COMP 2011 Quiz 1 - Spring 2018 - HKUST

Date: Mar 6, 2018
Time Allowed: 30 minutes
Instructions:

1. This is a open book, open notes examination. No electronic devices are allowed.
2. There are **5** questions on **4** pages (including this cover page).
3. Write your answers in the space provided.
4. All programming codes in your answers must be written in the ANSI C++ version as taught in the class.
5. For programming questions, you are **NOT** allowed to define additional helper functions or structures, nor global variables unless otherwise stated. You also **cannot** use any library functions not mentioned in the questions.

Student Name	Miss Solution
Student ID	
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Lecture & Lab Section	L3 (Version A)

For T.A. Use Only

Problem	Score
1	/ 20
2	/ 20
3	/ 20
4	/ 20
5	/ 20
Total	/ 100

Problem 1 [20 points]

How does pass-by-reference work?

Answer:

The actual parameter is bound to the formal paramter which is a reference variable. Accessing the reference variable is actually accessing the passed actual parameter.

Problem 2 [20 points]

Given the array:

```
const int SIZE = 5;
int a[SIZE] = {3, 6, 4, 2, 7};
```

Assume the `void swap(int &a, int &b)` function works as given in notes, what will the above array contains when the following code segment is executed?

```
for (int i = 0; i< SIZE-1; i++)
   if (a[i] > a[i+1])
      swap(a[i], a[i+1]);
```

Answer:

Array element	a[0]	a[1]	a[2]	a[3]	a[4]
Value	3	4	2	6	7

Problem 3 [20 points]

What does the following function do?

```
int fun(int a[], int size) {
   int n = a[0], m = 0;
   for (int i = 1; i < size; i++)
      if (a[i] > n) {
         m = i;
         n = a[i];
      }
   return m;
}
```

Answer:

Return the index of the array element with the maximum value.

Problem 4 [20 points]

Modify the function `swap()` in the notes to work with an integer array given in the 1st paramter, so that it swaps the values of two array elements with the indices given in the 2nd and 3rd parameters. Fill in the formal parameter list and the function body.

Note: it should be able to handle 1-dimensional integer array of any size. You can assume the values of the 2nd and 3rd parameters are smaller than the array size.

Answer:

```
void swap(  int a[], int index1, int index2 ) {

   int temp = a[index1];
   a[index1] = a[index2];
   a[index2] = temp;

}
```

Problem 5 [20 points]

Write a function `fun()` which takes an integer array and its size as the parameters. It rotates the elements of the array to the right by 1 position. For example, the array `[w, x, y, z]` becomes `[z, w, x, y]`.

Write both the function header and the function body.

Answer:

```
void fun(int a[], int size)
{
      int item_n = a[size - 1];
      for (int i = size-1; i > 0; i--)
         a[i] = a[i-1];
      a[0] = item_n;
}
```

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