//////////////////MAIN SECTION/////////////////////////////////////

let shape: number = (Number(prompt("Enter the desired shape : " + "\n" + "for Square enter 1 " + "\n" + "for Rectangle enter 2 " + "\n" + "for Triangle enter 3 " + "\n" + "for Diamond enter 4 ")));

checkShape(shape)

//////////////////FUNCTION SECTION//////////////////////////////////

///////////////////CHECK SHAPE////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

function checkShape(chekParam: number): void {

switch (chekParam) {

case 1:

let square: number;

var LengthSquare: number = (Number(prompt("Enter the Length of the side of the square:")));

if (((LengthSquare <= 0 )) || (isNaN(LengthSquare))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

CheckContent(1, LengthSquare);

}

break;

case 2:

let Rectangle: number;

var LengthRectangle: number = (Number(prompt("Enter the Length side of the rectangle:")));

var heightRectangle: number = (Number(prompt("Enter the Height side of the rectangle:")));

if ((LengthRectangle <= 0 || isNaN(LengthRectangle)) || (heightRectangle <= 0 || isNaN(heightRectangle))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

CheckContent(2, LengthRectangle, heightRectangle);

}

break;

case 3:

let Triangular: number;

var LengthTriangular: number = (Number(prompt("Enter the Length side of the Triangle:")));

if (((LengthTriangular <= 0)) || (isNaN(LengthTriangular))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

CheckContent(3, LengthTriangular);

}

break;

case 4:

let diamond: number;

var LengthDiamond: number = (Number(prompt("Enter the Length side of the Diamond:")));

if (((LengthDiamond <= 0)) || (isNaN(LengthDiamond))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

CheckContent(4, LengthDiamond);

}

break;

default:

alert("Eror.please select 1 or 2 or 3 or 4,for the shape type:");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

}

}

//////////////////////////////////CHECK CONTENT SHAPE/////////////////////////////////////////////////////////////////////////////////////////////////////

function CheckContent(ShapeParam: number, lengthParam: number, heightParam?: number): void {

let contentParam: number = (Number(prompt("please select shape content : " + "\n" + "1) \*\*\*\*\*" + "\n" + "2) \* \* " + "\n" + "3) 12345 " + " \n " + "4) 543211")));

switch (contentParam) {

case 1:

if (((contentParam < 0)) || (isNaN(contentParam))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

if (ShapeParam == 1) {

fullSquare(lengthParam);

} else if (ShapeParam == 2) {

fullRectangle(lengthParam, heightParam);

} else if (ShapeParam == 3) {

fullTriangularOrDaimond(lengthParam);

} else if (ShapeParam == 4) {

fullTriangularOrDaimond(lengthParam, lengthParam)

}

}

break;

case 2:

if (((contentParam < 0)) || (isNaN(contentParam))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

if (ShapeParam == 1) {

EmptySquare(lengthParam, );

}

if (ShapeParam == 2) {

EmptyRectangle(lengthParam, heightParam);

}

if (ShapeParam == 3) {

EmptyTriangularOrDiamond(lengthParam, undefined);

}

if (ShapeParam == 4) {

EmptyTriangularOrDiamond(undefined, lengthParam)

}

break;

}

case 3:

if (((contentParam < 0)) || (isNaN(contentParam))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

if (ShapeParam == 1) {

numUpSquare(lengthParam);

}

else if (ShapeParam == 2) {

numUpRectangle(lengthParam, heightParam);

}

else if (ShapeParam == 3) {

numUpTriangularOrDaimond(lengthParam);

}

else if (ShapeParam == 4) {

numUpTriangularOrDaimond(lengthParam, lengthParam)

}

break;

}

case 4:

if (((contentParam < 0)) || (isNaN(contentParam))) {

alert("Eror.please select only positive integer.");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

} else {

if (ShapeParam == 1) {

numDownSquare(lengthParam);

}

else if (ShapeParam == 2) {

numDownRectangle(lengthParam, heightParam);

}

else if (ShapeParam == 3) {

numDownTriangularOrDaimond(lengthParam);

