Graphical user interface, text

Description automatically generated

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#include <stdio.h> // libaries

#include <stdlib.h>

#include <string.h>

#include <math.h>

#include <time.h>

void printDoubleArray(double\* dp, int len); // functions with pointers

void swapIntegerValues(int\* i1, int\* i2);

void squareIntArray(int\* i1, int len);

void printIntegerArrayBackwards(int\* arr, int len);

void randomIntArray(int\* arr, int len, int max);

void main() {

// Question 1

double array1[] = { 1.50, 2.30, 4.70, 8.90 }; // array double

printf("Q1: Double array\n");

int\* ip = array1; // pointers

printDoubleArray(array1, 4); // calling function

// Question 2

printf("Q2: Integer Swap\n");

int a = 7; // initialise

int b = 6;

printf("\tBefore swap a = %d B = %d\n", a, b); // before swap

swapIntegerValues(&a, &b);

printf("\tAfter swap a = %d b = %d\n", a, b); // after swap

// Question 3

int array2[] = { 1,2,4,8,16 }; // array of integers

printf("Q3: Square Array \n");

int\* iq = array2;

squareIntArray(array2, 5); // call function

// Question 4

printf("\n");

int array3[] = { 6,7,8,9,10 };

printf("Q4: Array Backwards \n");

int\* ig = array3;

printIntegerArrayBackwards(array3, 5);

// Question 5

srand(time(NULL));

printf("\n");

int array4[5];

printf("Q5: Random Integers \n");

int\* il = array4;

randomIntArray(array4, 5, 100); // random number generator with max size 100 and 5 numbers

}

void printDoubleArray(double\* dp, int len)

{

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

printf("%0.2f\t", \*(dp + i)); // prints doubles to the screen

}

printf("\n");

}

void swapIntegerValues(int\* i1, int\* i2)

{

int temp = \*i1; // swapping integer values

\*i1 = \*i2;

\*i2 = temp;

return 0;

}

void squareIntArray(int\* i1, int len)

{

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

\*(i1 + i) = (\* (i1 + i) \* (\*i1 + i)); // formula for squaring

printf("%d\t", \*(i1 + i));

}

}

void printIntegerArrayBackwards(int\* arr, int len)

{

for (int i = len - 1;i>=0; i--) { // reverse order

printf("%d \t", arr[i]);

}

return 0;

}

void randomIntArray(int\* arr, int len, int max)

{

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

\*(arr + i) = rand() % 100; // modulus function

printf("%d\t", arr[i]);

}

}