#include <stdio.h>

#include <stdlib.h>

void FirstShipCoordinates();

void SecondShipCoordinates();

void ThirdShipCoordinates();

int turn = 1;

void main (){

puts("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

puts("\nThis program enables users to play a game of battleship on 10x10 boards:\n");

puts("Both players will get a chance to input the coordinates for their ships");

puts("on the following board: \n");

int board\_1[10][10] = {0};

int board\_2[10][10] = {0};

for (int i = 0; i < 10; i++){

for (int j = 0; j < 10; j++){

if (i == 0 && j == 0){

printf(" ");

for (int num = 0; num < 10; num++){

printf("%4d", num);

}

printf("\n");

}

if (i == 0 && j ==0) {printf("%4d", board\_1[i][j]);}

if (i != 0 && j == 0){

printf("%4d", i);

}

printf("%4d", board\_1[i][j]);

}

printf("\n");

}

puts ("\nFirst player should get ready to place their ships on the board:");

FirstShipCoordinates(board\_1);

SecondShipCoordinates(board\_1);

ThirdShipCoordinates(board\_1);

for (int i = 0; i < 10; i++){

for (int j = 0; j < 10; j++){

if (i == 0 && j == 0){

printf(" ");

for (int num = 0; num < 10; num++){

printf("%4d", num);

}

printf("\n");

}

if (i == 0 && j ==0) {printf("%4d", board\_1[i][j]);}

if (i != 0 && j == 0){

printf("%4d", i);

}

printf("%4d", board\_1[i][j]);

}

printf("\n");

}

puts("In the above-shown grid, '7' marks the locations of your ships");

puts("Before following the next command, please verify the locations of your ships");

char ch;

LOOP: printf("Press 'Y' or 'y' to clear the screen: ");

scanf(" %c", &ch);

if (ch == 'Y' || ch == 'y'){

system("clear");

}

else {goto LOOP;}

FirstShipCoordinates(board\_2);

SecondShipCoordinates(board\_2);

ThirdShipCoordinates(board\_2);

for (int i = 0; i < 10; i++){

for (int j = 0; j < 10; j++){

if (i == 0 && j == 0){

printf(" ");

for (int num = 0; num < 10; num++){

printf("%4d", num);

}

printf("\n");

}

if (i == 0 && j ==0) {printf("%4d", board\_2[i][j]);}

if (i != 0 && j == 0){

printf("%4d", i);

}

printf("%4d", board\_2[i][j]);

}

printf("\n");

}

puts("In the above-shown grid, '7' marks the locations of your ships");

puts("Before following the next command, please verify the locations of your ships");

char ch2;

LOOP2: printf("Press 'Y' or 'y' to clear the screen: ");

scanf(" %c", &ch2);

if (ch2 == 'Y' || ch2 == 'y'){

system("clear");

}

else {goto LOOP2;}

printf("Now, the guessing game starts:\n");

int hitCountPlayer1 = 0;

int hitCountPlayer2 = 0;

int guessingBoard\_1[10][10] = {{0}};

int guessingBoard\_2[10][10] = {{0}};

while ((hitCountPlayer1 < 12) || (hitCountPlayer2 < 12)){

int guess\_depth = 10, guess\_width = 10;

int guess\_depth2 = 10, guess\_width2 = 10;

puts("PLAYER 1, enter your guessing coordinate:");

printf("Please enter the depth/vertical location of your opponents' ship (0-9): ");

scanf("%d", &guess\_depth);

printf("Please enter the width/horizontal location of your opponents' ship (0-9): ");

scanf("%d", &guess\_width);

if (board\_2[guess\_depth][guess\_width] == 7){

hitCountPlayer1 += 1;

puts(":)You have just hit the opponents ship ('1' denotes the correctly guessed location)");

guessingBoard\_2[guess\_depth][guess\_width] = 1;

for (int a = 0; a < 10; a++){

for (int b = 0; b < 10; b++){

if (a == 0 && b == 0){

printf(" ");

for (int num1 = 0; num1 < 10; num1++){

printf("%4d", num1);

}

printf("\n");

}

if (a == 0 && b ==0) {printf("%4d", guessingBoard\_2[a][b]);}

if (a != 0 && b == 0){

printf("%4d", a);

}

printf("%4d", guessingBoard\_2[a][b]);

}

printf("\n");

