Homework 2

Due on September 26, 2024

1. Are the following array initializations correct? If not, why not?
   1. int x[4] = {8, 7, 6, 5, 4};
   2. int x[] = {8, 7, 6, 5, 4};
   3. int x[4] = {8, 7, 6};
   4. const int SIZE =4;

int x[SIZE];

* 1. const int SIZE =4;

int x[SIZE-4];

1. Suppose you have the following array declaration in a program.

int yourArray[5];

Further suppose that in the implementation of C++ you are using an int that requires 4 bytes.

i) When your program runs, how much memory is required for this array?

ii) Suppose further that your array starts at memory location decimal 100. What will be the address of yourArray[3]?

iii)If you wrote to the (illegal) index 7 position in yourArray to what address would this clobber?

1. Which of these array definitions will set all the indexed variables to 0?
   1. int array[5];
   2. int array[5] = {0};
   3. int array[5] = {0,1,2,3,4};
   4. int array[5] = {0,0,0};
   5. int array[5] = {0,0,0,0,0};

4. Here is a list of 8 numbers. Use the selection sort algorithm to sort this list. Fill in this table with each iteration of the loop in the selection sort algorithm. Mark the place from which you are looking for the 'next smallest element'. In this display, the upper numbers are the indices, the lower numbers are in the corresponding positions. Use the several rows provided to show the sequence of steps.

0 1 2 3 4 5 6 7

|------|------|------|------|------|------|------|-

8 6 10 2 16 4 18 14

0 1 2 3 4 5 6 7

|------|------|------|------|------|------|------|-

0 1 2 3 4 5 6 7

|------|------|------|------|------|------|------|-

0 1 2 3 4 5 6 7

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0 1 2 3 4 5 6 7

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0 1 2 3 4 5 6 7

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0 1 2 3 4 5 6 7

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0 1 2 3 4 5 6 7

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5. Read the following problem, and configure out the output. What does this program

implement?

#include<iostream>

using namespace std;

int main()

{

int a[2][4] = { 1, 2, 3, 4, 5, 6, 7, 8}, b[4][2];

int i, j;

for (i = 0; i < 2; i++)

{

for (j = 0; j < 4; j++)

{

cout << a[i][j]<<" ";

b[j][i] = a[i][j];

}

cout << endl;

}

cout << endl;

for (i = 0; i < 4; i++)

{

for (j = 0; j < 2; j++)

{

cout << b[i][j] <<" ";

}

cout << endl;

}

return 0;

}

6. What are the enumerators for the following enumeration data declaration?

A）enum test {RED, YELLOW, BLUE, BLACK};

B）enum test {RED, YELLOW=4, BLUE, BLACK};

C）enum test {RED=-1, YELLOW,BLUE, BLACK};

D）enum test {RED, YELLOW=6, BLUE, BLACK};

7. Given the structure type and variable definitions

struct ShoeSize

{

char width;

int number;

};

struct ShoeType

{

char style;

ShoeSize size;

double price;

};

ShoeType shoe1, shod2;

What type do these variables have?

* 1. shoe1.style
  2. shoe2.size
  3. shoe1.size.width
  4. shoe2.price
  5. shoe1.size.number

8. Write a definition for a structure type for personnel records for hourly employees. The record contains an hourly wage rate, accrued vacation in an integer number of days, and employee status (use ‘T’ for temporary and ‘P’ for permanent). Part of the problem is appropriate choices of type and member names.

9. What are the differences between global variables and global static variables?

10. What are the differences between local variables and local static variables?