90Matrix ([**

[1,2],

[4,5],

[7,8]

])