}

}

else {

puts("Too bad, your guess was wrong, please hand over the control to the other player now...");

puts("'4' denotes the failed attempt to detect the ships' location");

guessingBoard\_2[guess\_depth][guess\_width] = 4;

for (int a = 0; a < 10; a++){

for (int b = 0; b < 10; b++){

if (a == 0 && b == 0){

printf(" ");

for (int num1 = 0; num1 < 10; num1++){

printf("%4d", num1);

}

printf("\n");

}

if (a == 0 && b ==0) {printf("%4d", guessingBoard\_2[a][b]);}

if (a != 0 && b == 0){

printf("%4d", a);

}

printf("%4d", guessingBoard\_2[a][b]);

}

printf("\n");

}

}

puts("\nPlease hand over the keyboard to PLAYER 2");

printf("Please enter the depth/vertical location of your opponents' ship (0-9): ");

scanf("%d", &guess\_depth2);

printf("Please enter the width/horizontal location of your opponents' ship (0-9): ");

scanf("%d", &guess\_width2);

if (board\_1[guess\_depth2][guess\_width2] == 7){

hitCountPlayer2 += 1;

puts("\n:)You have just hit the opponents ship ('1' denotes the correctly guessed location)");

guessingBoard\_1[guess\_depth][guess\_width] = 1;

for (int a = 0; a < 10; a++){

for (int b = 0; b < 10; b++){

if (a == 0 && b == 0){

printf(" ");

for (int num1 = 0; num1 < 10; num1++){

printf("%4d", num1);

}

printf("\n");

}

if (a == 0 && b ==0) {printf("%4d", guessingBoard\_1[a][b]);}

if (a != 0 && b == 0){

printf("%4d", a);

}

printf("%4d", guessingBoard\_1[a][b]);

}

printf("\n");

}

}

else {

puts("\nToo bad, your guess was wrong, please hand over the control to the other player now...");

puts("'4' denotes the failed attempt to detect the ships' location");

guessingBoard\_1[guess\_depth][guess\_width] = 4;

for (int a = 0; a < 10; a++){

for (int b = 0; b < 10; b++){

if (a == 0 && b == 0){

printf(" ");

for (int num1 = 0; num1 < 10; num1++){

printf("%4d", num1);

}

printf("\n");

}

if (a == 0 && b ==0) {printf("%4d", guessingBoard\_1[a][b]);}

if (a != 0 && b == 0){

printf("%4d", a);

}

printf("%4d", guessingBoard\_1[a][b]);

}

printf("\n");

}

}

}

if (hitCountPlayer1 == 12) {puts("\n!!!!!!!!Congrats, Player 1 have won the game!!!!!!!!");}

else {puts("\n!!!!!!!!Congrats, Player 2 have won the game!!!!!!!!");}

}

void FirstShipCoordinates(int shipOne[10][10]){

printf("\n\*\*\*\*Now, the display screen must be facing Player #%d only\*\*\*\*\n", turn);

puts("\*\*\*\*Dimensions of the first ship are 1 X 5\*\*\*\*\n");

depthWidthloop:;

int depth = 10, width = 10;

while ((depth < 0 || depth > 9) && (width < 0 || width > 9)) {

printf("Please enter the depth/vertical location of the first ship (0-9): ");

scanf("%d", &depth);

printf("Please enter the width/horizontal location of the first ship (0-9): ");

scanf("%d", &width);

}

printf("\nPlease select one of the following options (The ship will\n");

printf("be oriented accordingly):\n1.(Vertical)\t ");

int d = depth;

int w = width;

unsigned int depth\_limit = depth + 5;

unsigned int width\_limit = width + 5;

for (d; d < depth\_limit; d++){

printf("%d,%d; ", d, width);

}

printf("\n2.(Horizontal)\t ");

for (w; w < width\_limit; w++){

printf("%d,%d; ", depth, w);

} printf("\n");

if (depth\_limit > 10 || width\_limit > 10) {

puts("!!!Your 1X5 ship will not fit at this location (grid limit is 0 to 9), please try again");

goto depthWidthloop;

}

int orientation;

loop1: printf("Please select one of the above-written options (1-Vertical or 2-Horizontal): ");

scanf("%d", &orientation);

if (orientation == 1){

for (int x = depth; x < (depth + 5); x++){

shipOne[x][width] = 7;

}

}

else if (orientation == 2){

for (int x = width; x < (width + 5); x++){

shipOne[depth][x] = 7;

}

}

else {

puts ("!!!Please select a valid input");

goto loop1;

}

turn += 1;