}

else if (ShapeParam == 4) {

numDownTriangularOrDaimond(lengthParam, lengthParam)

}

break;

}

default:

alert("Eror.please select 1 or 2 or 3 or 4,for the shape type:");

do {

shape = (Number(prompt("Enter the desired shape : " + "\n" + "for squares enter 1 " + "\n" + "for rectangles enter 2 " + "\n" + "for triangles enter 3 " + "\n" + "for diamond enter 4 ")));

checkShape(shape)

} while ((shape < 1) && (shape > 4))

}

}

///////////////////////////////////////////////////////////////////////////FULL SHAPE////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

function fullSquare(lengthParam: number, heightParam?: number): void {

let perimeter: number = lengthParam + lengthParam + lengthParam + lengthParam;

let area: number = lengthParam \* lengthParam;

for (let row: number = 1; row <= lengthParam; row++) {

for (let column: number = 1; column <= lengthParam; column++) {

document.write(" \*");

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the square perimeter is:" + perimeter + "<br/>");

document.write("the square area is:" + area + "<br/>");

}

function fullRectangle(lengthParam: number, heightParam: number): void {

let perimeter: number = lengthParam + heightParam + lengthParam + heightParam;

let area: number = lengthParam \* heightParam;

for (let row: number = 1; row <= heightParam; row++) {

for (let column: number = 1; column <= lengthParam; column++) {

document.write(" \*");

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the Rectangle perimeter is:" + perimeter + "<br/>");

document.write("the Rectangle area is:" + area + "<br/>");

}

function fullTriangularOrDaimond(lengthParam: number, heightParam?: number): void {

let perimeterTriangular: number = 3 \* lengthParam;

let areaTriangular: number = Math.sqrt(3) \* Math.pow(lengthParam,2) / 4;

let perimeterDaimond: number = 4 \* lengthParam;

let areaDaimond: number = Math.sqrt(3) \* Math.pow(lengthParam, 2) / 2;

for (let row1: number = 1; row1 <= lengthParam; row1++) {

for (let colSpace1 = lengthParam - row1; colSpace1 >= 1; colSpace1--) {

document.write("&nbsp" + "&nbsp");

}

for (let colStar1: number = 1; colStar1 <= row1; colStar1++) {

document.write("\* " + "&nbsp" + "&nbsp");

}

document.write("<br/>");

}

for (let row2: number = heightParam; row2 >= 1; row2--) {

for (let colSpace2 = row2; colSpace2 <= heightParam; colSpace2++) {

document.write("&nbsp" + "&nbsp");

}

for (let colStar2: number = row2; colStar2 >= 2; colStar2--) {

document.write("\* " + "&nbsp" + "&nbsp");

}

document.write("<br/>");

}

document.write("<br/>");

if (heightParam != undefined) {

document.write("the Daimond perimeter is:" + perimeterDaimond + "<br/>");

document.write("the Daimond area is:" + areaDaimond + "<br/>");

} else if (heightParam == undefined) {

document.write("the Triangular perimeter is:" + perimeterTriangular + "<br/>");

document.write("the Triangular area is:" + areaTriangular + "<br/>");

}

}

//////////////////////////////////////////////////////////////////////////EMPTY SHAPE////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

function EmptySquare(lengthParam: number): void {

let perimeter: number = lengthParam + lengthParam + lengthParam + lengthParam;

let area: number = lengthParam \* lengthParam;

for (let row: number = 1; row <= lengthParam; row++) {

for (let column: number = 1; column <= lengthParam; column++) {

if ((row == 1 || row == lengthParam || column == 1 || column == lengthParam)) {

document.write(" \*");

}

else {

document.write(" &nbsp");

}

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the square perimeter is:" + perimeter + "<br/>");

document.write("the square area is:" + area + "<br/>");

}

function EmptyRectangle(lengthParam: number, heightParam?: number): void {

let perimeter: number = lengthParam + heightParam + lengthParam + heightParam;

let area: number = lengthParam \* heightParam;

for (let row: number = 1; row <= heightParam; row++) {

let s = " ";

for (let column: number = 1; column <= lengthParam; column++) {

if ((row == 1 || row == heightParam || column == 1 || column == lengthParam)) {

document.write(" \*");

