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#include <stdio.h>

#include <stdlib.h>

#include <math.h>

struct circle{

int radius, x, y;

};

void addCircle(struct circle\*,int \*);

void searchPoints(struct circle\*,int);

void storeCircles(struct circle\*, int);

int main(){

struct circle circles[10];

int choice;

int count = 0;

do{

printf("\n1) Add circle\n");

printf("2) Search points\n");

printf("3) Store circles\n");

printf("4) Exit\n");

printf("What would you like to do? ");

scanf("%d",&choice);

if(choice == 1)

addCircle(circles,&count);

else if(choice == 2)

searchPoints(circles,count);

else if(choice == 3)

storeCircles(circles,count);

else{

if(choice != 4)

printf("Please enter a valid number!\n");

}

}while(choice!=4);

return 0;

}

void addCircle(struct circle \*circles,int \*count){

int x, y, r;

if((\*count) == 10){

printf("The list is already full! You cannot add more!\n");

exit(-1);

}

printf("Enter the x-coordinate of circle:\n");

scanf("%d",&x);

printf("Enter the y-coordinate of circle:\n");

scanf("%d",&y);

printf("Enter the radius of circle:\n");

scanf("%d",&r);

circles[\*count].radius = r;

circles[\*count].x = x;

circles[\*count].y = y;

(\*count)++;

}

void searchPoints(struct circle \*circles, int count){

int i, x, y, flag = 0;

printf("Enter the x-coordinate of point: ");

scanf("%d",&x);

printf("Enter the y-coordinate of point: ");

scanf("%d",&y);

for(i=0; i<count; i++){

if ((pow((circles[i].x - x),2) + pow((circles[i].y - y),2)) == pow(circles[i].radius,2)){

if(flag == 0)

printf("This point lies on the following circles:\n");

printf("circle: x=%d, y=%d, r=%d\n",circles[i].x,circles[i].y,circles[i].radius);

flag = 1;

}

}

if(!flag)

printf("This point does not lie on available circles!\n");

}

void storeCircles(struct circle \*circles, int count){

int i;

FILE \*outFile;

outFile = fopen("circles.txt", "w");

if (outFile == NULL){

printf("Error occured while opening the file!\n");

exit(-1);

}

for(i=0;i<count;i++)

fprintf(outFile,"x = %d, y = %d, r = %d\n",circles[i].x,circles[i].y,circles[i].radius);

printf("circles.txt is successfully created!\n");

}