}

void SecondShipCoordinates (int shipTwo[10][10]){

puts("\n\*\*\*\*Dimensions of the second ship are 1 X 3\*\*\*\*\n");

int depth = 10, width = 10;

int countCheckVertical = 0, countCheckHorizontal = 0;

loop2: do {

depth = 10, width = 10;

while ((depth < 0 || depth > 9) && (width < 0 || width > 9)) {

printf("Please enter the depth/vertical location of the second ship (0-9): ");

scanf("%d", &depth);

printf("Please enter the width/horizontal location of the second ship (0-9): ");

scanf("%d", &width);

}

} while (shipTwo[depth][width] == 7);

printf("\nPlease select one of the following options (The ship will\n");

printf("be oriented accordingly):\n1.(Vertical)\t ");

int d = depth;

int w = width;

unsigned int depth\_limit = depth + 3;

unsigned int width\_limit = width + 3;

for (d; d < depth\_limit; d++){

printf("%d,%d; ", d, width);

if (shipTwo[d][width] == 7){

puts("\n!!!Vertical orientation not possible, because ship-one holds this place\n");

countCheckVertical += 1;

goto skipDueToOverlap;

}

}

skipDueToOverlap:;

printf("\n2.(Horizontal)\t ");

for (w; w < width\_limit; w++){

printf("%d,%d; ", depth, w);

if (shipTwo[depth][w] == 7){

countCheckHorizontal += 1;

break;

}

}

puts("\n!!!Horizontal orientation not possible, because ship-one holds this place\n");

char answer;

printf("\nPlease enter 'Y' or 'y' to make a selection for vertical orientation");

printf("\nOR enter 'N' or 'n' to try new depth & width values: ");

scanf(" %c", &answer);

if (answer == 'N' || answer == 'n'){

goto loop2;}

printf("\n");

if (depth\_limit > 10 || width\_limit > 10) {

puts("!!!Your 1X3 ship will not fit at this location (grid limit is 0 to 9), please try again");

goto loop2;

}

int orientation;

loop3: printf("Please select one of the above-written options (1-Vertical or 2-Horizontal): ");

scanf("%d", &orientation);

if (orientation == 1){

if (countCheckVertical == 1) {goto loop2;}

for (int x = depth; x < (depth + 3); x++){

shipTwo[x][width] = 7;

}

}

else if (orientation == 2){

if (countCheckHorizontal == 1) {goto loop2;}

for (int x = width; x < (width + 3); x++){

shipTwo[depth][x] = 7;

}

}

else {

puts ("!!!Please select a valid input");

goto loop3;

}

}

void ThirdShipCoordinates (int shipThree[10][10]){

puts("\n\*\*\*\*Dimensions of the third ship are 1 X 4\*\*\*\*\n");

int depth = 10, width = 10;

loop4: do {

depth = 10, width = 10;

while ((depth < 0 || depth > 9) && (width < 0 || width > 9)) {

printf("Please enter the depth/vertical location of the third ship (0-9): ");

scanf("%d", &depth);

printf("Please enter the width/horizontal location of the third ship (0-9): ");

scanf("%d", &width);

}

} while (shipThree[depth][width] == 7);

printf("\nPlease select one of the following options (The ship will\n");

printf("be oriented accordingly):\n1.(Vertical)\t ");

int d = depth;

int w = width;

unsigned int depth\_limit = depth + 4;

unsigned int width\_limit = width + 4;

for (d; d < depth\_limit; d++){

printf("%d,%d; ", d, width);

if (shipThree[d][width] == 7){

puts("\n!!!Please try a new coordinate value, because ship-one/two holds this place\n");

goto loop4;

}

}

printf("\n2.(Horizontal)\t ");

for (w; w < width\_limit; w++){

printf("%d,%d; ", depth, w);

if (shipThree[depth][w] == 7){

puts("\n!!!Please try a new coordinate value, because ship-one/two holds this place\n");

goto loop4;

}

} printf("\n");

if (depth\_limit > 10 || width\_limit > 10) {

puts("!!!Your 1X4 ship will not fit at this location (grid limit is 0 to 9), please try again");

goto loop4;

}

int orientation;

loop5: printf("Please select one of the above-written options (1-Vertical or 2-Horizontal): ");

scanf("%d", &orientation);

if (orientation == 1){

for (int x = depth; x < (depth + 4); x++){

shipThree[x][width] = 7;

}

}

else if (orientation == 2){

for (int x = width; x < (width + 4); x++){

shipThree[depth][x] = 7;

}

}

else {

puts ("!!!Please select a valid input");

goto loop5;

}

}