}

else {

document.write(" &nbsp");

}

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the Rectangle perimeter is:" + perimeter + "<br/>");

document.write("the Rectangle area is:" + area + "<br/>");

}

function EmptyTriangularOrDiamond(lengthParam: number, heightParam?: number) {

let perimeterTriangular: number = 3 \* lengthParam;

let areaTriangular: number = Math.sqrt(3) \* Math.pow(lengthParam, 2) / 4;

let perimeterDaimond: number = 4 \* heightParam;

let areaDaimond: number = Math.sqrt(3) \* Math.pow(heightParam, 2) / 2;

if (heightParam == undefined) {

lengthParam -= 1;

for (let row = 1; row <= lengthParam; row++) {

for (let colSpace = 1; colSpace <= lengthParam - row + 1; colSpace++) {

document.write(" &nbsp" + " &nbsp");

}

for (let colStars = 1; colStars <= (2 \* row - 1); colStars++) {

if (colStars == 1 || colStars == (2 \* row - 1))

document.write(" \*" + "&nbsp");

else

document.write(" &nbsp" + " &nbsp");

}

document.write("<br/>");

if (row == lengthParam) {

for (let lastRow = lengthParam; lastRow <= lengthParam + lengthParam; lastRow++) {

document.write(" \*" + "&nbsp" + " &nbsp" + "&nbsp" + " &nbsp");

}

}

}

document.write("<br/>"); document.write("<br/>");

document.write("the Triangular perimeter is:" + perimeterTriangular + "<br/>");

document.write("the Triangular area is:" + areaTriangular + "<br/>");

} else if (heightParam != undefined) {

let i: number, space: number, star: number = 0;

for (i = 1; i <= heightParam; i++) {

for (space = 1; space <= heightParam - i; space++) {

document.write("&nbsp");

}

while (star != (2 \* i - 1)) {

if (star == 0 || star == 2 \* i - 2)

document.write("\*");

else

document.write("&nbsp");

star++;

}

star = 0;

document.write("<br/>");

}

heightParam--;

for (i = heightParam; i >= 1; i--) {

for (space = 0; space <= heightParam - i; space++) {

document.write("&nbsp");

}

star = 0;

while (star != (2 \* i - 1)) {

if (star == 0 || star == 2 \* i - 2)

document.write("\*");

else

document.write("&nbsp");

star++;

}

document.write("<br/>");

}

document.write("the Daimond perimeter is:" + perimeterDaimond + "<br/>");

document.write("the Daimond area is:" + areaDaimond + "<br/>");

}

}

//////////////////////////////////////////////////////////////////////////NUM UP SHAPE/////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

function numUpSquare(lengthParam: number): void {

let perimeter: number = lengthParam + lengthParam + lengthParam + lengthParam;

let area: number = lengthParam \* lengthParam;

for (let row: number = 1; row <= lengthParam; row++) {

for (let column: number = 1; column <= lengthParam; column++) {

document.write(" " + column);

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the square perimeter is:" + perimeter + "<br/>");

document.write("the square area is:" + area + "<br/>");

}

function numUpRectangle(lengthParam: number, heightParam: number): void {

let perimeter: number = lengthParam + heightParam + lengthParam + heightParam;

let area: number = lengthParam \* heightParam;

for (let row: number = 1; row <= heightParam; row++) {

for (let column: number = 1; column <= lengthParam; column++) {

document.write(" " + column);

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the Rectangle perimeter is:" + perimeter + "<br/>");

document.write("the Rectangle area is:" + area + "<br/>");

}

function numUpTriangularOrDaimond(lengthParam: number, heightParam?: number): void {

let perimeterTriangular: number = 3 \* lengthParam;

let areaTriangular: number = Math.sqrt(3) \* Math.pow(lengthParam, 2) / 4;

let perimeterDaimond: number = 4 \* lengthParam;

let areaDaimond: number = Math.sqrt(3) \* Math.pow(lengthParam, 2) / 2;

for (let row1: number = 1; row1 <= lengthParam; row1++) {

for (let colSpace1 = lengthParam - row1; colSpace1 >= 1; colSpace1--) {

document.write("&nbsp" + "&nbsp");

