

CS16, UCSB

Pre-lab #6: worth 50% of Lab 6 score (50 total points)

Print this form, staple loose pages together, and write your answers on it.

Accepted: On paper, in lab Wednesday, August 8.

Name (2 pts): _____

Email (2 pts): _____

Lab section (2 pts) Circle one: 2:00 3:30

If you have the book, read sections 5.1 - 5.4. Then answer the following items.

1. (6 pts) what is a one-dimensional array in C? Show an example, including a memory snapshot to illustrate your answer.

2. (4 pts) Explain the distinction between an element of an array and its corresponding array subscript.

3. Write C statements to accomplish each of the following tasks. Assume these statements will be executed in the order shown.

3.a. (3 pts) Declare an array named `x` that can hold 100 `double` values. Do not initialize the values.

3.b.(3 pts) Set the value of the first element of the array `x` to `NUM` (assuming `NUM` is a symbolic constant defined elsewhere in your code).

3.c.(6 pts) Write a `for` loop that sets each remaining value of `x` to the value of the preceding element plus 0.1 (i.e. second element is first + 0.1, third is second + 0.1, etc.).

3.d.(3 pts) Print the value of the last element of `x`.

4.(9 pts) In C, arrays can be initialized as with the following example, where `NUM` is an `int` constant:

```
int arr[ NUM ] = { integer_0, integer_1, ..., integer_N };
```

If `NUM` is omitted, the length of the array is set to the number of values specified. In the above example, the length of `arr` would be `N + 1` if `NUM` were omitted. If `NUM` is less than the number of elements specified, the compiler will issue a warning. If `NUM` is greater than the number of elements specified, then all remaining elements (i.e. elements at indices greater than `N`) will be initialized to 0. Note that this will be 0 at the binary representation, regardless of the data type of the array (i.e. an array of `char` will be initialized to `'\0'`, an array of pointers will be initialized to `NULL`, and so on).

It is also possible to simply declare arrays without initialization, like so:

```
int arr[ NUM ];
```

For arrays that are declared without initialization, the value of all elements is undefined.

Consider the following code:

```
int arr1[ 10 ] = { 4, 5, 6 };  
int arr2[ 10 ];
```

What is the value of each of the following expressions?
Note that the correct answer may be undefined. 1 pt apiece.

a. arr1[0]

b. arr1[1]

c. arr1[2]

d. arr1[3]

e. arr1[9]

f. arr1[10]

g. arr1[11]

h. arr1[-1]

i. arr2[5]

5. (10 pts) Write a void function named `printReverse` that takes one double array named `d` and one int named `n` as

arguments, where n is the number of elements in d . This function must print the n array values in reverse order, i.e. the last element of d should be printed first and the first element of d should be printed last. Separate the printed values by newlines.