}

for (var colStar1: number = 1; colStar1 <= row1; colStar1++) {

document.write(" " + "&nbsp" + "&nbsp" + colStar1);

}

document.write("<br/>");

}

for (let row2: number = heightParam; row2 >= 1; row2--) {

for (let colSpace2 = row2; colSpace2 <= heightParam; colSpace2++) {

document.write("&nbsp" + "&nbsp");

}

for (let colStar2: number = row2, temp: number = 0; colStar2 > 0; colStar2-- , temp++) {

document.write(temp + " " + "&nbsp" + "&nbsp");

}

document.write("<br/>");

}

document.write("<br/>");

if (heightParam != undefined) {

document.write("the Daimond perimeter is:" + perimeterDaimond + "<br/>");

document.write("the Daimond area is:" + areaDaimond + "<br/>");

} else if (heightParam == undefined) {

document.write("the Triangular perimeter is:" + perimeterTriangular + "<br/>");

document.write("the Triangular area is:" + areaTriangular + "<br/>");

}

}

//////////////////////////////////////////////////////////////////////////NUM DOWN SHAPE////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

function numDownSquare(lengthParam: number): void {

let perimeter: number = lengthParam + lengthParam + lengthParam + lengthParam;

let area: number = lengthParam \* lengthParam;

for (let row: number = 1; row <= lengthParam; row++) {

for (let column: number = lengthParam; column >= 1; column--) {

document.write(" " + column);

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the square perimeter is:" + perimeter + "<br/>");

document.write("the square area is:" + area + "<br/>");

}

function numDownRectangle(lengthParam: number, heightParam: number): void {

let perimeter: number = lengthParam + heightParam + lengthParam + heightParam;

let area: number = lengthParam \* heightParam;

for (let row: number = 1; row <= heightParam; row++) {

for (let column: number = lengthParam; column >= 1; column--) {

document.write(" " + column);

}

document.write("<br/>");

}

document.write("<br/>");

document.write("the Rectangle perimeter is:" + perimeter + "<br/>");

document.write("the Rectangle area is:" + area + "<br/>");

}

function numDownTriangularOrDaimond(lengthParam: number, heightParam?: number): void {

let perimeterTriangular: number = 3 \* lengthParam;

let areaTriangular: number = Math.sqrt(3) \* Math.pow(lengthParam, 2) / 4;

let perimeterDaimond: number = 4 \* lengthParam;

let areaDaimond: number = Math.sqrt(3) \* Math.pow(lengthParam, 2) / 2;

let amount1: number = lengthParam - 1; var amount2: number = 0;

for (var row1: number = 1; row1 <= lengthParam; row1++) {

for (let colSpace1 = lengthParam - row1; colSpace1 >= 1; colSpace1--) {

document.write("&nbsp" + "&nbsp");

}

for (var colStar1: number = lengthParam; colStar1 > amount1; colStar1--)

document.write(" " + "&nbsp" + "&nbsp" + colStar1);

amount1--;

document.write("<br/>");

}

for (let row2: number = 1; row2 <= heightParam; row2++) {

for (let colSpace2 = heightParam - row2; colSpace2 <= heightParam - 1; colSpace2++){

document.write("&nbsp" + "&nbsp");

}

for (var colStar2: number = lengthParam - 1; colStar2 >= amount2; colStar2--)

document.write(colStar2 + " " + "&nbsp" + "&nbsp");

amount2++;

document.write("<br/>");

}

document.write("<br/>");

if (heightParam != undefined) {

document.write("the Daimond perimeter is:" + perimeterDaimond + "<br/>");

document.write("the Daimond area is:" + areaDaimond + "<br/>");

} else if (heightParam == undefined) {

document.write("the Triangular perimeter is:" + perimeterTriangular + "<br/>");

document.write("the Triangular area is:" + areaTriangular + "<br/>");

}

}